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AGRICULTURAL POLICY REFORM AND THE RURAL ECONOMY IN OECD COUNTRIES

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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LA RÉFORME DE LA POLITIQUE AGRICOLE
ET L'ÉCONOMIE RURALE DANS LES PAYS DE L'OCDE

FOREWORD

OECD Ministers have agreed on the need for a concerted reform of agricultural policies and have defined the principles and actions on which this reform should be based. The reform agenda, including analyses of how the reform process can be promoted by measures aimed at facilitating adjustment in the agro-food sector, has been a central focus of the OECD's work on agriculture. The 1992 meeting of the OECD Agriculture ministers "... recognised that it was necessary to examine in a coherent manner the relationships among structural adjustment in the agricultural sector, environmental issues, and rural development, and any measures used to address them".

The report has been undertaken in response to this request by Ministers; it is one of a number of studies carried out under the "Policies and Adjustment in the Agro-food Sector" component of the work programme of the OECD's Committee for Agriculture. It analyses the role of agriculture and agricultural policies in the rural economy of OECD countries, primarily in terms of employment, income, output and land.

The report was carried out in the Country Studies I and Structural Adjustment Division of the Directorate for Food, Agriculture and Fisheries and Dimitris Diakosavvas is the main author. Other staff and persons outside OECD were involved in the preparation of some of the case studies. Secretarial assistance was provided by Annick Ronxin Rochard.

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SYMBOLS AND ABBREVIATIONS

AA	Agricultural area in use
AWU	Annual work unit. This is defined as being equivalent to the annual labour unit, in terms of working hours, of a person employed full-time for agricultural work on a farm. Full-time labour input is measured as the minimum amount of working hours according to national labour contracts. An AWU is usually equivalent to 2 200 working hours.
CAP	Common Agricultural Policy
EU	European Union
ECU	European Currency Unit
ESU	European size unit. This is a unit of measurement of the economic size of agricultural holding. A farm has an economic size of 1 ESU if its total SGM is ECU 1 200 of 1990 SGM. In the EU typology for agricultural holdings there are nine classes of economic size, the limits of which are: 2, 3, 6, 8, 12, 16, 40 and 100 ESU.
GCRD	OECD Group of the Council on Rural Development
LFA	Less favoured areas
OGA	Other gainful activity
SGM	Standard gross margin. This corresponds to the average value, over a three-year period and in a given region, of production minus certain variable costs

ha	Hectares
%	Percentage
. .	Data not available
0	Nil or negligible
– –	Not relevant

EXECUTIVE SUMMARY

BACKGROUND

The socio-economic development of rural areas, and the management and use of rural landscape have become important issues for agricultural policy design in many OECD countries. Agricultural Ministries are broadening the orientation of their policies beyond the farm sector alone to include improvement of economic opportunities in rural areas, the sustainability of the natural environment and the provision of countryside amenity. There is a growing awareness that agricultural policy reform could, in many respects, contribute to rural development objectives. OECD Ministers, since the 1987 OECD Council Meeting, acknowledged that agricultural policy reform would better be addressed in an integrated and comprehensive manner, encompassing concerns for rural development and environment.

TRENDS

Diversity of opportunities and problems in rural areas...

Rural areas differ markedly in their development experience, economic structure, natural and human endowments, geographical location, demographic and social conditions. Therefore, they are affected in different ways, and to differing extents, by socio-economic and policy changes shaping the national and international economic environment. There are rural regions which continue to experience out-migration and declining population, while others demonstrate considerable capacity to adapt to the rapidly changing socio-economic landscape. Knowledge and understanding of the processes involved is a crucial element for policy. Increased diversity implies that policies need to respond in a differentiated manner.

Policy makers are increasingly aware that rural development with its multiple objectives, such as reversing out-migration, reducing rural poverty, stimulating employment and protection of rural amenities, cannot rely on agriculture and agricultural policy alone, but requires a broad range of viable economic activities and cross-sectoral policies.

... but farm structures and changes in them have an important bearing on the viability of many parts of the rural economy in OECD countries...

Farm structures affect the magnitude and spatial distribution of income and economic activity. The regional distribution of benefits from agricultural support policies is also influenced by the structural characteristics of the sector. Further, the linkages between the farm sector and the related upstream and downstream sectors in different regions could have a major bearing on the extent to which those regions are dependent on the sector as a whole. Thus, in order to understand the full effects of agricultural policies and of agricultural policy reform for rural areas, it is important that the full range of interdependencies that exist between the agro-food sector and the rural economy is explicitly recognised. This raises a number of questions about policy options and the reform process for the sector as a whole, and the answers differ between regions.

The agro-food sector in OECD Member countries faces continuous adjustment emanating from economic and non-economic factors. Notwithstanding the great diversity of farm structures, farm household incomes and farm labour across OECD Member countries, the empirical evidence reveals that

there has been a continuation of a number of long-term trends in farm structures, albeit different regional patterns over the last twenty years.

Despite the general tendency for an increasing proportion of agricultural production to be concentrated in a declining proportion of farm holdings, family or small farms have not disappeared. Such farms have proved remarkably adaptable to changing economic circumstances and multiple-job holding has become widespread. There has been a decline in the total number of farms, but the decline is attributable more to the fall in the number of middle-sized farms and, to a lesser extent, to the decline in the number of small farms. In many cases, however, the number of large farms has increased rapidly. The increasing concentration and specialisation of production and increasing diversity of the sector have important implications for evaluating the ways in which rural areas are affected by agricultural policies.

... and there is great diversity in agro-food's contribution to the rural socio-economic fabric...

The empirical evidence suggests that:

– The agro-food sector is not synonymous with the rural economy. However, the sector is an important source of income and jobs in many rural areas and is critical in determining the rural landscape, even if the sector's relative economic importance may be of marginal significance at the country level.

– There is significant variation in the relative importance of the agro-food sector not only between OECD Member countries, but also between regions within countries.

– Increasing importance of linkages throughout the whole agro-food chain in the role of agro-food in the rural economy.

AGRICULTURAL POLICIES AND RURAL DEVELOPMENT

... but traditional agricultural support policies are increasingly ineffective in accomplishing rural development objectives...

Agricultural support policies in OECD countries have many objectives, some of which are conflicting. Agricultural support policies have exerted varying degrees of influence on resource use and returns. By attracting into and retaining in the sector more resources than would have occurred in the absence of agricultural support policies, they have positively influenced the socio-economic rural fabric. However, the trend towards increasing integration of the agro-food sector in the whole economic system, including rural economies, suggests that efforts to improve the economic well-being of farm families through traditional agricultural support policies are increasingly inefficient. Production-linked agricultural support policies are not an effective means of achieving sustainable rural development. Although the impacts differ, largely depending upon the type of agricultural policy considered, farm employment in most countries and rural areas continues to decline. Farm support, by bidding up land rents, might deter other non-farm industries from locating in rural areas. In addition, these measures could increase inter-regional differences in income and employment levels as the largest benefits of agricultural support tend to be channelled to the most affluent rural areas. Furthermore, output-linked policies, by increasing the prices of fixed factors of production, increase the costs of production, thereby squeezing farm incomes.

... and agricultural policy reform can enhance agro-food's contribution to the sustainable development of the rural economy, but the benefits are neither instantaneous nor without cost...

Given their diversity, agricultural policy reform will affect rural areas in different ways. It will give rise to continuing and, in many cases, opposing adjustment pressures throughout the agro-food sector as relative costs within and between regions and the geographic pattern of economic activity will alter. Some agro-food production will tend to gravitate to those countries and regions in which there is a competitive advantage. This will be associated with declines in output and employment in regions that

lack competitive advantage. In some other regions, however, increased incentives for diversification into new products or value-adding activities to meet consumers' preferences, developing niche markets, and an increase in part-time farming and pluriactivity could allow farmers to stay in rural areas and provide stimulus to rural economic development. The adaptation of agriculture to market signals would also enhance the integration of farmers into the rural socio-economic fabric. The pace and time scale of such pressures will vary among sectors, regions and countries.

In general, the incomes of farm households in economically integrated rural areas will be the most affected because farmers in such areas were the principal beneficiaries of output-related agricultural support. Nevertheless, in such rural areas farmers often enjoy multiple-income sources due to economic diversity and will be best equipped to cope with reform pressures. On the other hand, in those rural areas that lack competitive advantage in agriculture and where the prospects for diversification are limited, a faster outflow of agricultural labour and a fall in agricultural incomes could lead to acute local and regional problems. Thus, agricultural policy reform could accelerate underlying structural trends. However, reform of output-related support policies accompanied by alternative policy mechanisms targeting low-income farmers, those in particularly disadvantaged regions of those affected by structural adjustment, as suggested by the 1987 OECD Council Communiqué reform principles will mitigate the degree of hardship. As the social costs of adjustment usually precedes the benefits of reform, it is important that governments have a coherent strategy for dealing with them.

POLICY CHALLENGES

... and governments will continue to face important challenges

An efficient and competitive agro-food sector will contribute to rural development. The challenge for policy makers is to identify policy options to enable the sector to respond promptly and flexibly to new opportunities, while dealing with problems of market failure directly. This underscores the increasing need for harnessing the synergies between agricultural and cross-sectoral policies, with implications for institutional structures. A coherent, well co-ordinated and targeted policy approach aimed at diversification, promotion of high-quality regional products, provision of information, infrastructure, direct income support and public goods would improve the competitiveness of rural areas. Policy makers should balance the need for greater economic efficiency, with transparency and with environmental and social concerns in rural areas. Policies should be transparent and regular monitoring and rigorous evaluation are necessary. Although a coherent policy approach will differentiate among rural areas, its effectiveness hinges heavily upon a clear understanding of stated objectives. The existence of a wide range of often ambitious and inconsistent rural development objectives poses important challenges to policy makers in devising and implementing cost-effective policies.

I. BACKGROUND

1.1. INTRODUCTION

In recent years, greater prominence has been attached to rural policy objectives in most OECD countries. Ministries for Agriculture in many Member countries are broadening the focus and orientation of their programmes to include rural communities rather than just the farm sector. Within the EU, there is an increasing recognition that agricultural policy reform could better serve rural development objectives. The 1987 OECD Ministerial Council Communiqué, which set out the principles of agricultural policy reform, recognised that the "adjustment of the agricultural sector will be facilitated if it is supported by comprehensive policies for the development of various activities in rural areas". OECD Ministerial Communiqués have underscored the need for a well-co-ordinated approach to agricultural reform policies, encompassing concerns for rural development through a greater emphasis on an inter-

sectoral approach to policy formulation. OECD Agriculture Ministers, at their 1992 meeting, specifically highlighted the importance of rural development objectives in the context of agricultural policy reform, while noting that an integrated approach is required. The interactions and complementarities between agricultural policies and rural development policies were further reinforced at the OECD Committee for Agriculture meeting at High Official Level in March 1994, which devoted one of its three themes to Rural Development.

OECD Ministerial Communiqués have also stressed the importance of pursuing work on rural development policy in the programme of activities of the Organisation. In its 1988 Communiqué, the Council at Ministerial level requested the Secretariat to study "the possible contribution to agricultural reform that might be made by measures such as policies for rural development including environmental aspects".

Although policy makers are increasingly aware of the need to tackle agricultural policy reform within the context of a coherent framework, there is a lack of comprehensive evidence on the inter-linkages between the agro-food sector and the rural economy. A better understanding of how much agriculture contributes to the rest of the rural economy should enhance understanding of the consequences of the changes in agricultural policies and support on the rural economy and, further, might assist in the design of better policies for more sustainable economic development in rural areas.

Most of the available information about the declining role of the agricultural sector in rural economies refers only to primary agriculture and scant attention has been paid to the whole agro-food sector. Very little is known about the extent to which upstream and downstream agricultural activities are located in rural areas. Despite the growing importance of farm family pluriactivity, there is a lack of knowledge on the sources of off-farm income and the more general effects of developments in the wider rural economy on the structure of the agro-food sector. Further, there is an incomplete picture of how alternative policy approaches in the context of agricultural policy reform might affect the well being of rural areas.

Ongoing changes in agricultural policy reinforce the importance of more fully understanding the role of agriculture in rural economies. The successful conclusion of the Uruguay Round should provide new impetus to the movement towards trade liberalisation and a more integrated world economy. Most countries have embarked on at least some market oriented reform of their agricultural policies. OECD Member countries have begun to reduce their reliance on the most distorting forms of support to agriculture and are increasingly moving towards direct income support. The consequences of these policy changes for rural economies and the factors which could influence the choice of the policies to facilitate adjustment is not yet fully comprehended. Concern over the effects of agricultural policy reform on rural economies, particularly over the potential loss of agricultural employment, is a principal consideration for policy makers in deciding the pace of reform and in choosing its form.

Because of different degrees of socio-economic diversification of rural areas, the importance of the agricultural sector can vary substantially by location between and within countries. Thus, in order to capture the full implications of agricultural policies and of agricultural policy reform for the rural areas, it is important that the full complement of linkages that exist between the whole agro-food sector and the rural economy is explicitly recognised.

An evaluation of the impact of agricultural policy reform on rural areas must account for this underlying diversity and should encompass a complex array of overlapping issues such as rural and regional development policies, interactions between structural change and agricultural policy, labour market developments, as well as social equity considerations. This raises a number of questions about policy options and the reform process for the sector as a whole, and the answers might vary considerably between regions. It also underscores the increasing need to consider coherent, well co-ordinated and targeted policies, which adhere to the principles of transparency, equity and efficiency, to facilitate the necessary adjustment in the entire agro-food sector in the rural economy.

In order to deal with this complexity, the present study, which is undertaken in response to the mandate received through the 1992 OECD Agriculture Ministers meeting and subsequent 1994 High Level meeting of the Committee for Agriculture, focuses on a limited number of issues. The issues here

have been chosen because they are not addressed at length in other work of the OECD Secretariat and they are deemed to be of sufficiently general interest to be useful for OECD countries contemplating policy reform. With these caveats in mind, the study seeks to clarify the key aspects of the role of agricultural policies and policy reform with respect to the rural economy. It attempts to sharpen understanding of those agricultural adjustment processes which are essential for effective policy design. While it is recognised that changes in agriculture and the rural economy are affecting the social cohesion of rural society, and that these in turn impact on the sustainability of agriculture and other rural sectors, these topics are not addressed in the present study.

The study is organised in two parts. The first part consists of a Main Report, which analyses the policy implications of the changing nature of the linkages between the rural economy and the whole agro-food sector, primarily in terms of income, output, employment and land. It examines the implications of changing agricultural structures for rural economies in OECD countries and attempts to provide some insights into the most important aspects of the inter-relationship between the agro-food sector and the rural economies that are relevant for policy makers. The second part comprises case studies, which complement the analytical work, focusing on issues which are the most directly related to the role of agriculture and agricultural policies in the rural economy in Canada, France, Greece, Japan, New Zealand, Norway and Switzerland. Where possible, the pilot studies cover a small number of diverse regions in each country.

1.1.1. Main report

In this Part, Chapter 1 provides a general introduction to the study; it offers a succinct discussion of the concept of rural economy and the objectives of policies for rural development in OECD Member countries, and it presents a brief discussion of rural areas in the overall economy. Chapter 2 endeavours to analyse available historical data on main trends in farm structures, which have evolved over the last two decades, to illustrate the similarities and diversity within and between Member countries and to obtain some insights into the inter-relationship between the farm sector and the rural economy. Chapter 3 examines the implications of agricultural policies and agricultural policy reform as defined in the 1987 Ministerial Communiqué for adjustment of factors of production in the context of the rural economy. It also attempts to assess the importance of the whole agro-food sector in the rural economy, particularly in terms of employment, income creation and land use. This involves both the direct and the indirect contribution of the agro-food sector to the state of the rural economy and taking into account intra- and inter-country diversity. It also provides a brief discussion of the structure, magnitude and distribution of transfers arising from agricultural policies in OECD Member countries. Finally, Chapter 4 attempts to synthesise the main points that can be drawn from the analysis and different possibilities of consensus are presented which define the role of agriculture and agricultural policy approaches in the rural economy.

1.1.2. Case studies

The overriding objective is to look at concrete agricultural policy measures and programmes in OECD Member countries that have a bearing on the regional distribution of resources, including those with structural measures which contain viability of rural areas as an explicit objective. The intention is not to undertake wide ranging country case studies but rather to explore key policy issues. The pilot studies assist in drawing some lessons on how alternative policy approaches might affect the well being of rural areas. As such they could facilitate identification of policy options for strengthening the contribution of agriculture to achieve viable rural economies.

Moreover, the pilot studies aim to enhance understanding of the geographical pattern of diversification and adjustment of the agro-food sector in the process of policy reform. The diversity of socio-economic conditions prevailing in OECD Member countries' rural areas and the disparities among their regions offer a challenging opportunity to analyse the different approaches used to facilitate the process of structural adjustment.

Against this background, the pilot studies attempt to address the following questions:

- To what extent have agricultural policies and agricultural policy reform significantly affected the well being of different types of rural areas, and if so, how?
- To what extent have agricultural policies facilitated adjustment in the entire agro-food sector in rural economies?
- To what extent have broad agricultural policies accommodated the increased diversity of agriculture within and between OECD Member countries?
- To what extent have different agricultural policy measures addressed rural issues within an integrated and coherent framework?

To achieve their objectives, the studies focus on aspects or issues which are particularly important in the countries under consideration and do not attempt a comprehensive coverage of all topics for each of the countries concerned. For this reason, although the framework is broadly consistent for all studies, it was not considered fruitful to adopt a common methodology. Such an approach could inhibit the ability to focus on the most relevant and interesting aspects of a given country's experience and policy concerns.

Within this structure, the focus is on the key problems or issues that are considered most important in the case of each country in assessing the role of agriculture and agricultural policies in rural development. The emphasis is on comparisons across regions within countries and over time, rather than across countries. Further, assessments of specific policies are made in terms of their intended objectives and against a set of indicators, to the extent possible. In addition, it was considered important that the issues and regions selected reflect an appropriate range of the diversified agricultural structures and policies prevailing in OECD countries, thereby offering a range of policy conclusions that could be of value to other OECD countries.

Following extensive consultations with the countries concerned, the following regions and issues have been selected:

Country	Region	Issue
Canada	Yorkton region in eastern Saskatchewan and Annapolis region in Nova Scotia	Impact of agricultural policies and expected effects of 1995 policy reforms
France	Brittany, Burgundy	Role of the agro-food sector; evaluation of agro-structural policies
Greece	Crete	Effectiveness of agro-structural policies
Japan	Hilly and mountainous areas	Role of agriculture and agricultural policies
New Zealand	Rural areas	Effects of agricultural policy reform
Norway	Vestfold and Sogn of Fjordane	Integration of agricultural with rural/regional policies
Switzerland	Canton Uri and Canton Zug	Impact of direct payments on regional performance in mountain and plain areas

The Canadian study has been prepared by the Canadian authorities. The rural areas of Canada, with few exceptions, have long been reliant on the production of primary resources and the subsequent export of these primary resources. This economy is now changing, moving from its dependence on primary production towards more innovative and value-added resource-based industries and new business opportunities. New information technology, new markets, international and domestic pressures and changes to the policy environment, ranging from trade agreements, globalisation of markets, to reduced government resources and the need to diversify and produce more value-added products, set the stage for a number of adjustments and opportunities. These changes are particularly impacting rural areas where agriculture is significant. Although the agriculture and agri-food sector is always adjusting, the policy framework within which has operated for some time has taken a new direction. In 1995, the Government of Canada announced and commenced implementation of a number of major

policy changes impacting the agriculture and agri-food sector. The study looks at the demographic and economic profiles of the Yorkton region of eastern Saskatchewan and the Annapolis region of Nova Scotia during the period 1981 to 1995 and describes the impact of the agriculture and agri-food policies and policy environment during this same period. It provides observations on some of the factors affecting regional economic development over the last decade, as well as some preliminary light on the major current economic and social adjustments, occasioned by the recent shifts in government policy, by technological innovation and by changes in demand and supply patterns.

The French study considers two regions: Brittany and Burgundy. Its objective is twofold. First, it examines the role of the agro-food sector in the two regions. Second, it outlines the agricultural policies, including agro-structural policies implemented and a critical assessment of the role of agricultural policy in rural development in both regions is presented. Finally, the study identifies some of the challenges confronting farming and associated downstream industries today and the strategies that these sectors could pursue in order to adapt to the new policy environment.

The Greek case study endeavours to analyse the extent to which agro-structural policies have succeeded in alleviating the main structural impediments which thwart the competitiveness of the agricultural sector and consequently its contribution to rural development of the island on Crete. More specifically, it attempts to address two issues: have agro-structural policies had a discernible impact on farm structures, agricultural incomes and the rural population? What were farmers perceptions of these policies? Such analysis is timely given the increasing prominence that these policies have recently been accorded with the new implementation period, 1994-99, for EU structural funds. The time horizon of the analysis is 1981 onwards, although in most cases data are only available until 1991. The island of Crete was considered to be representative of the country in terms of its rural diversity, the importance of the agricultural sector in the island's economy, and the variety of agro-structural measures applied.

The Japanese study focuses on the rural economy in hilly and mountainous areas and draws some conclusions about appropriate policies to revitalise these areas. The study first provides an overview of hilly and mountainous areas in terms of their socio-economic structure as well as the structural characteristics of their agricultural sectors. Then it discusses the overall agricultural policy setting and recent development, particularly in the context of hilly and mountainous areas. An attempt is made to make a preliminary assessment of the implications of agricultural policies for these areas, including market price support measures and structural policies. To provide a concrete background to the analysis, the paper compares two villages located in different geographical zones. Finally, the paper endeavours to draw some conclusions about the possibilities and options of designing a more appropriate policy framework to better achieve stated policy objectives.

New Zealand was considered to be a suitable case for two main reasons. Firstly, the agricultural sector continues to be of paramount importance in the country. Secondly, the reforms undertaken both sectoral and economy-wide, by New Zealand in the mid-1980s constitute the most comprehensive reforms undertaken by any OECD country in recent years. Consequently, New Zealand stands out as the OECD country with the lowest assistance afforded to the agricultural sector. New Zealand's experience of "farming without subsidies" could be very illuminating in providing insights on how the agricultural sectors in other countries might adjust in the circumstances of radical policy reforms and on how such adjustment will impact on the rural economy. The objective of this study is therefore to examine the implications of agricultural policy reform for New Zealand's rural economy. The study briefly outlines the socio-economic profile of rural New Zealand; it discusses the relative importance of the agricultural and adjacent agro-food sectors and the major structural changes over the last two decades; it then focuses on the main effects of agricultural policy reform. Finally, it presents the main lessons drawn from the reform experience.

The Norwegian study, which has been prepared by the Norwegian authorities, focuses on the interactions between agricultural policies and cross-sectoral policies such as regional and rural development policies. The analysis is based on two diverse rural regions: Vestfold and Sogn og Fjordane. The study discusses the various policies in place to stimulate rural areas. These include traditional agricultural policies such as price support, the Agricultural Agreement, various legislative measures, as well as regional and rural development policies.

The Swiss study has been prepared by the Swiss authorities. Its objective is to examine the regional implications of agricultural policy reform. The study is be based on two diverse rural regions: a remote rural region, Canton Uri, and an integrated rural region, Canton Zug. To set the scene, the study provides a short explanation about the reform in Switzerland. The agri-environmental programmes are explained, specifically the two programmes which integrate production and organic farming. It then presents a brief description of the socio-economic structure of the selected regions (*i.e.* the economy, population, area, etc.). Based on available data, the process of adoption of the agri-programmes over time in the two chosen regions is analysed and compared.

1.2. RURAL ECONOMY DEFINED

"Rural", like "urban", is a generic term that covers a multitude of circumstances. There are significant differences in the conceptualisation of "rural" and defining what constitutes a rural area in any country with precision is difficult. The most fundamental feature of rural areas is their place in economic geography and the concomitant attributes associated with that place.

Box 1.1. **Definitions of rural areas used in OECD Member countries**

Austria:	Rural areas are those areas which are non-urban or lack an urban centre.
Canada:	Rural areas are those with a population of less than 1 000 and a density of less than 400 persons per square kilometre (Census definition).
Finland:	Three types of rural areas are distinguished based on their prospects for development: urban-adjacent rural areas, rural heartland areas and peripheral areas.
France:	Rural areas are those areas which are non-urban or lack an urban centre.
Greece:	Rural areas are defined as the territories of the communities with less than 2 000 inhabitants.
Ireland:	Rural areas are defined as towns under 1 500 persons or open country districts (Census definition).
New Zealand:	Rural is defined on a geographical basis as those areas outside centres which have 1 000 or more people. The definition encompasses a continuum from areas without people and sparsely settled territory through to small towns with fewer than 1 000 people; and of very remote locations to areas surrounding small or even large cities. For policy purposes, minor urban areas are also often as part of "rural". Minor urban areas are centres of population with between 1 000 and 10 000 people.
Portugal:	Rural areas are those areas which are non-urban or lack an urban centre.
Sweden:	The traditional definition is based on the dichotomy rural-urban, where urban is any agglomeration of more than 200 persons. Recently a more elaborated system of categories was proposed by the national Rural Area Development Agency which distinguishes different degrees of rurality based on travelling time. These are urban centres with more than 3 000, countryside close to urban centres, countryside and rural areas.
United Kingdom:	Rural areas are defined on the basis of ten indicators along the lines of Objective 1 and Objective 5*b* of the EU.
United States:	Counties are classified as metro and non-metro; non-metro or rural counties are further classified by their economic and social base (Cook and Mizer, 1994). Counties designated as non-metro in 1993 are classified into six non-overlapping economic types (*i.e.* farming dependent, mining-dependent, manufacturing-dependent, government-dependent, services-dependent and non-specialised counties) and into five overlapping policy types (*i.e.* retirement-destination, federal lands, community, persistent poverty and transfers-dependent counties).

Rural areas can be defined according to different criteria stemming from different aspects of rurality – geographic, social, economic and cultural. Thus, not only would each definition result in a different geographic and statistical coverage, but also would give a different orientation to any analysis, depending on the predominant attributes chosen for the definition. Further, it is important to recognise that rurality is a dynamic phenomenon because as spatial changes in rural areas occur over time the nature of rurality itself changes (Blanc, 1997; Cloke and Edwards, 1986).

Not surprisingly, definitions used vary across Member countries and a variety of socio-economic criteria, including a high share of primary sector activities, intensity and profitability of farming, population density, land use, distance, proportion of active farms, etc., are used (OECD, 1994*b*, p. 18; Errington, 1990; Saraceno, 1994; Berger and Rouzier, 1995; Box 1.1). In many instances "rural" is treated as a residual category being defined negatively as not being "urban" rather than being explicitly specified by its own properties. Definitions of "rural areas" are often crystallised into the rural-urban continuum, the main factor being the degree of urbanisation (as demographic, socio-economic and behavioural phenomena) and the main criterion is the distinction between urban and rural characteristics.[1] Overall, the criteria used vary considerably from one country to another (OECD, 1988).

The OECD Rural Development Programme has conceptualised "rural" as a territorial or spatial concept, not restricted to any particular use of land, degree of economic health, or an economic concept. It has distinguished three types of rural areas, on the basis of their place in economic geography (OECD, 1993, pp. 32-40).[2] This three-type typology refers to *economically integrated rural areas*, *intermediate rural areas* and *remote rural areas*. This typology provides the basis for differentiating among rural policies and has been used by the GCRD to analyse alternative policy measures for creating rural employment (OECD, 1995*e*). A tripartite typology of rural areas is useful insofar as it can help reveal diversity in rural areas, rural development options and opportunities, and ensure real territorial differences in policy analysis. The typology is based on the assumption that knowledge and understanding of different types of rural economies and their distinctive socio-economic profiles can aid policy makers. This typology is primarily a function of geographic and economic remoteness from urban centres. *Economically integrated rural* areas are growing economically and demographically, often located near an urban centre, with incomes generally above the rural average. Although farmers make up only a small part of the work force, farm incomes are typically higher than the average. *Intermediate rural* areas are areas which are relatively spatially remote, but their good infrastructure provides easy access to urban centres. These are areas traditionally dependent on agriculture and related activities, particularly in terms of jobs, although they are increasingly diversified into other sectors such as manufacturing and services. *Remote rural areas* are usually sparsely populated and are often located in peripheral regions far removed from urban centres. They are characterised by low population density, ageing population, minimum infrastructure and services, low skills and incomes, and weak integration with the rest of the economy.

1.3. RURAL AREAS IN THE OVERALL ECONOMY

- *Policies for rural areas must increasingly recognise the diversity of socio-economic conditions.*

Rural areas comprise more than 90 per cent of the national territory in OECD countries. About one third of the total OECD population lives in rural areas and in many countries they contribute more than a half of total employment (OECD, 1994*b*, Table 2, p. 27). Rural areas in OECD Member countries are highly diverse, exhibiting a wide range in average per capita incomes, having a variety of economic bases and consequently different degrees of integration with the rest of the economy. Ageing and depopulation, primarily among those individuals in the prime working age categories and in higher

levels of educational attainment, have been the most conspicuous problems confronting the viability of many rural areas, particularly for the remote areas.

As is the case for the economy as a whole, rural economies have been experiencing continuous pressures stemming from structural change and globalisation. As was highlighted at the *OECD High Level Meeting on Rural Development,* many rural areas are likely to undergo profound adjustments in their socio-economic structures to respond to pressures emanating from increasing integration of the world economy, new (mainly information) technology, emerging environmental concerns and structural changes in the agricultural sector following policy reform. Consequently, they have become more diversified in terms of economic, social and demographic conditions. Notwithstanding the great degree of diversity of economic activity, improvements in communications, infrastructure and transportation have led to increasing specialisation in many rural areas.[3]

The process of economic development and integration has created new economic opportunities for rural industries in many rural areas. In a number of OECD Member countries, some rural areas have buoyant and dynamic economies which are successfully adapting to the continuous pressures for adjustment and are the driving force for employment creation for the overall economy.

Enhanced diversification of the rural economy has been a major development in the past fifteen to twenty years. During the 1950s and 1960s, the traditional pattern of migration was the rural exodus as ''poles of growth'' were heavily concentrated in large urban and industrial centres. Since the 1970s, however, the situation has begun to change and diversification of rural economies has emerged as a new feature. Population in rural areas of OECD countries grew in the 1970s, often outpacing urban population growth, bringing renewed economic vitality to many rural areas, particularly in the United States and Canada. France is perhaps the most vivid example of net migration as the phenomenon of rural exodus which was evident during the 1960s was reversed with people moving into rural communes from urban areas (see Cavailhès, *et al.*, 1994; Bontron, 1990; Kayser, 1990).

However, the changes have not occurred at the same time, with the same intensity or speed across OECD Member countries or within regions. The 1970s decade of ''rural renaissance'' in some Member countries was followed by a period of significant economic upheaval with many rural areas failing to share economic progress enjoyed by other areas. Many witnessed slower rural population and employment growth, and in some areas these declined, in both absolute and relative terms, compared with the corresponding rates in urban areas, resulting in a wider rural-urban income gap and higher rural poverty rates. For example, the share of Canada's population in rural areas declined from approximately 35 per cent in 1981 to 33 per cent in 1991 and unemployment rates increased with the degree of rurality of the region. Further, not only the level of per capita real income in rural areas but also its growth rate during the 1980s was smaller than the corresponding rate in urban areas (Government of Canada, 1995).[4] In the United States, during the 1980s, 54 per cent of the country's non-metropolitan counties lost population.

A possible explanation for this turnaround can be found in the changing structure of OECD Member economies. One major trend in recent years has been the growing interdependence of economies and the globalisation of economic activities brought about by rapid changes in technology. A common feature of all OECD countries over the 1980s has been a slowdown in growth in both output and productivity. Notwithstanding wide variations across OECD countries, the relative importance not only of agriculture but also of the industrial sectors as a source of jobs has declined, with an acceleration in the shift of employment to services occurring in many countries. The service sector currently, accounts for two out of every three jobs in the OECD (OECD, 1995*d*, pp. 2-6). The particular sectors which contributed most to service employment growth were those characterised as advanced services sectors such as banking, insurance and finance-related services and these activities are usually located in urban areas.

For the 1990s, available evidence portrays a more optimistic picture of rural economies and some indicators suggest the possibility of a new rural revival in some OECD Member countries. In Australia only 27 per cent of rural households had income lower than the median national average, while this was the case for almost half of households in urban areas in 1991. In the United Kingdom, data for 1991 show that there has been a convergence of the employment profile and industrial structure of rural areas with

those in urban areas and unemployment rates in rural areas were less than the national average (RDC, 1995). In the United States, population and employment data for the 1990s suggest some rural revival, with widespread rural growth and a slight decline in rural-urban gaps in earnings, income and poverty (USDA, 1995, p. 3).[5]

There is a great degree of diversity within as well as between rural areas of Member countries. According to the GCRD's rural indicators work, on average, one quarter of the OECD population reside in predominantly rural regions, while about 40 per cent is concentrated in 3 per cent of the territory in predominantly urbanised regions (OECD, 1994*b*). The employment share is higher in the significantly rural areas than in the predominantly rural areas for the overwhelming majority of the countries. The spatial distribution of national populations over the three types of regions differ in most Member countries. In some countries (*e.g.* Turkey, Scandinavian countries, Austria) population shares descend from predominantly rural regions to significantly rural, to predominantly urban, while in others population shares ascend (United Kingdom, Germany, Switzerland and the Netherlands). Further, some countries are characterised by a dual structure insofar as relatively large proportions of the population can be found at both extremes, predominantly rural and predominantly urban regions (Iceland, Ireland, Greece and Portugal).

The increased diversity of rural areas is also reflected in the changing relative importance of the economic sectors. Rural areas are shifting away from natural resource-based industries toward services in accordance with trends at the national level. At the same time, the rural economy has become more closely tied to national and global economies, making it more sensitive to changes in macroeconomic policy, business cycles and global competition. Manufacturing is important to the rural economy and the role of services is growing. The OECD Rural Indicators work suggests that in 1990 employment in manufacturing industries is higher than employment in primary industries in most regions across OECD Member countries. However, as for the overall national economies, the service sector provides the bulk of employment opportunities in rural areas for most countries.

1.4. RURAL DEVELOPMENT OBJECTIVES

In recent years, rural development issues have become more central to policy-making in many OECD Member countries, especially those of Europe and Japan. This increased interest stems in part from the substantial changes that agriculture has undergone over the last decade. These changes have not been without impact on the economy and social structures of different countries and regions. In fact, agricultural adjustment problems are seen within the wider agenda of issues affecting rural areas and rural development is considered as part of the answer to the problems of small-scale low-income farming, lack of alternative employment and persistent out-migration from the countryside (EC, 1988).

The term rural development has a large number of connotations not only within the various academic disciplines but also in public policy debate. The rationale for rural development policy lies on two distinct characteristics of rural areas. The most salient feature of rural areas, in terms of its relevance for policy-making, is the wider geographic dispersion of consumers and producers compared with urban areas. This generally gives rise to higher transaction costs such as those associated with the acquisition or delivery of goods and services as well as costs of securing and enforcing contracts. This is the key feature of rural economy and the prime force behind historic trends towards increased urbanisation. A second characteristic of rural areas is the presence of a wide variety of public goods to which high value seems to be attached in many OECD Member countries.

There is a widespread heterogeneity of rural development objectives and approaches. The general interest embraces a variety of more specific concerns which differ considerably among countries (Box 1.2). The principal objectives of rural policy are to maintain the socio-economic viability of rural communities over time.[6] These objectives embrace such things as equalisation of incomes of rural and urban populations, equal access to social and commercial services, creating equal job opportunities or more vaguely at creating freedom of choice as to where to live and to work, and cultivating a sense of identity among the rural population.

Box 1.2. **Objectives of rural development policies in selected OECD Member countries**

Czech Republic:	Restoration and preservation of rural life and rural traditions.
England:	Rural Development Commission seeks to enhance and support rural areas by: *Self-sufficiency*: ensuring that rural communities develop in such a way as to encourage enterprise, responsibility and ownership; *opportunity*: ensuring that economies in rural areas provide a suitable range of job opportunities, suitable for small rural communities; *vitality*: ensuring that these communities are place where people both live and work; *equality*: ensuring that rural communities have reasonable and affordable access to services; *amenity*: ensuring that development occurs in ways that preserve and enhance rural environment (Rural Policy Issues, The Arkleton Trust, 1990, p. 79).
EU:	Article 130*a* of the Treaty establishing the European Community states that the Union "shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions, including rural areas".
Finland:	The objectives of rural policy are to preserve viable rural communities throughout the country, raise the living conditions of rural inhabitants to a par with the urban population, narrow the gap between incomes and employment in different parts of the countryside and to ensure an adequate population in villages.
Hungary:	Development policy for rural areas is a part of regional policy, which has as its main objective to promote harmonious socio-economic development of the regions.
Japan:	Policies for rural communities aim at revitalising rural areas and emphasise improvements to the living environment and natural scenery, the preservation of regional traditions and culture.
Poland:	The definitions of regional policy for rural areas cover a broad field of interests and concerns the social and economic problems of all the economic branches interested in or realising their stated goals in the countryside and in small towns.
Switzerland:	Rural development policy is under regional policy, with the main objective to reduce the gap between living conditions in economically weak regions and economically developed regions as well as ensuring adequate population across the country. The focus of regional policies is on the mountainous regions.

While it is difficult to distil a detailed sense of the overall goals and objectives of OECD Member's rural development policies, with varying degrees of importance, policy statements include the following aims (OECD, 1993; Mannion, 1996):

- to enhance the competitiveness of rural areas so as to maximise their contribution to economic development;
- to provide opportunities for rural citizens to enjoy a standard of living comparable to national norms;
- to preserve and develop the natural environment and cultural heritage of rural areas;
- to maintain rural population and reverse out-migration;
- to improve incomes of farm households;
- to diversify and promote increased employment opportunities as a response to declining trends in agricultural employment; and generally
- to improve the quality of rural life, to reduce disparities in living conditions, to conserve; and
- to develop the landscape and protecting the natural and traditional cultural environment.

Rural development is an aspect of regional development and often the boundaries between the two concepts and objectives are blurred, and regional policies often adopt objectives which acknowledge rural problems. In Scandinavian countries, France, Greece, Portugal and Switzerland the preservation of existing settlement patterns and the maintenance of population is accepted as an objective of regional policies, whereas in Australia, Canada and Turkey it is economic diversification that is

emphasised. Balanced regional development and equivalence in living conditions feature prominently in the accepted objectives of the governments of Austria and Germany, while policy makers in Japan and the United Kingdom are even more explicit in defining as objectives the development of underdeveloped areas and the achievement of a healthy rural economy and an attractive rural environment.

In the EU Members, rural development policies of governments include several goals of general importance, as well as several specific ones elaborated for less-favoured rural areas. Moreover, the maintenance of prosperous rural communities and the preservation and encouragement of family farming are explicit or implicit agricultural policy objectives in many OECD Member countries. According to Article 39 of the Treaty of Rome account is to be taken of the "... particular nature of agricultural activity, which results from the social structure of agriculture and from structural and natural disparities between various regions...". Many policy makers believe that rural communities based on family farms are a form of social organisation which preserves values such as social solidarity and community care. They also seem sensitive to the maintenance of service infrastructure dependent, at least partially, on farming.

Nevertheless, rural development policies are not, by nature, sectoral policies but horizontal ones. Thus, agriculture, industry, rural tourism, social policies, land management, community development, transport and infrastructure, and environmental policies are all part and parcel of such policies. Nonetheless, the existence of wide range and often ambitious of rural development objectives posses important challenges to policy makers in devising and implementing cost-effective policies.

II. AGRICULTURAL STRUCTURAL CHANGE AND THE RURAL ECONOMY

- *A clear understanding of agricultural structural adjustment is fundamental for effective policy design in rural areas.*

2.1. INTRODUCTION

A good knowledge of farm structures and their evolution over time is a prerequisite for understanding the way the sector functions and for assessing the likely regional effects of agricultural policies. Structural characteristics of the sector and changes in structures have an important bearing on the viability of the rural economy as they affect the magnitude and distribution of income and economic activity and have spatial consequences. Because of different degrees of economic diversification in rural areas, the relative importance of the agricultural sector can vary dramatically by location between and within countries.

The economic structure of the farm sector, as for other economic sectors, is multidimensional. It includes *economic concentration*, such as the number and size distribution of farms by farm type and geographic region; the technology and production characteristics of those farms, including type of activity and level of *specialisation*; the *socio-economic* characteristics of the work force including age, education, the economic contribution of each family member and the extent to which total family income is generated by off-farm activities; and *internal organisation of resources*, including ownership, financing pattern such as tenancy, leasing and debt/equity sources and relationships; the inter- and intra-sectoral linkages including contract production, and vertical and horizontal integration; and changes to legal restraints on the use of farm inputs and resources (Boehlje, 1992; IAC, 1984).

Farm structure and changes in structure affect the economic and social situation of rural areas in a variety of ways. Farm households in different farm size classes organise their labour, production methods, financing and marketing arrangements in different ways. Consequently, a predominance of

small- to medium-sized farms would have different implications for the economic and social vitality of rural areas than a predominance of large farms which, in turn, will not be homogeneous across regions. Overall, the more a rural area depends on farming, the more it is likely that changes in farm structures will be felt on the economy of the rural area.

In addition, the distribution of benefits from agricultural support policies is influenced by the structural features of the farm sector.[7] Changes in the number, concentration, production type and size of farms in a region have a direct bearing on the extent to which the region's farms will benefit from particular support programmes – and from changes in them under policy reform. The scope for changes in labour allocation on and off farms by farm families in different regions will also have a fundamental bearing on the extent to which the adjustment process would be smooth in response to market signals or whether there is a need for policy intervention to address particular income or adjustment problems. Finally, the linkages between the farm sector and the related upstream and downstream industries in different regions have an important bearing on the extent to which those regions are dependent on the economic activity in the sector as a whole. This raises a number of questions about policy options and the reform process for the sector as a whole (*i.e.* both farm level policies and those affecting the related industries), and the answers might vary considerably between regions.

The farm sector is linked to the larger economy through a network of input purchases and product sales. It purchases its inputs such as equipment, fertilisers, feed, seed and labour from upstream sectors. In turn, it sells its products to downstream sectors that process, transport, distribute, manufacture, retail or consume the products. These purchases, in turn, generate indirect demands for additional inputs, yielding additional employment and income generation.[8]

On the demand side, an increase in total farm household incomes is likely to generate spillover growth in the rural non-farm economy, since rising farm household incomes can alter rural purchases of non-farm goods and services and could lead to consumption diversification into a broader array of products. The extent and location of employment, generated in other sectors from increased total farm household income, depends in part on the demand for goods and services which, in turn, depends upon the income-distributional consequences of agricultural growth and how the consumers in different income classes allocate their expenditure. There are also multiplier effects through the demand for services such as education, health and infrastructure of those employed in agriculture and their families. The reverse sequence of events could hold for decreases in farm household incomes.

On the supply side of the rural non-farm economy, agricultural activity could affect the rural non-farm wage and hence the opportunity cost of labour available for non-farm activities. If returns in agriculture increase, this could induce a movement away from many low-return non-farm activities towards those that are more remunerative. In contrast, in regions where returns to agriculture are poor, low-return non-farm activities could proliferate, with no increase in wage rates. These effects depend, *inter alia*, on the degree to which the region's labour is isolated or linked into larger multi-regional labour market as well as on government policies such as minimum wage legislation.

One of the major manifestations of structural change is that the nature and extent of linkages between sub-sectors is changing. Rapid advances and adoption of new technology in OECD countries' agriculture has strengthened the linkages between agricultural and non-agricultural sectors. Due to the intensification and specialisation of production, the farm sector is increasingly dependent on inputs which are not supplied by farmers, such as fertilisers, machines and fuel. This increased reliance on external inputs extends beyond physical goods to purchased services such as contracting, technical, financial and business advice. New linkages and relationships among levels in the production-marketing chain have evolved which significantly influence the regional structure of agriculture.

Consequently, as emerging new technologies tend to substitute purchased inputs for farm-supplied inputs, changes in the structure of the agricultural sector could strengthen the linkages with the non-farm rural and/or urban economy. Both the backward linkages (*i.e.* where the sector purchases its inputs) and forward linkages (*i.e.* the market for an industry's output) of the agricultural sector might be changing with important implications for the rural economy, depending on where these industries are located.

The spatial location of the agro-food sector might be changing over time across OECD Member countries. As new technology is developed and adopted, economies of scale unfold in new growth areas, with new producers or old ones relocating, capital and other resources entering in these new producing areas. Thus, as the interegional competitive advantage in the production, processing and distribution of specific agro-food products shifts in favour of new producing areas, certain regions might have increased their respective shares in production, employment and value-added relative to others, while other producing regions lose respective shares. In such circumstances, the economic impacts of the agro-food sector in rural economies could be changing substantially between regions.

The organisation and location of each agro-food sub-sector is influenced largely by commodity characteristics such as perishability, seasonality of production, resource requirements, economies of scale, degree of processing required and nature of final demand for the commodity.[9] These factors affect both the regional concentration of farm production and the linkages with other stages of production and marketing.

Another important feature of structural change is the increasing tendency to add value to the product. Downstream in the food chain, changes in consumer preferences have led to more complex patterns of processing and distribution of farm output. In the United Kingdom, for example, over 80 per cent of farm produce now undergoes processing and packaging before sale.

The increasing integration and concentration of agro-industry has numerous implications for the rural economy. The agro-food sector has often been viewed as a vehicle for rural development and as a means of absorbing labour displaced through structural adjustment at the farm level. Food processing in rural areas, for example, has the advantage of being often located near agricultural production, albeit away from consumer areas (*i.e.* urban centres). The potential for food processing industries to create employment and income in rural areas largely depends on whether local areas can supply competitively priced raw inputs for local processing facilities. In addition, regional location, particularly in European countries, is often tied to products with a specific label and the characteristics and processing techniques are specific to the regions concerned.

An important implication of the preceding discussion is that policies aimed directly at farmers could have large leakage effects upstream or downstream into the rest of the economy. Therefore, in order to capture the full implications of agricultural policies and of agricultural policy reform for the well-being of rural areas, it is important that the full complement of linkages that exist between the whole agro-food sector and the rural economy is explicitly recognised.

Moreover, there is a synergistic, two-way relationship between farm structure and the rural economy. As rural areas diversify, the local farming sector may be altered by the new socio-economic environment. The rural non-agricultural economy affects the agro-food structure because it provides alternative uses for labour, land and capital. Changes in non-farm rural economic activity will affect allocation of labour within farm households which will affect farm structure. The larger and more diverse the non-agricultural rural sector, the more likely it is that farm households will be able to obtain non-agricultural employment to help to maintain or increase household incomes. Likewise, the more dependent a region's economy is on farming, the larger the average size farm would tend to be and the less likely the operator is to work off-farm as the lack of alternative opportunities for the employment of farmer's labour in the region provides an incentive for farmers to expand their farms to achieve fuller employment and higher incomes (Swanson, ed., 1988; Carlin and Saupe, 1993; Reimer, Carlin and Bentley, 1995; Gow and Stayner, 1995).[10]

Further, farm structure at the regional level is influenced by a wide range of attributes of rural areas such as economic structure, the physical and social geography and history, population, human capital characteristics. Increasing non-farm employment opportunities in a particular rural area could have an effect on the farmer's perception of economic risk, with implications for the selection of farm product and input-mix. Risk averse farmers may be more likely to participate in non-farm employment and in regions where geography is not conducive to farming, the risk averse farmers may prefer full-time off-farm employment to farm expansion.

The rural area characteristics could also affect a farm household's asset position. In general, the more a region depends on farming, the more likely a farm household is to be in a financially risky position (*i.e.* have a relatively high debt-to-asset ratio). As land values are influenced by expectations about the ability of the land to generate income, in rural areas where farming is the dominant economic activity, land values will be sensitive to expectations about farm income. Thus in such rural areas, farmland owners are more likely to bear the brunt of asset value declines, while in rural areas dominated by non-farm economic activities, competition from alternative users of farmland will mitigate declines or even increase farmland values, thus strengthening the equity position of farmers.

It is clear that the strength and nature of linkages between the various agro-food sectors and the rural economy depends on a complex array of factors. These, include, *inter alia*, demand-induced factors such as evolving consumer preferences, supply-induced factors such as technological change, the socio-economic structure of the local rural area, farm and farm-household structure, relative dependence of the rural area on farming and government policies. These factors will affect the location, size and composition of agro-food based industries and their employment potential in rural areas. Thus, the importance of structural change in the agricultural sector on the economies of rural areas can be expected to vary considerably among regions, across Member countries and over time. In order to acquire a good understanding of the linkages and thus the importance of the sector, and policies which influence it, on the well-being of rural people the following sections attempt a systematic analysis of the structural characteristics of the sector.

2.2. CHANGES IN FARMS STRUCTURES

- *Continuation of a number of long-term trends in farm structures, albeit different regional patterns.*

This section explores some of the major changes in farm structures in OECD countries. In particular, three dimensions of farm structures are addressed: economic concentration, specialisation and socio-economic characteristics of farm labour.[11]

2.2.1. Economic concentration

- *Declining farm numbers, farm land and increased average farm size as farm numbers have fallen by more than farm land over the last two decades.*
- *Slower rates of decline in farm numbers and land, in some cases, in recent years.*
- *Concentration of declining farm numbers on small and medium-size farms, with lower rates of losses or even increases among larger farms.*
- *No uniform pattern of farm declines by farm types.*
- *Some notable geographic variations, although, in most cases, relative changes in farm numbers and average size have mirrored national trends.*
- *Considerable regional variation in farm holdings by farm type.*

Concentration is reflected in the size of farms and the size distribution of farm holdings. Although size is widely used to describe farm structures there is no universally accepted method of measuring it. The two most commonly operational approaches used to define farm size are physical size such as hectares operated or economic size such as standard gross margin or the value of farm sales.[12] Both

measures have advantages and disadvantages. Physical size, which is the most widely used measure in OECD Member countries, has the shortcoming that is very dependent on such agronomic considerations as soil productivity and type of enterprise so the differences between intensive and extensive forms of production are blurred. On the other hand, major disadvantages of using economic size pertain to the difficulties of adjusting for the effect of changes in prices, changes in stocks and sharp production losses due to natural conditions. Nonetheless, economic size is generally considered a better measure of the ability of farms to support the farm operator economically.

a) Changes in farm number and average size of farm holdings

Table 1 and Annex Table 1 show how the average economic and physical size of farm holdings in OECD Member countries has evolved over time. The evidence suggests that farm holdings are fewer in the 1990s than in earlier years, with an annual average rate of decline of about 1.5 per cent for the OECD countries as a whole during the 1970-90 period. Over the 1970-mid 90s period, the largest decline in farm holdings was experienced in Belgium (11 per cent), Denmark (11 per cent) and France (10 per cent). In these countries the number of farm holdings in 1993 was almost half of that in 1970.[13] In Japan, the number of farm holdings declined consistently over the 1970-mid 90s period, particularly during the years of rapid growth of the Japanese economy in the 1970s and 1980s, with an annual average rate of decline of 3 per cent over the 1980-90 period. In Austria, farm numbers fell by 10 per cent between 1980 and 1990.[14] In Canada, farms declined by 12 per cent between 1981 and 1991, while in the United States, farm numbers were about 300 000 less in 1990 than in 1980.[15] In Australia, by contrast, the number of farms increased during the 1986-93 period, by about 2 per cent per annum.

The decline in farm holdings in OECD countries as a whole has been associated with a reduction in the area used for farming. Between 1970 and 1990, utilised agricultural land fell by an average annual rate of around 0.4 per cent.[16] However, because of lower rates of decline in farmland than in farm numbers, average farm size increased. The data shown in Table 1 and Annex Table 1 underscore the great diversity in average size within and between countries, and also the differences in rates of change over time. Average farm size in 1990 ranged from 0.9 ha per farm in Japan to 3 813 ha per farm in Australia. The average size of farms varies considerably among EU-12 Member states (67 ha in the United Kingdom, compared to 4 ha in Greece in 1990) and its evolution over the last 25 years has also been characterised by major differences (Table 1). Average physical size increased by more than 3 per cent per annum in Australia (5 per cent), Denmark (3 per cent) and Portugal (8 per cent). Notably, average farm size has declined over time only in New Zealand (–3 per cent), mainly due to the development of horticultural and life-style farms (see New Zealand case study).

Overall, no discernible regional pattern emerges in relation to the average physical size of farms. With the exception of France, average farm size is larger in the rural areas than in urban areas. In Germany and the United Kingdom average farm size is largest in the significantly rural areas, while in Austria and Greece the average number of hectares per farm in significantly rural and predominantly rural regions is almost the same.[17]

Notwithstanding these trends, historical comparisons of rates of change in farm numbers and size suggest that in some Member countries the rate of decline has slowed in recent periods, reflecting a gradual slowing of the trend toward fewer, larger farms. In the United States, the average rate of decline in farm numbers fell annually by 4 per cent during the 1950s, 3 per cent in the 1960s, 2 per cent in the 1970s and 1 per cent in the 1980s. Likewise, average size per farm increased just under 4 per cent per year in the 1950s and has slowed by about a percentage point in each succeeding decade (Brooks, Kalbacher and Reimund, 1990). The pressures towards larger farms emanating from technological advances seem to be abating as many of the emerging technologies, such as biotechnology or information technology, tend to be scale-neutral compared with mechanical technologies (OECD, 1995*b*, p. 47). Such technologies, however, might affect regions differently as they are usually product-specific and they require a higher quality of management, thereby widening the gap between capital-limited (particularly human capital) and capital-abundant rural areas.

Table 1. **Average physical size (ha)**

	First year	Average size (ha)	Last year	Average size (ha)	Annual average growth rate (%)
Australia	1986	2 718	1993	3 813	5.0
Predominantly rural		3 111		4 397	5.1
Significantly rural		1 689		2 048	2.8
Predominantly urban		46		76	7.4
Austria	1990	12	1990	12	–
Predominantly rural		13		13	–
Significantly rural		12		12	–
Predominantly urban		9		9	–
Belgium	1979	12	1993	18	2.8
Predominantly rural					
Significantly rural					
Predominantly urban		12		18	2.8
Canada	1981	207	1991	242	1.6
Predominantly rural		237		278	1.6
Rural Metro-Adjacent		*225*		*261*	*1.5*
Rural Non-Adjacent		*250*		*294*	*1.6*
Northern Hinterland		*213*		*271*	*2.4*
Significantly rural		114		133	1.6
Predominantly urban		112		120	0.7
Denmark	1979	24	1993	37	3.2
France	1979	23	1993	35	3.1
Predominantly rural		26		38	2.7
Significantly rural		15		26	4.1
Predominantly urban		30		47	3.3
Finland	1970	9	1994	10	0.5
Germany	1979	14	1993	20	2.6
Predominantly rural		–	–	–	–
Significantly rural		16		22	2.3
Predominantly urban		12		18	2.8
Greece	1979	4	1993	4	0.5
Predominantly rural		4		4	0.5
Significantly rural		3		4	2.8
Predominantly urban		..		3	–
Ireland	1975	22	1993	27	1.1
Italy	1979	6	1993	6	–0.1
Predominantly rural		10		10	–0.2
Significantly rural		5		6	0.8
Predominantly urban		4		5	1.2
Japan	1975	0.8	1993	1.2	2.6
Predominantly rural		0.9		1.3	2.3
Significantly rural		0.8		1.1	2.0
Predominantly urban		0.7		1.0	2.3
The Netherlands	1979	14	1993	17	1.3
New Zealand	1977	310	1990	224	–2.7
Norway	1975	8	1993	11	2.4
Portugal	1987	5	1993	8	8.4
Predominantly rural		7		11	7.7
Significantly rural		4		5	4.5
Predominantly urban		–		–	–
Spain	1987	14	1993	18	4.1
Predominantly rural		25		33	4.6
Significantly rural		11		14	3.5
Predominantly urban		7		8	1.8

Table 1. **Average physical size (ha)** *(cont.)*

	First year	Average size (ha)	Last year	Average size (ha)	Annual average growth rate (%)
Sweden	1975	23	1990	29	1.8
Switzerland	1975	9	1990	10	0.8
United Kingdom	1979	64	1993	67	0.3
Predominantly rural		–		–	–
Significantly rural		68		73	0.5
Predominantly urban		55		57	0.3
United States	1970	368	1993	473	1.2
EU-12	1980	12	1993	16	2.4
LFA		..		16	–
MA		..		10	–

LFA = Less favoured areas; MA = Mountainous areas.
Notes: Calculations for Japan exclude Hokkaido. See Annex for methodology.
Source: OECD Secretariat's estimates based on national sources and EUROSTAT FSS for the EU-12 members.

b) Distribution of farms by size class

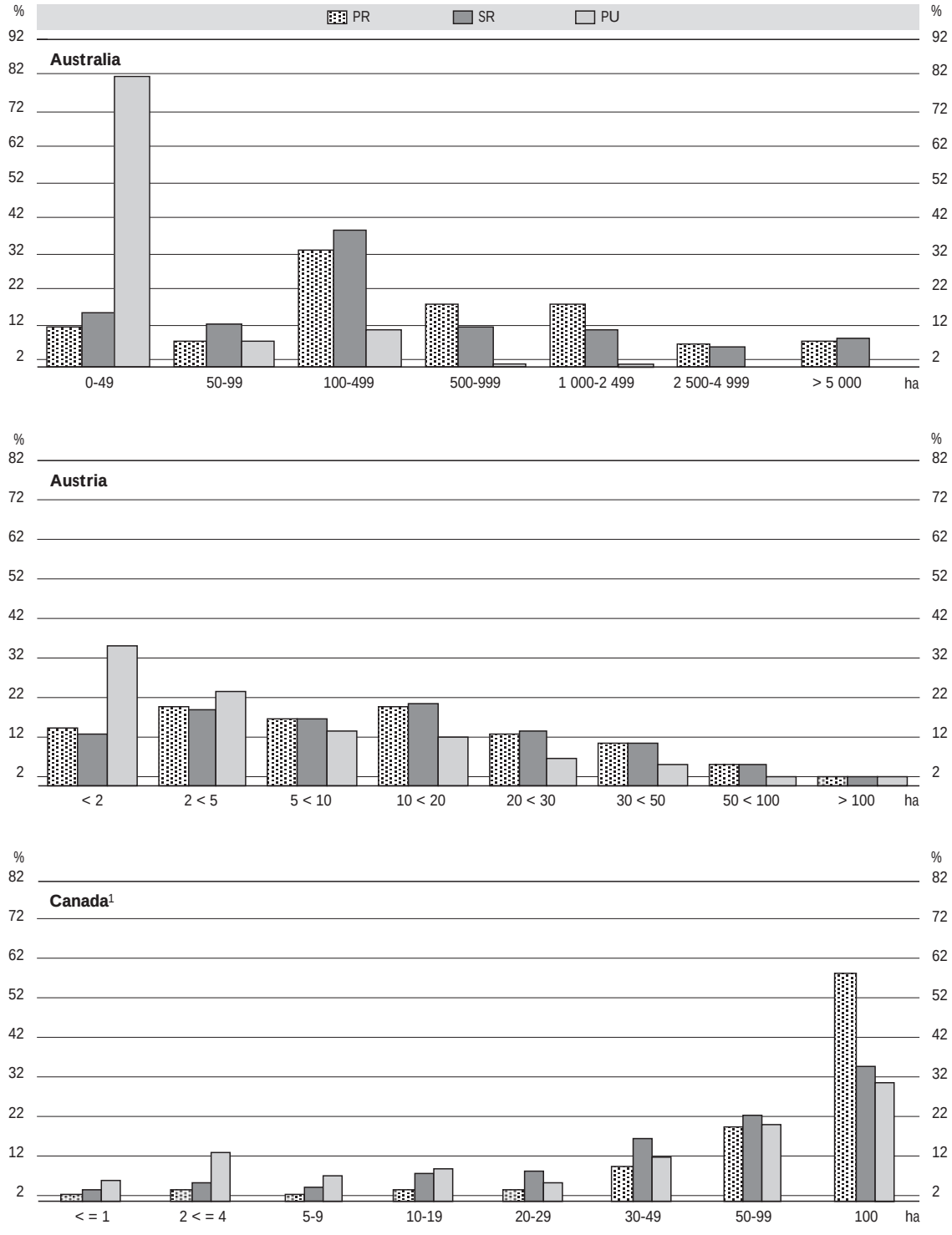
The trend toward fewer and larger agricultural holdings applies throughout OECD Member countries, although at different rates. However, aggregate national statistics conceal divergent trends within farm holdings of different size and in different regions across countries.

An overview of the distribution of farm holdings by size suggests that, despite the differences across Member countries, farm holdings are skewed at the lower end of the size spectrum. In Austria, half of the farms are less than 10 ha, although the average size is 12 ha, while in Norway half the farms are of less than 5 hectares and average farm size is 11 ha. Japanese agriculture is also characterised by a large number of small-sized farms distributed unimodally, with around 70 per cent of farms in 1990 being less than 1 ha. In the EU-12, notwithstanding the diversity across EU Member countries, 60 per cent of farm holdings are of less than 5 ha and only 6 per cent are more than 50 ha. Similar pattern emerges for other countries. For example, almost half the farms in Canada and about a third in Australia are less than 100 ha.

Regional differences in farm size changes and farm numbers have also emerged over time. One of the most important features of the disaggregated data portrayed in Chart 1, Annex Table 2 and Annex Table 3 is the regional variation within and between countries. Farm holdings of all sizes are primarily in the predominantly rural regions. In general, the smallest farm holdings are in predominantly urban areas and the largest in the predominantly rural areas. In Australia, farms of all sizes are prominent in the predominantly rural areas. The largest farms are in the predominantly rural areas and there is no discernible difference in the regional allocation of farms by size between the predominantly rural and significantly rural areas. In Austria, in the predominantly rural regions, the number of farms in each farm-size class accounts for more than 70 per cent of its class in the country as a whole. In the predominantly urban areas, the most common farm size is less than 2 ha, with 5 per cent of farms in this range in this region. In Japan, farms of less than 1.5 ha are concentrated in the significantly rural areas and those of more than 1.5 ha in the predominantly rural areas. In the predominantly urban areas the most common are small farms (less than 1 ha) which account for 28 per cent of this regional group. In Norway, farms of all sizes are significant in the predominantly rural areas. However, farms with more than 100 ha are relatively less important in the significantly rural regions than other sizes. In Canada, farms of more than 100 hectares are prominent in rural areas (85 per cent of these farms are in rural areas) and only 5 per cent are in the predominantly urban areas.[18]

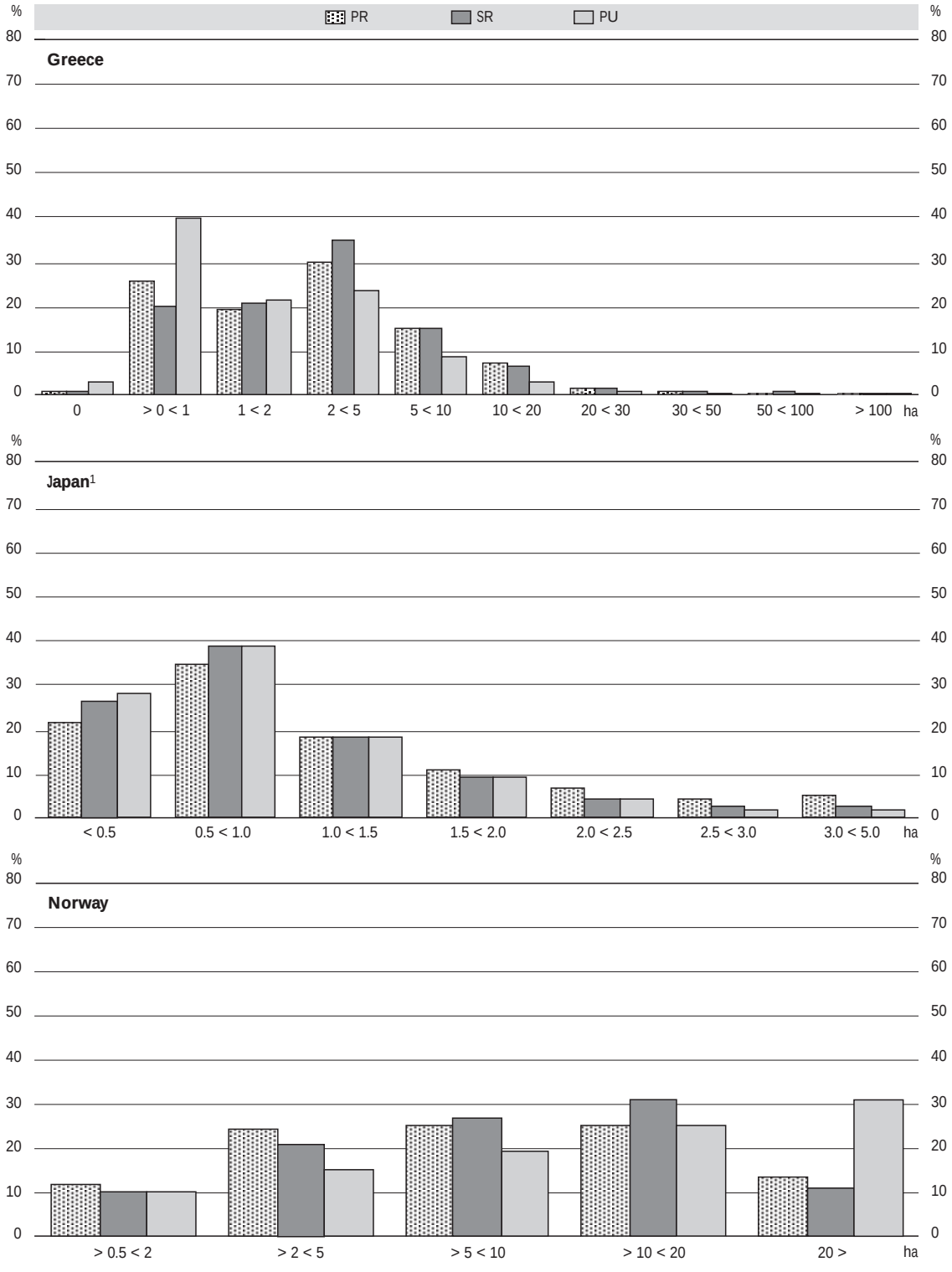
Although the total number of farms is declining, not all categories of farms are evenly affected. In a number of OECD Member states, the overall decline in farm numbers during the last decade or so

◆ Chart 1. ***Regional distribution of holdings by physical size, 1990***



1. 1991 data.
PR: predominantly rural; SR: significantly rural; PU: predominantly urban.
Source: OECD Secretariat estimates based on national sources.

◆ Chart 1 *(continued).* ***Regional distribution of holdings by physical size, 1990***



1. Does not include Hokkaido.
PR: predominantly rural; SR: significantly rural; PU: predominantly urban.
Source: OECD Secretariat estimates based on national sources.

stemmed primarily from decreases in the number of smaller and middle-sized farms, while large size farms increased moderately.

In Austria, both small farms (*i.e.* less than 10 ha) and middle size-farms (*i.e.* between 10 and 20 ha) declined, while large farms (*i.e.* more than 20 ha) increased during the 1980-90 period. The fall in the middle-size farms was more apparent in the urban regions and the increase in large farms was in the predominantly rural and urban regions. The same pattern of declining small and middle-size farms was observed in the 1980s for Norway. In the United States, changes in the distribution of farms as measured by average physical size during the 1974-87 period show that small farms (*i.e.* farms of less than 50 acres) and large farms (*i.e.* farms of more than 500 acres) increased as a proportion of all farms. Farm number losses were concentrated in the middle farm-size distribution (*i.e.* farms in the range of 50 to 499 acres). As a proportion of all farms, this group of farms fell from 62 per cent in 1974 to 53 per cent in 1987.[19] In EU-12, the number of farm holdings of less than 5 ha, which account for about 60 per cent, declined by 322.4 thousands farms between 1987 and 1989/90, while the number of farm holdings of more than 50 ha, which account for about 6.3 per cent of total farms, increased by almost the same rate during the same period. In Japan, farm structure has begun also to polarise recently as the share of farms with operational holdings larger than 2 ha more than doubled between 1975 and 1993. In Canada, the share of small-size farms (less than 39 ha) has increased slightly over the years in the urban (agglomerated) areas, while the opposite pattern has been observed in the intermediate areas. In New Zealand, the number of small farms (*i.e.* less than 40 ha) increased from a quarter of all farms in 1972 to 45 per cent of farms in 1992 (Gouin, Jean and Fairweather, 1994). Mid-sized farms (*i.e.* farms from 40 to 200 ha) declined by 11 per cent, while the number of farms in the larger categories remained stable.

An immediate result of the growth in farm size has been increased concentration of output on larger farms. A small proportion of farms produce most of the sector's output. In the United States, the 71 per cent of farms in 1988 that had gross sales of less than $40 000 accounted for less than 10 per cent of total sales. At the same time, the 1.4 per cent of farms with sales greater than $500 000 accounted for 37 per cent of sales. In Canada, a declining proportion of farms produce most output. In 1991, the largest 10 per cent produced more than a half (53 per cent) of output. Also in the EU-12, farm numbers are skewed at the lower end of the size spectrum, while farm output is concentrated at the upper end. The smallest 25 per cent of farms, based on ESU, produced 6 per cent of total value of output in 1994, while the largest 25 per cent of farms produced almost 60 per cent.[20] In Ireland, the top 20 per cent of farms, based on farm income, accounted for 39 per cent of agricultural land but produced 60 per cent of farm

Table 2. **Gini-Hirschman concentration index of standard gross margin (SGM), 1985-93**

Country	1985	1989	1993
Belgium	0.557	0.566	0.585
Denmark	0.542	0.554	0.594
Germany	0.519	0.523	0.531
France	0.509	0.523	0.539
Greece	0.335	0.455	0.470
Ireland	0.442	0.492	0.498
Italy	0.379	0.419	0.418
Luxembourg	0.612	0.631	0.680
Netherlands	0.604	0.606	0.654
Portugal	..	0.381	0.383
Spain	..	0.396	0.417
United Kingdom	0.616	0.585	0.608

Source: OECD Secretariat calculations based on EUROSTAT Farm Structure Surveys (FSS).

output (Commins and Keane, 1994). In Australia, 10 per cent of farms in the wool sector produce over half of the value of wool production.

Another indicator of increased concentration can be constructed with an index of the distribution of farms by economic size as measured by the Standard Gross Margin (SGM). The SGM could be considered as a proxy for value-added. Table 2 displays the Gini-Hirschman concentration index for some countries. A higher value for the index, which has a range from zero (uniform distribution of farms across all sizes) to unity (a high degree of concentration) indicates an increased level of concentration. Although, the time period covered is relatively short due to data unavailability, the results clearly show a trend towards increased concentration for all countries over time. The value of the index in 1989 is lower than its 1985 value only for the United Kingdom, whilst it increases from 1989 to 1993 for all countries except Italy which it remains almost unchanged.

This continuing trend toward a dual agricultural structure implies a farm sector composed of two distinct parts. One part is the commercial farm sector, from which most agricultural production originates. The second part constitutes the majority of farms. These tend to be small farms producing only a small portion of total output, existing primarily as a means of preserving a rural life-style for operators and their family (Brooks, Kalbacher and Reimund, 1990). Decreases in the number of smaller farm holdings might have greater implications for the employment situation of many remote rural areas, while increases in the number of larger farms might have greater significance in terms of the amount of farm income created.

2.2.2. Farm diversity and commodity specialisation

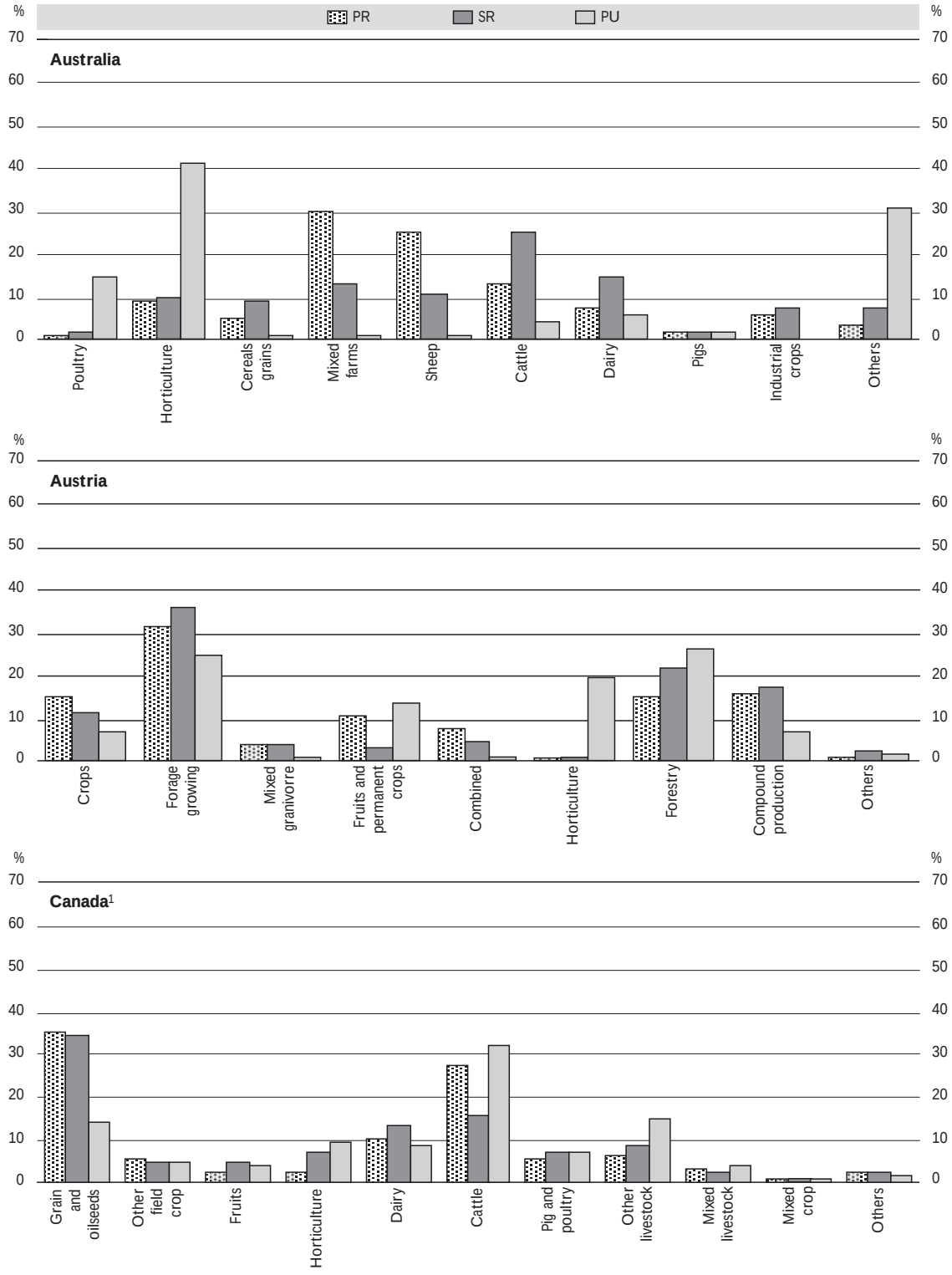
- *Along with declining numbers of farms more diversification and regional specialisation.*

The diversity of the farm sector across the OECD Member countries is also reflected in the production characteristics of different farm types.[21] Thus, an analysis of production specialisation by region provides insights into the way different regions might be affected by market changes, policies or technological developments affecting individual commodities.

To display regional similarities and differences, farm types have been ranked according to their share in total farm numbers. In the EU-12 in 1989/90, crops accounted for about 55 per cent of total holdings and 50 per cent of total agricultural output. Over time, the shares of different farm types have not changed significantly, although permanent crops have increased somewhat, particularly in Greece, Italy, Portugal and Spain. In Australia, the largest share in total farm holdings is accounted for by mixed farms (about 25 per cent), followed by sheep and cattle farms (Chart 2). The share of sheep farm holdings, which represent about a quarter of all farm holdings, increased constantly over the 1986/90 period and decreased constantly between 1990 and 1993. A similar pattern is observed for mixed farms, which account for about a quarter of total farm holdings. The opposite pattern is observed for cattle farms, which declined in the first period and increased in the second. These farms account for about 15 per cent of total farms. Rice is the predominant farm type in Japan, its share increasing from 60 per cent in 1975 to 63 per cent in 1993. Horticultural farms are also important and accounted for about 16 per cent of total farms. In Canada, grain and oilseeds operations comprise the largest share of farm holdings, particularly in rural areas (33 per cent).

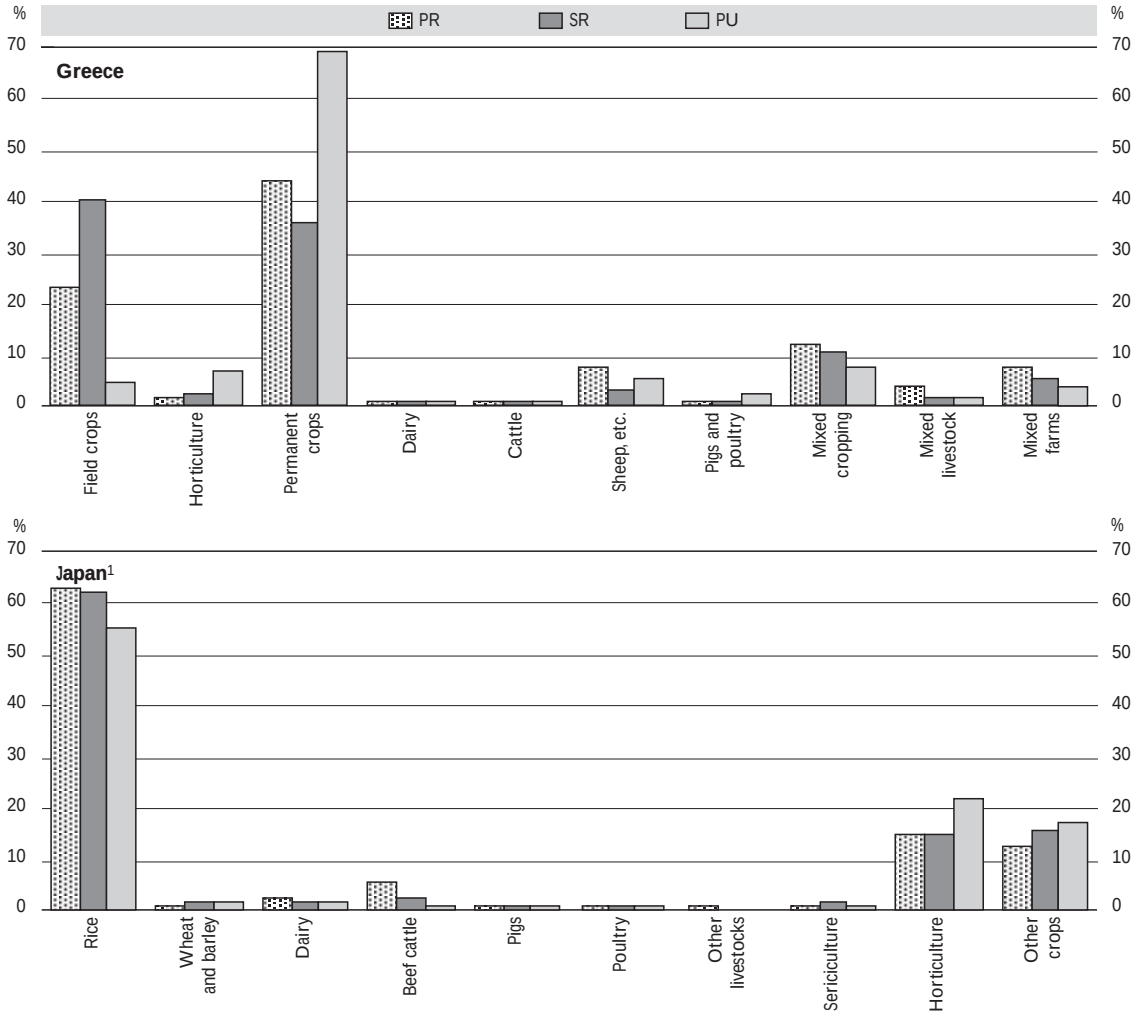
The decline in farm holdings was not uniform across farm types. In Canada, for example, the overall decline in farms was influenced mainly by falls in the number of grain and oilseeds, dairy, pig and poultry farms. These products account for more than 80 per cent of total farm sales. The rural and remote areas are affected relatively more by these declines as two-thirds of these products are located in the rural and remote areas. In contrast the number of farms for field crops, horticulture, other farming (honey, etc.) increased. However, the share of each of these farm groups in total farm receipts is less

◆ Chart 2. ***Regional distribution of holdings by farm type, 1990***



1. 1991 data.
PR: predominantly rural; SR: significantly rural; PU: predominantly urban.
Source: OECD Secretariat estimates based on national sources.

◆ Chart 2 *(continued).* ***Regional distribution of holdings by farm type, 1990***



1. Does not include Hokkaido.
PR: predominantly rural; SR: significantly rural; PU: predominantly urban.
Source: OECD Secretariat estimates based on national sources.

than 4 per cent. The changes were more pronounced in the predominantly urban regions, although these areas account for less than 10 per cent of total farms. In the EU-12, the decline in total farm holdings is attributable mainly to the fall in livestock farms and mixed farms. This occurred mainly in France, and the Netherlands. In contrast, in Ireland and the United Kingdom the share of livestock holdings increased over time. In Japan, the overall decline of farms overwhelmingly stemmed from the fall in the number of rice farms, which fell from 2.4 million in 1975 to 1.7 million in 1993. The number of horticulture farms fell on average by 8 per cent per annum and other crops farms which fell by 11 per cent per annum. These three farm types are mainly in the significantly rural areas, although there is not much difference in rice farms between predominantly rural and significantly rural regions and these farms account for about 90 per cent of the number of farms in each of the three regional groupings. Despite the fall in the number of farms, the data do not reveal significant changes in the shares of farm types by regional grouping.[22]

Specialisation in farm production can be identified in different regions within countries. In the predominantly rural areas in Australia, the most common are mixed farms, in the significantly rural areas, cattle farming; other farms are most common in the predominantly urban areas. In Canada, grains and oilseeds farm holdings are more common in rural areas and cattle farms in urban areas. In Greece, permanent crops are more common in the predominantly rural and predominantly urban areas, while in the significantly rural areas field crops are more common. In Spain, permanent crops are more common in the significantly rural and predominantly urban areas, while in the predominantly rural areas field crops are more common.

Regional specialisation has grown markedly over time as a result of improved infrastructure, marketing and communication that has enhanced interegional trade, thereby facilitating commodity concentration in areas of the greatest comparative advantage. Regional concentration of horticulture and poultry production in the United States, hog production in Canada, hog and crops production in France are cases in point.[23]

As the number of farms has declined, the sector has become more diversified and farms have become more specialised along commodity lines, with distinct trends for different commodity sub-sectors. For example, production of grains is usually concentrated on small- and mid-sized farms, although there is a trend towards fewer and larger farms in some Member countries (*i.e.* United States and Canada). The production of most grain crops occupies a lot of land and employ relatively little labour.[24] At the other spectrum, the poultry and pork sub-sectors tend to encompass large-scale, commercial farms, with their production technology, financial arrangements and methods of vertical co-ordination of farm production, input supply and marketing increasingly resembling a manufacturing industry more than traditional farm industry. With the advent of new technologies which have allowed producers to exploit economies of scale, these sectors have been largely transformed into a closely controlled, vertically integrated production-marketing systems. A major feature of the change is the shift from a geographically dispersed industry to an industry that is regionally concentrated.

2.2.3. Farm labour adjustment

- *Steady decline in farm employment.*
- *Increasing substitution of hired labour for family labour, but the latter still accounts for the largest proportion of farm labour.*

An important consequence of the structural changes of the farm sector discussed in the preceding sections is the steady decline in farm employment. As a country's economy develops, the number of people employed in the farm sector declines in both relative and absolute terms. This structural transformation of the economy has prompted people to migrate from rural areas to urban areas, especially where there have been few alternative employment opportunities.

The share of farm employment in total employment varies across countries, ranging from a high 48 per cent in Turkey to a low of 2 per cent in the United Kingdom in 1990 (Table 3). The level and share of farm employment has fallen over time for the majority of OECD Member countries, with an average fall for all OECD Member countries of 1.5 per cent in the level and 2.5 per cent in the share over the 1975-93 period. However, there is a great diversity among countries and also among regions within countries. In Austria, average farm employment in 1990 was about 80 per cent of the 1976 level, while in Japan it was only about 60 per cent of the 1975 level. In Norway, farm employment in 1992 was 25 per cent lower than a decade earlier. In Canada, average farm employment in 1991 was 6 per cent higher than in 1981.

As illustrated in Table 3, there is no a systematic regional pattern within countries. In countries such as Australia, Norway and Spain the decline in farm employment has been higher in the predominantly rural areas, while in Austria, Japan and Germany the decline has been more noticeable in the

Table 3. **Farm employment change, by region (%)**

	Predominantly rural	Significantly rural	Predominantly urban	Total
Australia				
1986-91	–13.1	–10.5	–9.9	–12.2
Austria				
1976-80	–7.3	–7.4	–11.3	–7.4
1980-86	–11.1	–10.3	–7.8	–10.9
1986-90	–7.0	–6.2	–10.4	–6.9
Canada				
1981-86	4.1	2.4	13.2	4.8
1986-91	–0.4	0.8	10.2	1.1
Finland				
1980-90	–30	–29	–8	–29
Japan				
1975-80	–8.1	–8.6	–10.2	–8.7
1980-85	–6.8	–7.3	–8.0	–7.2
1985-90	–27.2	–30.7	–30.8	–29.3
Norway				
1982-86	–7.0	4.4	–7.0	–3.8
1986-90	–14.1	–16.9	–14.7	–15.0
1990-93	–6.9	–8.2	–4.6	–7.2
France				
1985-87	–9.4	–9.1	–9.6	–9.3
1987-90	–7.7	–10.9	–5.8	–8.5
1985-90	–16.3	–19.0	–14.8	–17.0
1990-93	–13.2	–13.6	–14.4	–13.4
1985-93	–27.4	–30.0	–27.1	–28.1
Germany				
1985-87	–	–6.8	–9.7	–7.9
1987-90	–	–10.0	–10.1	–10.0
1985-90	–	–16.1	–18.8	–17.2
1990-93	–	–8.7	–6.8	–7.9
1985-93	–	–23.4	–24.4	–23.8
Greece				
1985-87	1.1	–1.0	..	0.6
1987-90	–22.0	–42.7	..	–25.9
1985-90	–21.2	–43.3	..	–25.4
1990-93	14.8	13.6	30.6	14.9
1985-93	–9.5	–35.6	..	–14.3
Italy				
1985-87	–2.2	1.9	–1.8	0.6
1987-90	11.4	3.2	–0.7	3.0
1985-90	9.0	5.2	–2.5	3.6
1990-93	–13.0	–10.2	–7.9	–10.0
1985-93	–5.2	–5.5	–10.1	–6.7
Portugal				
1987-90	–5.3	–6.1	–	–5.7
1990-93	–19.7	–18.5	–	–19.1
1987-93	–24.0	–23.4	–	–23.7
Spain				
1987-90	–15.0	–13.6	–8.4	–13.0
1990-93	–9.6	–10.7	–6.0	–9.4
1987-93	–23.2	–22.8	–13.9	–21.2
United Kingdom				
1985-87	–	–0.3	1.3	0.3
1987-90	–	–8.5	–7.4	–8.1
1985-90	–	–8.8	–6.2	–7.8
1990-93	–	–2.0	0.0	–1.2
1985-93	–	–10.6	–6.2	–8.9

Source: OECD Secretariat estimates based on national sources and EUROSTAT FSS for the EU-12 members.

predominantly urban areas. In other countries such as France, Greece, Portugal and the United Kingdom the decline in farm employment has been higher in the significantly rural areas. For Canada, the increase in the level of farm employment has been concentrated in urban areas, while for Italy the rise has been in rural areas. Nevertheless, within each country the decline in farm labour varies considerably over time. In Austria, for instance, the rate of decline during 1976-80 is largest in the predominantly urban regions, while during the 1980-86 period the rate of decline is largest in the predominantly rural regions. Further, in other countries such as Canada, Greece, Italy and the United Kingdom the direction of the rate of change of farm employment by regional grouping varies over time.

a) Socio-economic characteristics of farm labour

In order to obtain a better grasp of the extent to which employment in the farming sector has changed and the concomitant implications for rural economies, it is necessary to look at the composition of the farm labour force in terms of its socio-economic characteristics across regions and how its various components have evolved over time.

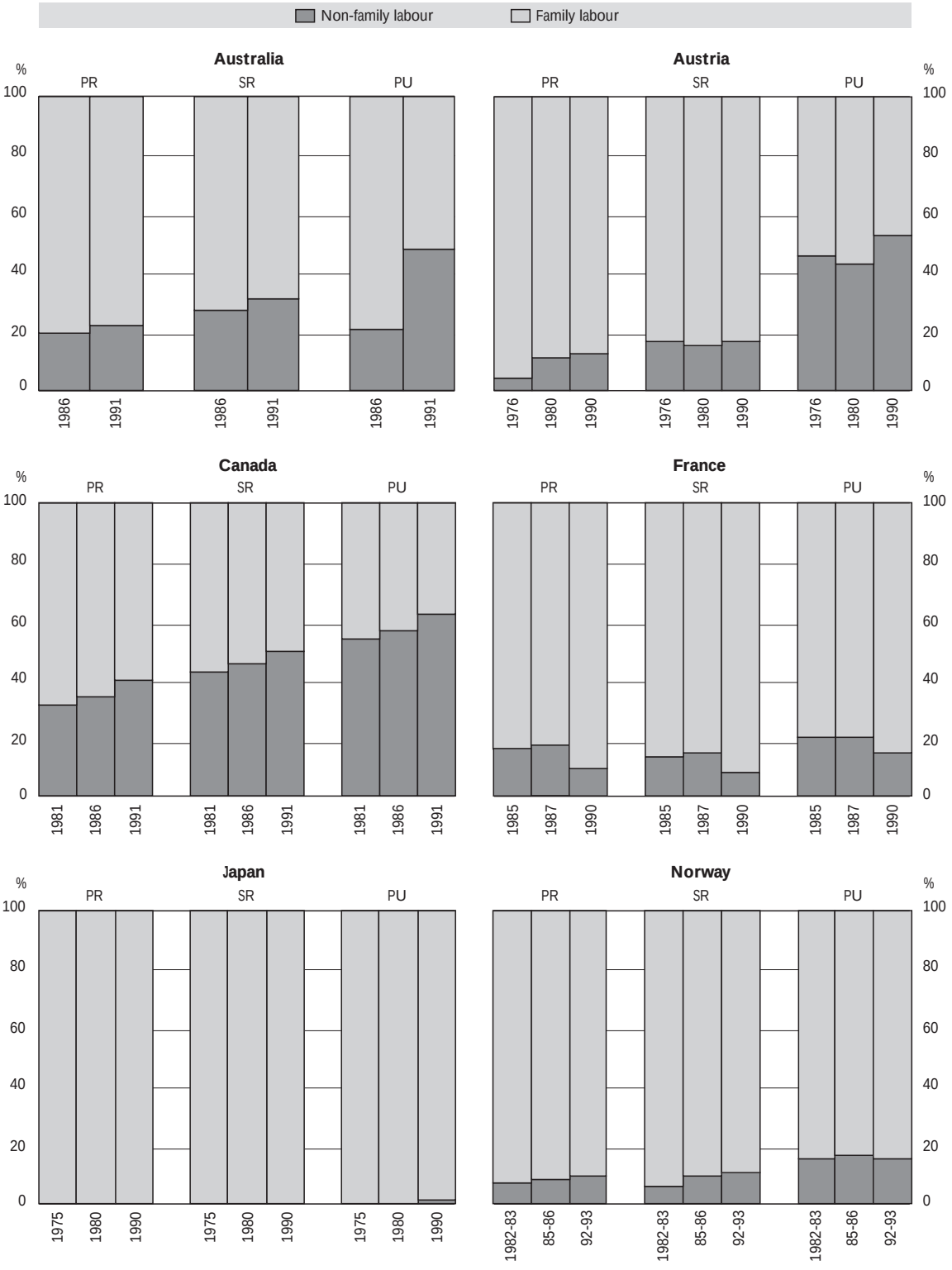
Chart 3 displays changes of family and non-family farm labour over time by region and by country, while Annex Table 5 provides a snapshot of the main features of farm labour by country and by regional groupings in 1990 for a number of OECD Member countries. According to these data, a distinctive feature of farm labour is the preponderance of family labour across all countries and regional groupings in the sample. Family labour is relatively more important in the predominantly rural areas than in urban areas, particularly for Australia, Austria, Canada and the United Kingdom. However, structural shifts in the composition of farm labour are occurring as the ratio of hired labour to family (self-employed and unpaid) labour is increasing over time. Hired labour declined more slowly than family labour or even increased in a few cases (*e.g.* Canada and Norway) leading to a gradual substitution of hired for family labour.[25] However, despite this substitution effect, family labour still accounts for the largest proportion of the farm labour across OECD Member countries. These results seem to suggest that demand for hired labour is more responsive to changes in economic conditions than demand for self-employed labour. Working owners are more resilient as the overlap of place of work and place of residence may increase the perceived costs of abandoning the sector (OECD, 1994*a*, p. 27). There is also some circumstantial evidence which suggests that regular hired farm labour has been increasingly replaced by the casual, seasonal and contractual work. In Japan, for example, seasonal or daily farm labour accounted as much as 70 per cent of the non-family labour in 1990. The importance of seasonal work is more prevalent in the predominantly rural and predominantly urban regions.

In terms of distribution of farm employment by age cohort, the available evidence indicates that, in general, there is no significant regional difference in the distribution of farm labour by age class across regions and within Member countries (Annex Table 5). With the exception of Canada and Norway, more than 40 per cent of farm labour is older than 55 years. In general, there is no significant regional divergence from the national average, although for Canada, France, Greece, Portugal, Spain and the United Kingdom the percentage of farm labour of more than 55 years old in rural areas is higher than the national average.

b) Distribution by tenure

While the total number of farmers declined, the distribution of farm operators by tenure status barely changed over the last two decades (Annex Table 4). Despite increased "industrialisation" of farming, most farmers still own the land that they farm. While operating mainly small farms, land owners engage in other gainful activities and produce both crops and livestock products. Although, these patterns have not changed drastically over time, the share of land owners in a number of countries declined, whilst that of tenant farming increased (Denmark, France and Ireland). In some countries, the decline in the share of full-owner farms was offset by a corresponding increase, evident over the longer-term, in the share of part-owner farms. Many farmers in the process of expanding their farming operations would probably prefer to lease than buy additional land to avoid tying up capital and increasing debt.

◆ Chart 3. ***Farm labour type***



PR: predominantly rural; SR: significantly rural; EU: Predominantly urban.
Source: OECD Secretariat estimates based on national sources.

c) Full-time farming

According to statistics presented in Annex Table 5, the incidence of full-time farm work, *i.e.* with agriculture as the main occupation, is less prevalent than part-time farming and its relative importance has declined over time. In 1990, at the national level, full-time work was more important than part-time farming only in Canada, Ireland and United Kingdom. In the EU-12, of the 15 million people working in agriculture in 1993, only one-quarter worked full-time. Overall, there is an inverse relationship between full-time farmers and the relative importance of agriculture in total employment. In particular, full-time farming appears to be less important in countries where the farm sector is relatively important (*e.g.* 12 per cent in Greece, 16 per cent in Spain and 17 per cent in Portugal). Furthermore, the proportion of holders working full-time tends to decrease as age increases. In the EU-12, for example, while about 40 per cent of holders under 35 years worked full-time in 1993, this figure was only 10 per cent in the case of holders 65 years and over.

In terms of regional distribution of full-time and part-time farming, the evidence suggests that the incidence of full-time farming tends to be more prevalent in significantly rural regions, although the differences among the three regional groupings do not appear to be substantial (Annex Table 5).

2.2.4. Role of pluriactivity in rural areas

- *Considerable variation among farm households in the share of their labour allocated to farming and to an even greater extent, in the dependence of farm household on incomes from agriculture.*

The importance of part-time farming and pluriactivity is widely recognised, both in absolute terms and in their potential role in structural adjustment in the sector, particularly in the context of policy reform. Policy makers are interested in the farm household and how pluriactivity enables farm families to remain on the land engaged in agriculture, while also contributing more broadly to the rural economy. They are also interested in some perceived negative consequences of pluriactivity such as decreasing land mobility or fiscal considerations, for example the risk of tax evasion.

The shift toward more part-time farming and off-farm work by farm families is one of the most important changes taking place in the agricultural sector of most OECD countries. Farm operators and other members of their households resort increasingly to off-farm work to complement their incomes.[26] A deeper understanding of the ways in which farm families and business interact at the local level would be valuable in the formation of agricultural policy.

Engagement in off-farm work can have an important role during agricultural policy reform, cushioning farm households from income pressures which emerge from reform of agricultural policies. Many farm households, particularly in more remote rural areas, are dependent on a single or very limited farm production sources for their incomes. By enabling farm households to diversify their income sources, pluriactivity can contribute to diversification and lower exposure to farm-sector events. Likewise, the farm makes them less vulnerable to off-farm events. These possibilities are of course contingent upon the availability of local non-farm employment opportunities, which vary across rural areas.

A traditional view of the role of pluriactivity was to allow the farm household to survive in less favoured areas when farming could not generate enough income for the maintenance of a family. However, pluriactivity cannot be considered a phenomenon confined to marginal areas as a high incidence of multiple-job holding has been observed in regions where agricultural structures are favourable as well as in areas where natural resource endowments and agrarian structures are poor (The Arkleton Trust, 1990; Journal of Rural Studies, 1990; Dax, Loibl and Oedl-Wieser, eds., 1995; Damianos and Skuras, 1996). Pluriactivity takes different forms in terms of income source and labour participation and performs different functions in terms of life styles and investment decisions for farm households in different circumstances and contexts.

Knowledge of farm business strategies which determine deployment of resources on farms is crucial to an understanding of pluriactivity and its increasing importance over time. In some regions, pluriactivity is a means of maintaining farming activity as non-agricultural income is used to support farm activities, while in other instances it can be seen as a means for the business to grow where the link between farming and non-farming activities is made by utilisation of farming incomes outside agriculture. The former case is more common in regions with access to major industrial and urban centres and with a modernised agro-food sector, while the latter case is more widespread in regions characterised with difficult farming in terms of an ageing farm labour force and farms which are too isolated to be able to diversify their activities.

The Picardy, Languedoc and Savoy regions in France are representative examples of the different forms of household pluriactivity. Picardy is a region with access to major industrial and urban centres. The agro-food sector contributes about 19 per cent of the value added in the region; farms are relatively large, more than 70 per cent are bigger than 20 ha and specialised in commercial crops (cereals, sugar-beet, potatoes). Some large arable farms have been able to maintain farming as their primary source of income, but others have diversified into off-farm activities such as transport and construction. Thus, pluriactivity is mainly a form of business pluriactivity as agricultural resources are used to increase non-agricultural activities. On the other hand, in the wine-growing region of Languedoc, pluriactivity is a means of maintaining the farming activity as farm households, typically seek off-farm employment in order to keep abreast of new technologies, often in manufacturing industry, to sustain farming. In the mountainous region of Savoy, pluriactivity is largely for survival and growth of the tourist industry has provided new opportunities for farm households to obtain off-farm employment such as in ski resorts and through new economic activities on the farm, such as tourist accommodation (Campagne, Carrère and Valceschini, 1990).

The growth in off-farm work could be attributable to attitudinal, social and cultural factors as well as economic pressures emanating from the restructuring of the agricultural sector. As increasing participation of women in the labour force and multiple-job holding are becoming norms, farm households could be expected to adopt similar work patterns. Further, the move towards larger holdings stemming from agricultural structural change has increased the size of a productive unit that can provide full employment for a farmer. For the same number of families to remain on the land, farm families must find alternative and complementary sources of employment and income (Fuller and Bollman, 1992, p. 203).

Thus, pluriactivity could reflect a variety of farm business strategies, including: a search for new markets in response to severe financial stress; an attempt to reduce risks; an outcome of internal family dynamics, including education attainment levels or increased female participation in the labour force and; a response to perceive market opportunities, either in the off-farm labour or product markets; it may also be part of a process of adjusting out of farming (The Arkleton Trust, 1990; Brannigan, 1994; Gasson and Errington, 1993; Shucksmith, *et al*, 1989; Kingma and Samuel, 1977; Gow and Stayner, 1995). Moreover, the opportunities and constraints of on-farm diversification, availability of off-farm work and government policies are also intimately related to the contextual settings.

a) Incidence of pluriactivity

While there are clearly differences in the scope and definitions employed in the statistical surveys by Member countries, it is clear that pluriactivity is important and has increased over time for most of the countries for which data are available. The incidence of farm holders with off-farm work ranges from 22 per cent in the Netherlands to 44 per cent for Germany and Norway (Table 4).[27] However, in almost all cases, the share of part-time farmers is higher than the share of farmers with other gainful activities (*i.e.* those part-time farmers who are engaged in other gainful activities in addition to their agricultural activities). This raises the question of the existence or extent of disguised unemployment among farm households in OECD Member countries.

Off-farm employment is more widespread in some regions than in others. However, contrary to what one would expect, comparison of the incidence of pluriactivity across the three types of regions does not reveal a specific pattern. In countries such as Austria, Belgium, France, Germany and Portugal

Table 4. **Farm holders with other gainful activity (OGA), 1990 (%)**

	Predominantly rural	Significantly rural	Predominantly urban	National average
Austria	35	35	29	35
Belgium	38	36	34	35
Canada	37	37	43	38
Denmark	38	33	42	37
Finland	22	21	24	22
France	22	24	17	24
Germany	44	45	43	44
Greece	24	31	..	26
Ireland	26	..	31	26
Italy	30	29	32	31
Netherlands	–	17	24	22
Norway	45	39	57	44
Portugal	34	42	28	36
Spain	32	33	37	35
United Kingdom	31	27	33	30
EU-12	–	–	–	29

Note: See Annex for methodology and definition of concepts.
Source: OECD Secretariat estimates based on various sources. Austria: *ÖIR.* Canada: *Census of Population* (20 per cent sample). EU member countries: EUROSTAT, *Farm Structure Survey, 1989/90.* Norway: NOS, Jordbruksstatistikk.

the share of farm holders with other gainful activities tends to be more important in rural areas, while the opposite is true in Canada, Denmark, Finland, Ireland, Italy, the Netherlands, Norway, Spain and the United Kingdom. The increase in the number of farm holders engaged in off-farm work over the last two decades was most pronounced in Italy, the Netherlands, Norway and the United Kingdom. Its incidence in areas with different socio-economic contexts supports the view that pluriactivity is a common feature of the changing agrarian structure and socio-economic attitudes.

Off-farm work is overwhelmingly undertaken by holders or farm managers, although in some countries such as Ireland, Denmark, and United Kingdom spouses working off-farm is relatively common (Annex Table 6). It is also more common among farm operators less than 45 years old and is also most likely to be adopted when the farmer is relatively young and has higher levels of educational attainment. It is also more prevalent among operators of small farms, but operators of all size units could be involved in off-farm employment. Those that hold off-farm jobs tend to have more specialised farming operations and use more labour-saving machinery than full-time farmers.

In addition, the size and the type of farming are important. Off-farm work is relatively more important on small farms than on larger ones. In the EU-12, 30 per cent of farmers on small farms (*i.e.* less than 5 ha), which account for about 60 per cent of total farms, were engaged in off-farm work in 1993, while the percentage of farmers with off-farm work on large size farms (*i.e.* more than 50 ha) was only 14 per cent. Some types of farming can be operated part-time more readily than others. For example, operators of livestock farms (hogs, sheep, etc.), permanent crops and horticulture appear to work off-farm more than farm operators of other types of farms (*e.g.* dairy farms). In Spain, of the one million people working in farms specialised in permanent crops, only 6 per cent worked full-time in 1993 (EUROSTAT, FSS 1993).

b) Off-farm income

An important policy consequence of increased off-farm employment by farm households is increased reliance on off-farm income to maintain farm family well-being. Many part-time farmers

receive income from non-agricultural activities such as wages from a job outside the agricultural sector, social security benefits, property income or other income.[28] The relative importance of off-farm income and its evolution is of interest as it may provide insights into the implications of structural change for total farm family incomes and the well being of farm families and rural economies.

As shown in Table 5 and in the OECD study on farm household income (OECD, 1995*a*), in spite of differences in definitions, non-farm income is significant in all countries studied and its relative importance has increased over time. Even though in many countries, only the incomes of the operator and spouse are included, the share of off-farm income is more than one third of total income.[29]

Pluriactive farm households can be quite successful in generating adequate standards of living relative to urban or full-time farming households. Though differences in methodology and in the availability of data prevents firm conclusions, when income derived from non-farm sources is taken into account, farm households seem to have average disposable incomes (*i.e.* after tax) on a par with the average of all households (OECD, 1995*a*).

In the United States, although farm operator household income compares favourably with the country average, only 12 per cent of farm household income in 1993 was accounted for by farm income (USDA, 1995, p. 34). In Denmark, in 1992/93 more than half of farm household income originates from off-farm employment, and the share of off-farm income is increasing over time. Off-farm income is more important in the significantly rural and significantly urban regions than in predominantly rural regions. In Japan, average incomes of full-time farm households have been consistently lower than part-time farm households and urban households. Thus, apart from helping to raise total farm incomes, the extensive pluriactivity of farm households in Japan has also limited the extent of rural depopulation and thus, indirectly, has been a population stabilising force in some rural communities (OECD, 1995*c*).[30]

Structural characteristics of the farm sector and their evolution over time have an important bearing on the ability of farm households to earn off-farm income. In general, farm household income and

Table 5. **Share of off-farm income in total farm family income by country and type of regions (%)**

	Predominantly rural	Significantly rural	Predominantly urban	National average
Canada				
1980	66	73	85	70
1986	74	78	89	76
1990	79	83	90	81
Japan				
1975	51	61	61	57
1980	57	66	69	64
1985	58	66	71	64
1987	60	67	70	65
1990	59	67	69	65
1991	60	67	70	65
1992	58	65	67	63
1993	57	65	65	62
Norway				
1986	57	52	60	56
1987	56	51	58	54
1990	56	53	54	55
1992	58	55	64	57

Note: See Annex for methodology and definition of concepts.
Source: OECD Secretariat estimates based on national sources. Canada: *Census of Population* (20 per cent sample). Japan: MAFF, *Farm Household Survey.* Norway: NOS, *Jordbruksstatistikk.*

dependence on off-farm income vary by farm operator characteristics (age and education), farm size (the smaller, the higher the dependence on off-farm income) and farm type (different types of farm have different labour and management requirements. Dairy farms are the least dependent on off-farm income as they are labour intensive on a continued basis (*i.e.* little seasonality), limiting the hours that operators can devote to off-farm jobs).

Regional differences in off-farm incomes depend on a cluster of socio-economic factors, including the degree of urbanisation and the presence of non-agricultural economic activity. Moreover, data on off-farm incomes by region are more sparse and the size of the geographic unit varies across countries. Some countries report farm household income data on the basis of administrative regions, while others use geographical criteria such as altitude and the type of natural or cultivated vegetation in a region. Data available indicate that, in general, regional differences in farm household incomes relative to national averages are less pronounced than differences between different types of farms (OECD, 1995*a*).

In the three countries, Canada, Japan and Norway, for which data are available according to the territorial grid of the GCRD rural indicators work, farm households in urban regions have higher reliance on off-farm income than rural regions (Table 5). These aggregate results, however, conceal the diversity that might prevail at the sub-regional groupings within the countries due to the differences in the level and composition of farm households. For example, agricultural income in Hokkaido, a predominantly rural region with the largest average farm size in Japan, is about four times larger than the average of other regions, and off-farm employment opportunities are limited. Regions with advantageous geographic location in terms of access to employment opportunities in large urban centres such as Kinki and Tokai (an urban region) have higher levels of total income and less dependence on farm incomes. Also in Norway, there is important regional diversity both in the average total income of farm households and in the part which comes from off-farm sources across counties. The share of income derived from agriculture in 1990 ranged from a high of over 50 per cent in Rogaland, a significantly rural, and Nord-Trondelag, a predominantly rural region, with total incomes which are 116 and 105 per cent of the national average respectively, to a low of about 22 per cent in Telemark and Vest-Agder, both are predominantly rural regions, with total incomes which are 97 and 93 per cent of the national average respectively.

In Australia, various studies found that there has been an increasing incidence of off-farm income being earned by farm families (Peterson and Moon, 1994). For family owned broadacre farms the proportion earning income off-farm increased from 26 to 34 per cent. In 1992-93 those 34 per cent earned around 37 per cent of total income off-farm. Financial hardship was considered to be a major motivation for their seeking off-farm work. Another study of dairy farmers in three regions of Australia, found that off-farm employment was the major adjustment taken to offset low or declining farm income (Nankivell, 1979). Between 40 and 67 per cent of dairy farm operators in that study engaged in either full-time or part-time off-farm employment. It was also found that the dependence on off-farm employment as a major income source was part of a series of long-term adjustment strategies by farm families. This included increasing educational level of the next generation and discouraging them from becoming farmers.

Notwithstanding the wide diversity across OECD Member countries, a very high proportion of farm household income originates from sources other than farming (OECD, 1995*a*). The most important source of non-farm income is often wages and salaries. This is true in many countries, for most types and sizes of farms and in most regions. Exceptions tend to be found among the largest farms where investment income is often important and among small farms or in certain rural regions where transfer payments such as social security and old age pensions are relatively more important.

The lowest incomes among farm households seem to be related to demographic factors, farm type and region characteristics and not necessarily to farm size. Incomes are lowest among cattle farmers, young and older farmers, particularly in regions where off-farm employment opportunities are limited. Only the largest farms achieve incomes comparable to incomes in other sectors. Off-farm income is generally a smaller share of total income on these farms but remains large in absolute terms.

2.2.5. Summary

- *The increasing concentration of production and increasing diversity of the sector have important implications for evaluating the ways in which rural areas are affected by agricultural policies.*

While agriculture in OECD Member countries faces continuous adjustment emanating from economic and non-economic factors, structural change in the sector is not uniform among rural areas. Farm holdings and farm labour are overwhelmingly in the predominantly rural areas and to a lesser extent in the significantly rural areas. This highlights the relative importance of the agricultural sector as a source of rural employment for these areas.

While in most countries there is a general tendency for an increasing proportion of agricultural production to be concentrated in a declining proportion of farm holdings, this has not been accompanied by the disappearance of family or small farms. Families on small farms have proved remarkably adaptable to changing economic circumstances and multiple-job holding has become a widespread feature of changing agricultural structures. The decline in the number of middle-sized farms has been accompanied in many cases by a rapid growth in the number of large farms which now account for a high proportion of output. The decline in the number of small farms, however, has been much slower.

III. LINKAGES BETWEEN AGRICULTURAL POLICIES AND THE RURAL ECONOMY

Agricultural policies have evolved over time and increasingly are seen by many OECD Member countries as a vehicle for economic and social revitalisation of rural areas and not solely a means for maintaining farm incomes. Concerns about the economic cost of these policies have raised questions about the effectiveness of these policies in improving the well-being of farm households and, more generally, their effectiveness in addressing rural development objectives.

The effectiveness of agricultural policies in improving the economic well-being of rural areas depends upon several factors which are discussed below:

– The linkages between the farm sector and its adjacent "upstream" and "downstream" sectors.

– The degree of dependence of the local rural economy on the agro-food sector.

– The magnitude and type of support, including the distribution by farm type, size and region.

3.1. THE AGRO-FOOD SECTOR'S ECONOMIC CONTRIBUTION TO THE RURAL ECONOMY

- *Empirical evidence depicts an extremely diverse picture of the relative importance of the agro-food sector not only between OECD Member countries, but also between regions within countries.*

- *The long term decline in the relative economic importance of the farm sector, should not diminish the important socio-economic influence of the agro-food sector for many rural areas.*

In the past, the agricultural sector was often seen as the engine for growth in rural economies in many OECD countries and the terms rural and agricultural were used almost interchangeably. The structural changes in the sector discussed in the preceding sections, particularly the decline in the agricultural labour force, imply that in many OECD countries and regions, agriculture and the rural economy can no longer be considered to be synonymous.

Notwithstanding the reduction in the number of farmers, the decisive economic influence that the sector can have in terms of economic activity and employment creation and its importance to the well-being of rural communities should not be understated. The relevance of the agricultural sector to the well-being of the rural economy cannot be encapsulated in developments in the number of persons directly employed by the sector. A more concrete assessment of economic significance is necessary.

The economic base in many rural areas has become quite diverse, and in addition to farming, includes upstream and downstream agro-food industries, rural industry, tourism, and the sale of labour services by urban commuters living in rural areas. An assessment of the economic importance of agriculture needs to take account of its size and the size of its induced multiplier effects relative to the size of other basic activities and the size of their induced multiplier effects.

There are important linkages between the agricultural sector and the rural economy, in terms of output, employment, consumption and land use. Agriculture is the predominant user of rural land and its manifold functions constitute an important function in the rural landscape. In addition to producing a vast variety of raw materials, for both food and non-food purposes, farming affords recreational activities and it plays an important role in the preservation of cultural and environmental rural assets.

The fact that most rural land is used by agriculture implies that major changes in agricultural support policies could have important regional/rural implications for the land use pattern. Moreover, the continuation even of small farm enterprises earning only a limited share of household income from farm activities has broader significance for the fabric of the rural economy than might be imagined: keeping the population in local communities; land management; providing the resource base for new activities; and the supply or maintenance of environmental goods and services.

In addition to the direct interfaces between the farm sector and the other industries in the food chain, the trends towards farm diversification, the increasing levels of off-farm incomes and off-farm employment discussed in the preceding chapter all suggest that the farm sector has become more closely integrated into the wider economy. Combined with growing technological sophistication, the inter-sectoral linkages between the agro-food sector and the rural economy are becoming more complex.[31]

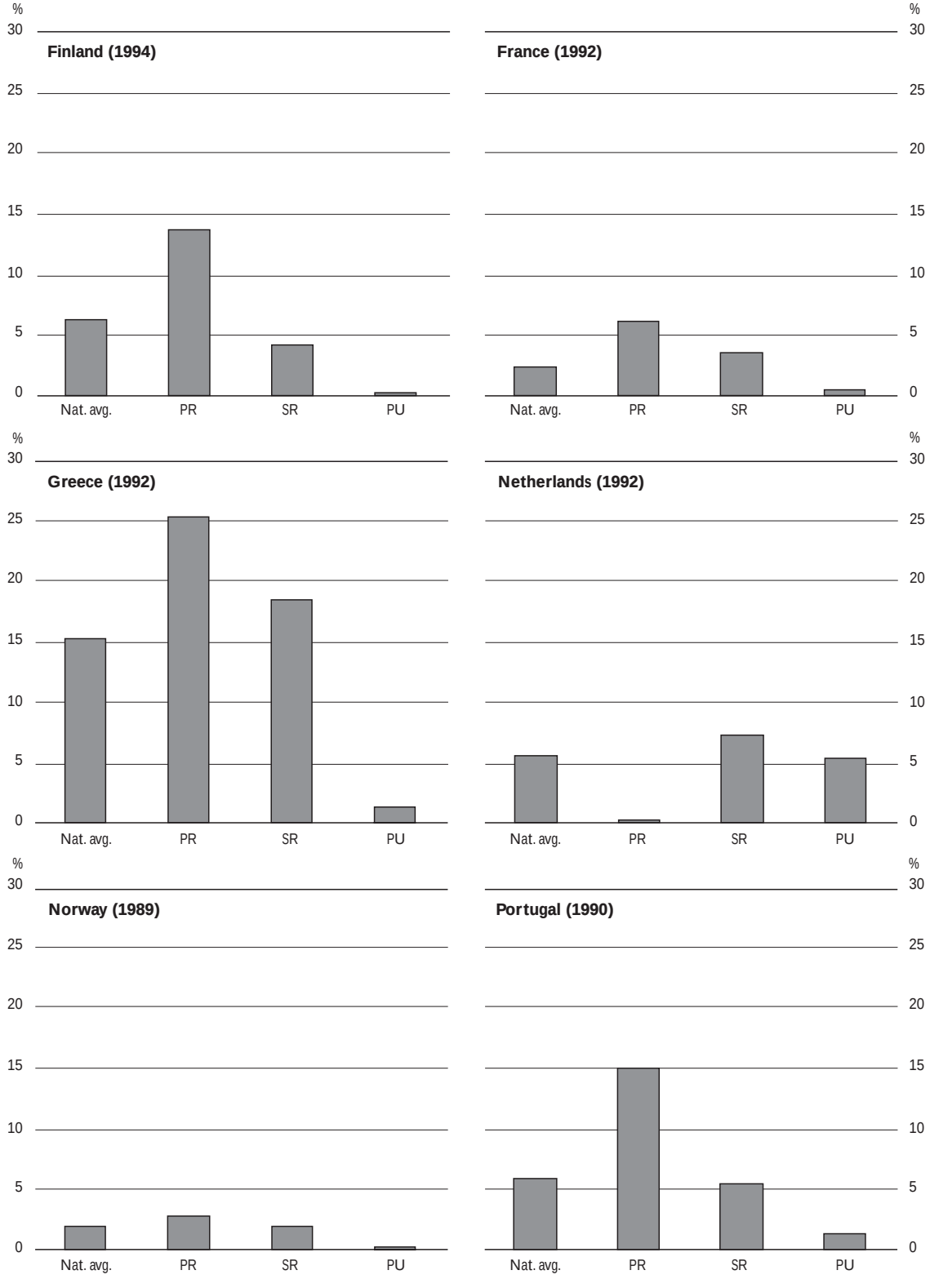
3.1.1. Direct contribution

Economic linkages of the agro-food sector to the wider economy vary among OECD Member countries (see Annex Table 7). Notwithstanding differences in the definition and in the coverage of the agro-food sector prevailing in OECD Member countries, its importance is considerable, contributing as much as 19 per cent to employment and 15 per cent to GDP in both New Zealand and the United States in 1990. The relative importance of the various agro-food sub-sectors also varies among countries. In Australia and New Zealand the farming sub-sector accounted for most of the agro-food sector's contribution to employment, while for most other countries the downstream sector is the principal source of GDP and employment.

Unfortunately, comprehensive data for the whole agro-food sector at the geographical unit level established by the work on rural indicators of the GCRD are very sketchy. The GCRD rural indicators work has shown that the primary sector (*i.e.* farming, forestry, fishing and hunting) is no longer the main source of rural employment. In terms of income, 25 per cent of GDP in rural areas in Greece, 15 per cent in Portugal, 7 per cent in the Netherlands and less than 5 per cent in Finland and Norway are derived from the primary sector (Chart 4 and Annex Table 8).

However, important regional variations exist, with farming continuing to dominate the economies of many rural areas as a source of income and employment (Annex Table 9 and Annex Table 10). The

◆ Chart 4. ***GDP contribution of agriculture by region***



PR: predominantly rural; SR: significantly rural; PU: predominantly urban; Nat. avg: national average.
Source: OECD Secretariat estimates based on national sources.

Table 6. **Employment contribution of the agro-food sector by region (%)**

	Primary sector	Food, beverages, tobacco	Input, supply	Other closely related	Peripherally related
Australia (1987)	4.9	2.4	0.1		
Predominantly rural	16.7	3.5	0.2		
Significantly rural	4.6	2.4	0.2		
Predominantly urban	0.8	2.1	0.1		
Austria (1991)	6.2				
Predominantly rural	13.3				
Significantly rural	4.1				
Predominantly urban	0.8				
Belgium (1990)	3.0				
Predominantly rural	11.1				
Significantly rural	3.4				
Predominantly urban	2.7				
Canada (1981)	5.1	2.1	0.3	3.5	
Predominantly rural	11.9	1.8	0.3	3.9	
Rural metro-adjacent	*11.1*	*2.0*	*0.4*	*3.9*	
Rural non-adjacent	*13.8*	*1.8*	*0.3*	*4.0*	
Northern Hinterland	*6.9*	*0.5*	*0.0*	*3.0*	
Significantly rural	4.0	2.2	0.4	3.6	
Predominantly urban	1.1	2.3	0.2	3.2	
Canada (1986)	5.1	1.9	0.2	3.7	
Predominantly rural	12.1	1.7	0.3	4.1	
Rural metro-adjacent	*10.9*	*1.9*	*0.4*	*4.1*	
Rural non-adjacent	*14.3*	*1.7*	*0.3*	*4.2*	
Northern Hinterland	*7.4*	*0.4*	*0.0*	*3.5*	
Significantly rural	3.8	2.1	0.3	3.9	
Predominantly urban	1.2	2.0	0.1	3.4	
Canada (1991)	4.6	1.7	0.1	3.8	
Predominantly rural	10.7	1.5	0.2	4.1	
Rural metro-adjacent	*9.7*	*1.6*	*0.3*	*4.1*	
Rural non-adjacent	*12.7*	*1.6*	*0.2*	*4.3*	
Northern Hinterland	*6.5*	*0.4*	*0.0*	*3.4*	
Significantly rural	3.2	1.8	0.2	4.0	
Predominantly urban	1.2	1.7	0.1	3.5	
Czech Republic (1990)	11.6				
Predominantly rural	22.3				
Significantly rural	13.1				
Predominantly urban	2.7				
Finland (1990)	8.7				
Predominantly rural	16.4				
Significantly rural	5.4				
Predominantly urban	0.7				
France (1990)	5.6	2.6			
Rural	27.3	4.5			
Germany (1990)	4.0				
Predominantly rural	11.0				
Significantly rural	6.0				
Predominantly urban	2.0				
Greece (1990)	25.0				
Predominantly rural	38.0				
Significantly rural					
Predominantly urban					
Iceland (1990)	10.6	9.7			2.0
Predominantly rural	24.6	17.3			1.7
Significantly rural	13.4	13.0			3.2
Predominantly urban	1.7	4.6			2.0
Ireland (1991)	13.9				
Predominantly rural	21.6				
Significantly rural	17.7				
Predominantly urban	3.9				

Table 6. **Employment contribution of the agro-food sector by region (%)** *(cont.)*

	Primary sector	Food, beverages, tobacco	Input, supply	Other closely related	Peripherally related
Japan (1991)	7.0	2.4	0.2		7.6
Predominantly rural	14.0	3.1	0.2		7.8
Significantly rural	9.0	2.7	0.3		7.7
Predominantly urban	2.0	1.8	0.2		7.3
Mexico (1990)	23.0				
Netherlands (1992)	4.4				
Predominantly rural	–				
Significantly rural	3.9				
Predominantly urban	2.5				
New Zealand (1986)	9.7	6.0	1.7	1.4	
Rural	34.2	5.8			
Norway (1990)	6.0				
Predominantly rural	8.0				
Significantly rural	5.0				
Predominantly urban	1.0				
Portugal (1990)	20.4				
Predominantly rural	36.9				
Significantly rural	22.7				
Predominantly urban	7.0				
Spain (1990)	11.1				
Predominantly rural	23.3				
Significantly rural	13.7				
Predominantly urban	3.2				
Sweden (1993)	2.4				
Predominantly rural	3.5				
Significantly rural	2.1				
Predominantly urban	0.4				
Switzerland (1990)	4.1				
Predominantly rural	9.9				
Significantly rural	6.5				
Predominantly urban	2.7				
Turkey (1990)	47.5				
United Kingdom (1991)	2.4				
Predominantly rural	10.3				
Significantly rural	4.2				
Predominantly urban	1.0				
United States (1975)	4.4	4.2	0.6		8.8
Predominantly rural	9.4	5.8	1.1		8.6
Significantly rural	2.4	3.2	0.4		8.7
Predominantly urban	1.1	3.3	0.2		9.2
United States (1981)	3.7	3.5	0.5		9.7
Predominantly rural	7.8	5.2	1.0		9.7
Significantly rural	2.0	2.6	0.3		9.7
Predominantly urban	1.0	2.7	0.2		9.7
United States (1985)	3.2	2.9	0.4		10.0
Predominantly rural	6.9	4.5	0.7		10.1
Significantly rural	1.8	2.1	0.2		10.0
Predominantly urban	0.8	2.1	0.1		9.8
United States (1990)	2.6	2.4	0.3		10.4
Predominantly rural	5.6	3.9	0.6		10.8
Significantly rural	1.5	1.7	0.2		10.4
Predominantly urban	0.7	1.7	0.1		10.0

Table 6. **Employment contribution of the agro-food sector by region (%)** *(cont.)*

	Primary sector	Food, beverages, tobacco	Input, supply	Other closely related	Peripherally related
United States (1992)	2.6	2.4	0.3		10.6
Predominantly rural	5.6	3.9	0.6		11.0
Significantly rural	1.5	1.6	0.2		10.5
Predominantly urban	0.7	1.7	0.1		10.1

Note: Peripherally related industries refer to wholesale and retail trade of agricultural products and indirect agribusiness chemical and fertilizer mining, miscellaneous textile and manufacturing, food products machinery).
See Annex for methodology.
Source: OECD Secretariat estimates based on national sources:
Australia: Integrated Regional Database, Australian Bureau of Statistics.
Canada: Data provided by Canadian authorities.
Czech Republic: Data provided by Czech authorities.
France: SEGESA as reported in J.C. BONTRON (1995).
Japan: *Establishment Census of Japan,* Statistics Bureau.
Iceland: Vinnuafl Employment 1963-90, Statistics Iceland, January 1996.
Netherlands: Regionale economische jaarcijfers, 1993, CBS.
New Zealand: 1986 Census of Population and Dwellings; as reported in J. Newell, 1992, p. 61 and SONZA, 1994, p. 114.
Sweden: Statistics Sweden.
United States: *Data provided by the US authorities, County Business Patterns,* Bureau of the Census, US Department of Commerce.
Austria, Belgium, Finland, Greece, Germany, Ireland, Norway, Portugal, Spain, Switzerland. and United Kingdom: *OECD Rural Data Surveys.*
Mexico and Turkey: *OECD Labour Force Statistics,* 1995.

contribution of the primary sector to employment in the predominantly rural areas ranges from over 20 per cent in Greece (38 per cent), Iceland (37 per cent), Portugal (37 per cent), Ireland (26 per cent), Spain (23 per cent) and Finland (20 per cent) to 3 per cent in Sweden (Table 6). The primary sector also provided 27 per cent of rural employment in France and 34 per cent in New Zealand. In the United States, almost 25 per cent of non-metro counties are farming dependent, deriving 20 per cent or more of their earned income from farming. Despite the continued long-term decline of farming as a principal source of income, well over a third of non-metro farm earnings and about a fourth of non-metro farm jobs were found in farming-dependent counties in 1989 (USDA, 1994). Further, in all countries in the sample the relative importance of the agricultural sector in creating employment in the predominantly rural areas is, in all cases, higher than the sector's employment contribution to the national economies.

However, it should be pointed out that the share of primary sector employment and income vary considerably within each regional typology, particularly among the predominantly rural group. For example, in countries like Austria and Canada, the predominantly rural region group comprises regions in which the share of agricultural employment in regional employment ranges from less than 5 per cent to over 25 per cent. This implies that the relative importance of the agricultural sector as a source of rural employment varies significantly by location between and within countries.

Notwithstanding policy interventions, farm employment has continued its long-term decline. Available evidence, however, suggests that employment in industries closely related to farming such as agricultural services, forestry, fishery, agricultural processing and marketing, agricultural inputs, has remained fairly stable or even increased in a number of Member countries. As has been pointed out earlier, farm production has important downstream linkages (food transportation, processing, marketing) and upstream linkages (farm input suppliers) to local, regional and national markets. The issue is then how "rural" are these upstream and downstream activities. Unfortunately regional data covering the whole agro-food sector are scarce.

Australia, Canada, Japan and the United States are the only four countries for which it was possible to collect comprehensive data for the whole agro-food sector at the level of the territorial grid of the Rural Development Group (Table 6 and Table 7). Data on the regional distribution of agro-food establishments indicate that up to 60 per cent of agro-food establishments are located in rural areas (Table 7). Available evidence also indicates that in France "the rurality" of the agro-food sector is very important (about 28 per cent) and has not decreased over time (Bontron, 1995).[32] In New Zealand, just

Table 7. **Regional distribution of agro-food establishments (%)**

	Food, beverages, tobacco	Input, supply	Peripherally related
Australia (1994)			
Predominantly rural	32	41	27
Significantly rural	21	22	23
Predominantly urban	47	37	51
Japan (1978)			
Predominantly rural	30	23	25
Significantly rural	44	38	36
Predominantly urban	26	39	38
Japan (1981)			
Predominantly rural	29	23	25
Significantly rural	44	40	36
Predominantly urban	26	37	38
Japan (1986)			
Predominantly rural	29	22	25
Significantly rural	44	41	36
Predominantly urban	26	37	38
Japan (1991)			
Predominantly rural	30	21	25
Significantly rural	44	42	36
Predominantly urban	26	37	37
United States (1975)			
Predominantly rural	47	70	37
Significantly rural	21	21	31
Predominantly urban	32	9	32
United States (1985)			
Predominantly rural	46	69	36
Significantly rural	22	21	33
Predominantly urban	32	10	31
United States (1992)			
Predominantly rural	45	67	35
Significantly rural	22	22	33
Predominantly urban	33	12	31

Notes: Peripherally related industries refer to wholesale and retail trade of agricultural products, and indirect agribusiness chemical and fertilizer mining, miscellaneous textile and manufacturing, food products machinery). Percentages might not add due to rounding.

Source: OECD Secretariat estimates based on national sources:
Australia: Integrated Regional Database, Australian Bureau of Statistics.
Japan: *Establishment Census of Japan,* Statistics Bureau.
United States: Data provided by the US authorities, *County Business Patterns,* Bureau of the Census, US Department of Commerce.

over 18 per cent of food, beverage and tobacco processing is located in rural areas and almost 50 per cent of the people engaged in manufacturing in rural areas in 1990 were involved of processing food and fibre products (see New Zealand case study).

In terms of rural employment, the contribution of the upstream and downstream agro-food sectors to the rural economies is not negligible. The level and composition of farm and farm-related employment varies among regions across OECD Member countries. As shown in Table 6 the share of agro-food employment in total employment is higher in the predominantly rural regions than in the predominantly urban regions. The total agro-food sector provided 43 per cent of employment in the predominantly rural areas of Iceland, 40 per cent in New Zealand, 25 per cent in Japan, 21 per cent in the United States and 17 per cent in Canada. For Australia, France and Japan the agro-food sector provided employment for over 20 per cent of the workforce in the predominantly rural areas. This high employment share of the agro-food sector in the predominantly rural regions reveals the relative importance of the sector for the economies of these regions.

In Canada, as in some other Member countries, the share of the agricultural sector (farming, hunting and trapping) in total GDP and employment declined over the last twenty years, while the corresponding shares for the upstream and downstream sectors remained relatively stable. Agro-food is a growing industry and the GDP at factor cost increased by an annual average rate of 2 per cent over the same period. Agro-food employment also increased over time, although employment in food and fibre processing and employment in farm input supply industries at the national level shrank during the 1981-91 period. However, the decline in food and fibre processing employment at the national level was only felt in the predominantly urban areas, while in the significantly rural and predominantly rural areas it steadily increased over the period. Up to 18 per cent (732 thousand persons) of the employment in the predominantly rural areas and 20 per cent (433 thousand persons) of the employment in the significantly rural areas originated from the agro-food sector in 1991. About 30 per cent of food and fibre processing employment and 47 per cent of employment created in farm input supply industries are in the rural and remote areas.

In the United States, the agro-food sector provided a quarter of the jobs in rural America in 1991. Of these jobs, about 32 per cent or 1.9 million, were in farming. Most of the remaining jobs were in wholesale and retail trade, only peripherally related to farming, which accounted for the largest share of farm and farm-related employment (2.4 million jobs or over 40 per cent) and agricultural marketing and processing industries (20 per cent) (Majchrowicz and Salsgiver, 1995). Nearly two-thirds of the jobs in the farm sector, over 48 per cent of the jobs in agricultural input industries and 36 per cent of the jobs in agricultural processing and marketing industries were located in rural (non-metro) areas.[33] Industries with upstream linkages to farming (agricultural inputs and services) and those linked downstream (processing and marketing, agricultural wholesale and retail trade and indirect agribusiness) provided about 87 per cent of farm and farm related jobs during the 1975-91 period. Among each region's agro-food sectors, the growth rate for wholesale and retail trade employment was always the largest. While, these industries are primarily located in urban areas, they account for a larger share in employment in rural (non-metro) areas.

In New Zealand, the agro-food sector remains a significant sector to the economy, in terms of its contribution to GDP and employment (see New Zealand case study). Its contribution to GDP, in real terms, grew faster than the New Zealand economy between 1987 and 1996. The rise in the contribution of the processing sub-sector is the main reason for the overall increase in GDP contribution by the agro-food sector. In contrast, the percentage contribution from the farming sub-sector declined somewhat from 5.9 per cent of total GDP to 5 per cent. In terms of its employment contribution, the sector provided employment for around 17.4 per cent (254 700 persons) of the country's work force in 1996, declining from 18.4 per cent (257 000 persons) in 1987. The percentage contribution to total employment from the farming sub-sector declined from 9.8 per cent in 1987 to 9.1 per cent in 1996, and it also declined in the processing sub-sector.

A recent survey conducted in the United Kingdom explores some of the links between farmers and their locality and provides some interesting insight into the spatial distribution of links between the farm and related industries (Harrison, 1993). The study examines the spatial distribution of inputs and outputs from a sample of 52 farms in the Reading area in the United Kingdom. This area is part of the county of Berkshire, which is classified as a predominantly urban region by the GCRD rural indicators work. The classification of rural areas was based on an index of rurality, on a scale from one (wholly urban) to six (wholly rural). The results obtained show significant links between farms and their locality, especially for the smaller farms as these farms have more transactions with rural areas than larger farms. The industry providing the highest value of produce from rural areas was the feed industry, with machinery and livestock second and third. The main farm output being sold to rural areas was cereals followed by milk. Farm types also appear to influence the location of the farm links, with pig and poultry farms having greater backward linkages with firms in rural areas than other farm types.

The study also estimated how much employment was indirectly related to agriculture and how much of this employment was found in rural areas. Although the results should be treated with caution due to methodological and data limitations, they suggest that approximately one-quarter of the people working in agriculturally-related industries are working in rural areas. The figures also suggest that the

ratio of the numbers employed in farming and those working in auxiliary rural industries is approximately two to one. It concludes that agriculture does have strong links with other rural industries, perhaps more than has previously been thought.[34]

3.1.2. Indirect contribution: multiplier analysis

Another way of gauging the linkages and the relative importance of the agro-food sector is the degree to which a change in the agro-food sector would affect the rest of the economy, including the rural economy. An increase in agricultural productivity induced by technological change, for example, leads to increased demands for outputs of the non-farm sectors. If these sectors can supply the increased demands, then income and employment multipliers arise. These multipliers effects may mostly occur within rural areas.

Likewise, following an increase in farm output, demand for rural labour can increase through demand for non-agricultural inputs; demand for farm labour; demand for labour in primary processing; and demand for supportive services such as research, extension, marketing and credit. The magnitude of these effects depend on the nature of technology, marginal productivity of the input, domestic terms of trade, infrastructure support provided to the sector, composition of output, distribution of holdings, size and the prevailing policy setting.

Factors influencing the growth of forward linkages include the supply of agricultural raw materials for the agro-food based industries. Policies influencing the choice of technology will have a critical impact in determining the size and composition of agro-food based industries and their employment content. The composition of agricultural output is also of importance (*i.e.* non-food crops may provide a stronger base for agro-food based industries).

A number of empirical studies attempted to measure the linkages and multiplier effects of the agro-food sector to the wider economy, as well as to the local rural economy. Such studies are customarily based on Input-Output or Social Accounting (SAMs) methodology (Midmore and Harrison-Mayfield, eds., 1996; Edmondson, *et al.*, 1996; Roberts, 1992; Psaltopoulos and Thomson, 1993; Leones, Schluter and Goldman, 1994; Midmore, ed., 1991; Harrington, 1987; Errington, 1991, Haggblade, Hammer and Hazell, 1991; Johns and Leat, 1987; Adelman and Robinson, 1986, etc.).[35]

Although the results of these studies are not directly comparable due to differences in the methodology applied, differences in the period studied and differences in definitions of the agro-food sector employed, some salient points emerge:

- The agro-food sector has significant economic linkages to other sectors of the economy and constitutes an important generator of employment in rural economies.
- Both backward and forward linkages of the agro-food sector are found to have greater than average potential in many rural areas.
- The primary sector is found to have the largest income and employment multipliers in both predominantly rural and significantly rural regions.
- Agricultural trade is an important source of income and employment in rural areas as it spurs economic activity in upstream and downstream sectors.
- The contribution of agriculture to sustaining local economies depends on a variety of factors including the structure of the sector, farm type, the size of the region and market structure of upstream and downstream sectors.
- The magnitude of output, employment and income multipliers differ significantly among the agro-food sectors, within regions and for the same sector in different regions. Therefore, not only do large differences exist in the absolute and relative size of the agro-food sector at the regional level, but also in the strength of the linkages that the sector has with other sectors of the local economy.
- Commodities with strong forward linkages do not necessarily have strong backward linkages.

– Livestock commodities seem to have the highest backward and forward linkages as they require more intermediate inputs than crops, are relatively income elastic and thus generate higher multiplier effects.
– The farm sector is an important generator of employment in downstream industries, particularly food processing.
– There is an asymmetry of leakages *to* and *from* the farm sector. Because of the dependence of farmers on inputs supplied outside the sector, there are large leakages from the farm sector to the wider economy, amplified by the elastic demand for non-food agricultural products. Thus, while exogenous stimuli to the farm sector can generate large multiplier effects for the non-farm sectors in local economies, the farm sector is less affected by higher non-agricultural income.

3.2. STRUCTURE OF AGRICULTURAL POLICIES

- *Agricultural support policies often are aimed at many distinct objectives, some of which are incompatible.*

3.2.1. Magnitude, type and evolution

In most OECD countries, agriculture is a heavily supported sector relative to other sectors in the economy. In 1997, total transfers associated with agricultural policies are estimated to be around US$287 (ECU 251) billion, which is equivalent to 1.3 per cent of total GDP (OECD, 1998, *Monitoring and Evaluation Report*). Both the level and form of support vary widely across countries, commodities and regions. Switzerland, Japan, Iceland and Norway have more than 70 per cent of the value of agricultural production accounted by support policies, and Australia, New Zealand, Hungary, the Czech Republic less or equal than 10 per cent. In most OECD Member countries, livestock products are more heavily supported than crops. On average, rice, sugar and dairy are relatively highly supported, whilst oilseeds, poultry meat and horticultural products are less assisted.

Disparities in agricultural support across regions may arise for several reasons. Because commodities for which support is available are by no means uniformly distributed across the country, removing or changing support will have uneven impact across regions. They may also be the result of explicit policy objectives such as to increase farm size, to encourage production diversification or to protect the income of farmers in particular regions. In most OECD Member countries, areas deemed to have certain structural handicaps are granted targeted support measures.

Agricultural support policies are implemented by a wide array of often complex policy measures, such as price supports, quantitative restrictions on outputs or inputs, direct budgetary payments, trade barriers and subsidies on inputs, reflecting multiple policy objectives and changes in priorities over time. These different measures influence the flow of resources between commodity sectors and regions and consequently, inputs used, farm structure, incomes and the rural economy.

Market price support constitutes the largest and most common policy intervention in the agricultural sector of OECD Member countries. Almost two-thirds of total support in the OECD area as a whole in 1996 was provided in the form of higher market prices (Chart 5). This type of support maintains domestic prices above world market prices for both producers and consumers, thereby generating an economic transfer to farmers from consumers and from taxpayers in the case of exporting countries.

Market price support is often combined with *supply restrictions*. Such measures, which are taken primarily to counterbalance excess supplies caused by market price support, usually with the effect of reducing government budget cost and raising prices in the protected market. They can be implemented in various ways, with potentially different consequences for resource allocation and the rural economy. They could be designed to restrict output (production quotas) or factor use (set-aside, acreage) at the country or regional level. Supply controls are particular widespread in the dairy and sugar sectors.

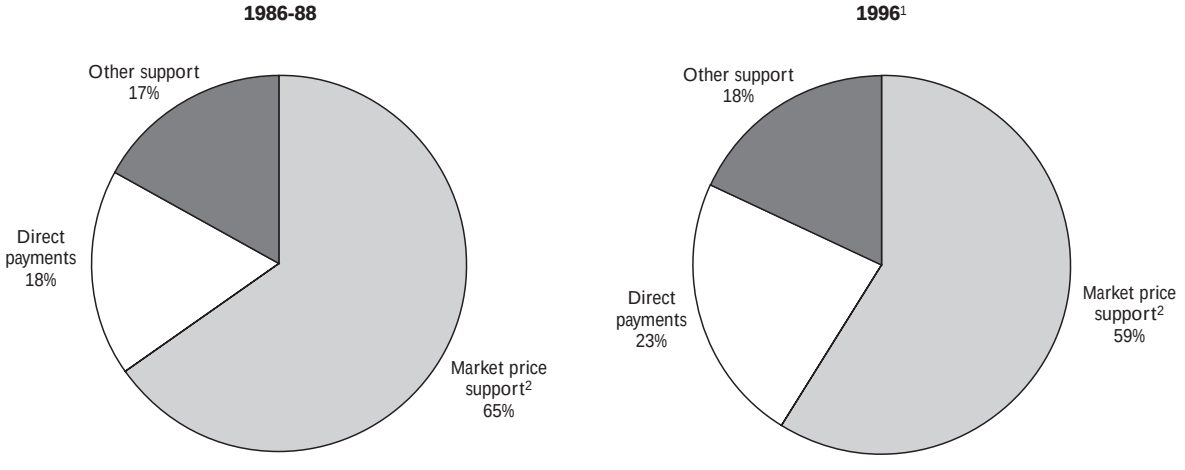
These schemes are sometimes used as a vehicle for targeting particular groups of producers in specific regions. In Norway, for instance, exemptions from milk quotas for less favoured northern regions used to be in place.

Direct payments constitute the second largest component of agricultural support, and their relative importance is increasing over time (Chart 5). These are budgetary payments made to support farmers' incomes and comprise a wide variety of different types of payments with different implications for factor prices, agricultural structural change and the rural economy. Such measures can range from support per unit of output to income payments that are independent of production. In many instances, direct payments are made to compensate for income losses due to policy reform or to adverse climatic conditions.

Agro-structural policies aim at increasing agricultural productivity and competitiveness by taking advantage of scale economies and regional specialisation as well as by encouraging diversification of the activities. Expenditures for structural adjustment measures have increased significantly over time in some OECD Member countries. In the EU, for example, the budget for the agricultural prices and market policy (EAGGF-Guarantee) declined from 64 per cent of total commitments in 1988 to 46 per cent by 1992. In contrast, the budget for structural policies increased from 18 per cent in 1988 to 36 per cent by 1992.

Agro-structural policies comprise a wide array of measures that promote amalgamation, modernisation of farms and improvement of farmers' living conditions, and are, in general, targeted to specific regions. They also encourage the diversification of activities which could generate additional income such as rural tourism and the natural environment. They include measures on structures such as training schemes for various farm groups such as young entrants, new entrepreneurs and those exiting the sector, early retirement schemes, measures to develop alternative sources of income such as quality products, geographical origin, promotion of producer associations, support for downstream processing and marketing of agricultural produce with the aim of improving product quality and enabling producers

◆ Chart 5. ***Composition of OECD agricultural support***
As a % of total producer subsidy equivalent



1. 1996 is an estimate. The Czech Republic, Hungary, Mexico and Poland are not included in the OECD average.
2. Net of producer levies and feed adjustment.

Source: OECD (1997), *Agricultural Policies in OECD Countries: Monitoring and Evaluation 1997*, Paris.

of primary products to benefit more from the value added from processing.[36] They also include funding for agro-environmental purposes, and aid for extending, transferring and withdrawing land.

This category of measures also comprise programmes for farming in disadvantaged areas to enable farmers to continue farming despite the permanent natural handicaps. For example, in many OECD Member countries, particularly in Europe, special schemes for farming in mountainous and less favoured areas are implemented, not to facilitate adjustment or modernisation of the agricultural sector but rather to enable farmers to resist these pressures. These structural measures aim at developing specific regions or rural areas, through the diversification of agricultural production, marketing of local products, diversification of activities, assistance to agro-food industries and to forestry, improvement of infrastructures, protection of the environment and investments in research and extension (Box 3.1). In the EU 60 per cent of agro-structural measures in 1993 were directed at supporting investment in holdings located in disadvantaged areas.

Box 3.1. **EU agro-structural policies**

EU agro-structural policies have undergone substantial change over time. Four phases of EU agricultural structural policy can be distinguished. At the outset, from 1962 to 1972 the policy limited itself to co-ordinating and supplementing national structural policies for agriculture. From 1972 a much more positive approach to structural policy was adopted and the EU began to co-finance certain measures in Member countries, provided they fulfilled certain conditions laid down in common directives or regulations. Most of these measures aimed at structural improvements in farming including small scale processing and marketing of farm products. In the negotiations which preceded the EC enlargement in 1973, emphasis had been placed on the difficulties faced by hill farmers. This led to Directive 268/75 on mountain and hill farming and farming in LFAs. Farmers within LFAs were entitled to enhanced rates of investment aid, to compensatory allowances on livestock in hill areas and to aids for joint fodder production, storage and distribution. The area qualifying as LFA has gradually increased and over 50 per cent of the EC agricultural area is now designated as less favoured.

A third phase began in 1985, as, following the second enlargement of the community to include Greece, Spain and Portugal, the existing agricultural structural policy was updated. Investment grants were to be confined to sectors where there was no ''structural over-production''. Provision was made for premia to be paid to farmers in sensitive areas using methods compatible with environmental protection and a series of measures was taken in relation to the southern member countries, including the Integrated Mediterranean Programmes for France, Italy and Greece.

The fourth stage of development stems from the reorganisation of the structural funds in 1988. Essential elements of the 1988 reform of structural funds include: doubling of financial resources in real terms between 1989 and 1993 from ECU 7 billion in 1989 to ECU 14 billion in 1993; the concentration of funds on six objectives (1-4, 5*a* and 5*b*); revision of priorities on policy instruments, mechanisms, and rates of co-financing for all structural policies (Regional, Social, Agricultural); the co-ordinated use of the structural funds and partly, of the European Investment Bank; the participation of the Commission, the member States and regional authorities in the planning execution and control of structural funds.[37]

Three of the six objectives (1, 5*a* and 5*b*) refer to agriculture itself or to regions where agriculture is very important. Objective 1 supports the development of mainly rural areas whose development is lagging behind. Objective 5*a* (EAGGF-Guidance) is devoted to the agricultural sector and deals with classical structural policies. Objective 5*b* is directly concerned with rural development policy and confined to depressed rural areas within regions which do not qualify for objective 1 assistance. Thus, promotion of the development of rural areas is undertaken by speeding up the adjustment of agricultural structures to the reform of the CAP (objective 5*a*) and by facilitating the development and structural adjustment of rural areas (objective 5*b*). In objective 1 regions the proportion of funds provided by the EC may reach 75 per cent and in all other regions is limited to 50 per cent of total cost. Following the enlargement of the Community to include Sweden and Finland Objective 6 was added for regions which had less than 8 habitants per square kilometre.

The revised priority objectives of structural policies placed emphasis on restoring market balance, maintaining viable rural communities, and conservation and protection of the environment. One of the

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principal innovations introduced by the 1988 reform was that structural measures will be implemented within a Community Support Framework (CSF). Within the partnership arrangements established in the Framework, the CSF establishes the agreed priorities which are to be the focus of Community assistance and represents an indicative financial commitment on the part of the Community for a five-year period.

This post-1985 agricultural structures policy contains the following measures:

1. the set-aside of arable land
2. the extensification and conversion of production
3. investments in agricultural holdings and setting up young farmers in business
4. compensatory allowance
5. introduction of farm accounts, establishment and operation of groups, services and facilities for several holdings
6. specific measures to assist mountain and hill farming and farming in certain less favoured areas
7. specific measures to protect the environment and preserve the landscape
8. adjustment of vocational training to the requirements of modern agriculture
9. early retirement of farmers of at least 55 years of age who quit farming and transfer their land to other farms
10. aid for producers' organisations (fruit and vegetables) and for producer groups
11. afforestation of land hitherto used for farming and improvement of existing forests.

In contrast with price policy, member countries enjoy a measure of independence in the application of most structural policies. The EC's contribution to the cost of structural programmes is only partial, with rates of Community co-financing for the above measures variable depending on the measure and the country. Only some measures are binding on all member countries. Set-aside payments, for example, are mainly Community financed, the costs being shared equally by the Guarantee and Guidance Fund. Payments under the structural programmes go to member governments rather than directly to farmers.

Measures are implemented in some countries to help the agricultural sector adjust to the changing policy environment. During the transition period following the 1984 reform in New Zealand a one-time payment programme was established to assist farmers who wanted to exit farming and pursue other economic activities. Under the 1992 Rural Adjustment Scheme, for example, Australia increased expenditures on measures aimed at improving farm productivity and encouraging farmers to leave the sector. The 1995 federal budget in Canada established a fund to help the sector adjust to reduced levels of safety net support and to take advantage of new market opportunities. Programmes aimed at helping farmers in financial difficulty have operated for a number of years.

In addition, in several countries there has been a shift to more decentralised measures, involving greater participation by rural farm and non-farm communities. In Australia, Canada**,** the EU and New Zealand, for example, there are programmes which provide payments not to individual farmers but to community-based groups of farmers. The role of government under such programmes is as facilitator and co-ordinator of local initiatives.

The category of *input subsidies* covers those measures that reduce costs paid by producers, mainly for their inputs used in production. This type of support is usually financed through the budget and has no direct effect on market prices received by producers or paid by consumers. Cost reducing subsidies affect the utilisation of both fixed and variable inputs and encompass policies affecting land and buildings as well as fertiliser, energy or transport use.

Virtually all OECD Member countries provide budget-financed services of a *general* nature, which benefit the agricultural sector as a whole, but are, in general, not linked to particular commodity. They often include research, extension, training, inspection and market promotion and in many cases increase farm productivity. Although the proportion of support to agriculture provided through govern-

ment expenditures on general services is below 10 per cent in most OECD countries they could have important implications for agricultural structures and the rural economy.

3.2.2. Distribution by farm type, size and region

The distribution of benefits to farmers stemming from agricultural support policies depends, *inter alia*, on the distribution of factor ownership among farmers, as well as the relative price changes among inputs. Input ownership among farmers varies greatly among countries and across regions within countries. In some cases farmers own almost all the land they farm, whilst in other cases lease virtually all the land. Moreover, some farmers have highly specialised skills and others do not. The existence of the wide distribution in input ownership implies that the distribution of benefits to farmers is likely to be unequal.

Changes in the relative input price depend primarily on the relative input supply elasticities. In general, price changes are larger for those inputs with more inelastic supply. Different input ownership patterns combined with different supply elasticities can give rise to very different patterns of benefits for farmers. One implication of the above is that a major impact of agricultural policies is likely to be on input prices, particularly land.

Work carried out by the OECD Secretariat indicates that, notwithstanding the wide diversity of situations, output-linked agricultural support is concentrated on larger farms, increases with farm size and that there are significant differences between regions and commodity specialities. A small proportion of large farms receive the bulk of the payments (Box 3.2).[38] To the extent that small farms are located in remote rural areas, output-related agricultural support will tend to be biased towards the most economically integrated rural areas.[39]

Box 3.2. **Selected empirical studies on the distribution of agricultural support**

In Austria a study analysed the impact of market support on income disparities in the 1980s, using three different policy scenarios: the continuation of a policy based on administered prices and export subsidies; equilibrium of domestic markets; and the adoption of EC-price conditions by Austria (Niessler, Perktold and Zoklits, 1989). The main result of the analysis is that market regulation, as applied in Austria in the 1980s, contributed significantly to increasing income inequalities and regional disparities in agriculture. Because support was linked to commodities, large farms with high incomes reaped most of the benefits. Farms producing grains, located in the favoured plain areas, are the main beneficiaries of market support. Most of the farmers with low income and especially those in the less favoured areas gained relatively little compared to an equilibrium of domestic market situation. Moreover, it is estimated that income distribution among farm households would have been more equitable if markets were not regulated and small incomes were instead supported by targeted direct payments.

In Canada, the average payment received per farm increases with gross sales and the 32 per cent of farms in the two largest sales classes received 68 per cent of all direct payments in 1993 (Statistics Canada, 1995). Almost three-quarters of government benefits went to the 80 per cent of farms classified as having a higher financial stability and they received slightly higher benefits per dollar of gross sales than the 3 per cent of farms with a lower financial stability (Bollman, 1989). Moreover, about 30 per cent of aggregate government benefits went to the 18 per cent of farms with a rate of return on equity of 10 per cent or more but the average benefit per farm was lower for this category of farm than for farms with a negative rate of return on equity.

Concerning the concentration of support from the CAP, 80 per cent of the support provided by FEOGA accrued to 20 per cent of farms and these farms also accounted for the greater part of the land used in agriculture (EC, 1991). Another study, which compares the proportion of total farms in each income class with their respective share of CAP gains, shows that CAP benefits were distributed regressively among EC farms with gains concentrated on the higher income farms (Brown, 1989). These conclusions also applied to individual EC member countries. Substantial variation in CAP benefits also arises across EC regions; farms in the Mediterranean regions receiving considerably less than farms in the Northern regions of the Community.

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In Finland, a recent study compares farm incomes in different regions, for different production sectors and physical size of farms under the support system prevailing before 1993, after the Finnish accession to the EU in 1995 as well as in 1997 when part of the transition period support will be eliminated in South and Central Finland (Myhrman and Heikkilä, 1996). According to the results of the study, full-time farmers, larger farms, farms located in South Finland and farms specialised in crop production tend to lose more than others from Finland's accession to the EU.

In France, a study by the Ministry of Agriculture on the distribution of different assistance measures by regions and farm types found that assistance was more concentrated than agricultural production, with strong disparities according to product-type and regions. These disparities are attributable to the different levels of support between commodities and to differences in economic size. This study also analyses the impact of the 1992 CAP reform on government assistance. It concludes that income disparities between regions, zones and classes of disposable income would be somewhat attenuated by the reform. The increase in government assistance and disposable income would be higher for farmers with a lower disposable income but the 25 per cent of professional farmers who received 60 per cent of total assistance in 1991 would still receive 55 per cent in 1996. Concerning the impact of 1992 CAP reform on the distribution of direct payments between zones it was found that after the reform, the amount of direct payments increased for all zones, especially for the plains mainly because of the introduction of direct payments to cereals (Bazin, 1995). Farms located in the plains, which represent 67 per cent of all farms, received 65 per cent of payments in 1994 compared to 45 per cent in 1991.

In Norway, the average payment per farm increases with farm size as measured by area for all zones, with the 32 per cent of farms over 20 ha receiving 77 per cent of all payments in 1993 (NILF, 1994). In 1993 there was a 50 per cent difference between payments in the lower and the higher area classes. The maximum difference between regions was around 40 per cent for all size classes but for smaller area classes, regional differences were bigger in some cases.

In Sweden, an official study on the distribution of support among commodities, regions and farm size classes, suggests very close link between the distribution of support with the distribution of production and geographic location of farms (Swedish Board of Agriculture, 1997). In 1995, farm holdings of more than 100 ha represented 28 per cent of total farm income and received 26 per cent of total support. One fifth of the farms received more than 70 per cent of the total support, while three fifths of the farms received less than 10 per cent of total support. The Central and Southern plains accounted for 85 per cent of total agricultural incomes and received 79 per cent of total support. With dairy farming and direct payments more prominent in the northern part of the country, the level of support in that part of the country was close to 70 per cent of total agricultural income as compared with 39 to 55 per cent in most of Central and Southern Sweden.

In Switzerland, the reduction in income disparities between plains and mountainous areas which has occurred over time is attributable to the provision of direct payments (Commission Popp, 1990). Income disparities among farms of different sizes were maintained in plains areas between 1976-78 and 1986-88 while they were reduced in mountainous areas. For all size classes, payments per farm and per hectare are higher in mountainous than in plains areas (Office fédéral de l'agriculture, 1995). In both plains and mountainous areas, average payments per farm increase with farm size; however payments per hectare decreased with farm size in 1993. The study also shows that as altitude increases, disparity in average payment between size classes declines. However, as the data only refer to "professional"[40] farms of a minimum size and exclude a large number of smaller farms, the resulting picture of the distribution of payments may be distorted.

In the United States, direct payments appear to be highly concentrated as 80 per cent of recipient farms received less than 40 per cent of payments, reflecting the strong links to production levels. Farms with gross sales over US$100 000 represented about 17 per cent of all farms but accounted for nearly 80 per cent of major programme-eligible commodity sales (EWG, 1995*c*). The average payment per farm increased with the economic size of the farm but represented a lower percentage of the cash receipts for larger farms than for smaller ones and landowners (EWG, 1995*a*). Over the period 1985-94, subsidies paid to farm operators whose permanent mailing address is one of the 50 most populous urban areas in the United States are estimated to be more than US$1.3 billion (EWG, 1995*b*). Concerning the financial position of farms, it was found that farms in a financially strong position represented 61 per cent of all farms and received 60 per cent of all payments (Perry and Morehart, 1994). The 11 per cent of farms classified as marginally solvent or vulnerable received less than 10 per cent of all payments but had the highest average payment.

3.3. IMPLICATIONS OF AGRICULTURAL POLICIES FOR PRODUCT AND FACTOR ADJUSTMENT IN RURAL AREAS

- *Agricultural policies have generally acted to increase input returns and resource use in agriculture. However the pattern of this increased resource use and returns differs, largely depending upon the type of agricultural policy considered.*
- *As adjustment evolved, output-linked agricultural policies have become increasingly ineffective in servicing rural development objectives.*

3.3.1. Market price support

Market price support policies affect rural economies in a number of ways. Market price support for a particular commodity raises producer and consumer prices above what they would otherwise be and makes production of the supported commodity more profitable. Consequently, production is increased, resulting in increased incomes and resource use in agriculture. However, an increase in resource use does not necessarily imply a proportionate increase in the use of all inputs used in agricultural production. This depends on input substitutability and relative input supply elasticities.

By transferring income to farmers, producer price support may help maintain or improve farm incomes and rural infrastructure, which could trigger additional spending and investment, and could stimulate rural entrepreneurship. However, these benign effects do not necessarily occur in the most cost-effective manner. First, allocation of resources within and among regions is distorted as resources are diverted from the lower or non-supported agricultural commodities as well as outside the sector or outside the rural area, thereby causing misallocation of resources. Second, this type of support is generally proportional to the volume of output and it tends to disproportionally benefit farmers on large-size farms, often located in the more economically integrated rural areas, rather than farmers on small-size farms, often in remote rural areas, whom policies are often intended to benefit. Third, by eliminating or reducing the risk associated with fluctuations in output prices, market support policies could reduce the incentive to hedge against price risk and reduce product diversification. They could therefore have adverse effects on rural entrepreneurship.

3.3.2. Supply restrictions

These measures are generally introduced with the objective of limiting domestic surpluses, reducing trade impacts and containing government expenditures. Three elements that are particularly important in determining the rural impact are: the effects on the intensity of input use, the distribution of benefits and the implications for the regional allocation of production. The type of supply control programme and the way in which they are implemented will influence the impact on rural areas.

Production supply control schemes, unlike price supports and input subsidies, imply the use of less inputs in agriculture. A fall in output of the restricted commodity will tend to cause a reduction in the resources allocated to this commodity. Decline in resources will tend to increase output price, reduce output, employment and value added both in agriculture and in its related upstream and downstream linkages. However, the degree to which the various inputs are restricted depends on the relative supply elasticities and input substitutability.[41] With a highly inelastic supply of land and a relatively elastic supply of non-land inputs, for example, a production control scheme results in much smaller reduction in non-land inputs than in land. In contrast, an acreage reduction programme results in a larger reduction in land (Gardner, 1987, p. 97, Table 4.1). The effects on the rural economy will be primarily determined by the extent to which the restricted inputs are replaced by others that are supplied within the rural area.

Output and input use controls have dramatically different effects on the pattern of input use. Restrictions on land use such as acreage or set-aside controls reduce agricultural production indirectly by limiting the use of an important factor of production, namely land. Output controls limit production

directly and may be implemented by the allocation of quotas, which limit the amount that may be produced or sold (OECD, 1998*b*). Production of the restricted commodity may be enticed from high-cost to low-cost rural areas. The impact on the rural economy of such a shift would be negative if the rural area is heavily dependent on the restricted commodity and possibilities for diversification are limited. This is likely to occur in the remote and mountainous rural areas.

Output and input use controls transfer income to farmers in different ways. In the case of output controls, the scarce factor of production becomes the output quota itself, and initial recipients of these quotas are the beneficiaries of the higher output prices. If quota owners and land owners are not the same, land rents fall, as does employment of purchased inputs, resulting in lower yields than would otherwise be the case (Hertel, 1990). By contrast, restrictions on land, such as acreage controls, restrict supply by making the land input more scarce. As a result land rents rise and there is an incentive to raise yields by using purchased inputs more intensively.

Restrictions on land use can have varied effects on rural areas depending on the specific way they are implemented, in particular the type of land to be withdrawn from production. Set-asides, for example, could have positive effects on the rural area if mostly fragile and marginal land are idled and the plots remaining in production were consolidated into larger production units, thereby enhancing productivity. However, set-asides would also tend to reinforce the downward trend in the size of the agricultural labour force and would reduce demand for other agricultural inputs, such as fertilisers and machinery. Set-asides on a large scale would adversely affect the general level of economic activity in the rural economy.

The owners of quota under production control programmes are not always the producers of the quota commodity. In the United States, for instance, the majority of flue-cured tobacco is grown on acreage for which quota is leased, most of the time from urban quota holders (Gardner, 1987). Sugar quotas are sometimes owned by processors, as in the EU, even though in practice they are shared out between farmers but closely tied to land, which means that they are capitalised into land values and thus benefit the owners of that land. Even when agricultural assets are owned by producers, transfers of wealth to individuals outside the farm sector or the rural area may take place over time.

Capitalisation of the value of agricultural support into fixed assets could affect structural adjustment through the increased costs of non-agricultural uses of land (OECD, 1998*b*). Higher land prices make it less attractive to use land for other purposes or to locate industries and other economic activities in rural areas. As a consequence, development of these regions would be adversely affected. Quota rents for current farm owners translate into increased production costs for future farm sector entrants. Thus output controls are not effective in raising the income of future generations of farmers. The cost of quota programmes is borne by consumers and taxpayers, but also by new entrants to the sector who pay for the intangible assets or the land attached to them. Young people in rural areas could therefore be discouraged from entering farming.

High asset prices are normally seen as an impediment to the structural adjustment of the agricultural sector. Empirical evidence, including that from New Zealand's policy reform experience, indicates that the number of farm sales decreases when prices are very high. If the price increase is accompanied by higher price volatility it may further decrease trade in farm land. Moreover, imperfections in capital markets can accentuate negative effects on structural adjustment. Potential farmers need to accumulate more funds to purchase land, thereby increasing the costs of entry to farming, whilst existing farmers will find it more difficult to increase their holdings than would otherwise be the case. In addition, capitalisation of support into land prices could increase insolvency in agriculture as under rising land prices farmers could adopt higher risk business strategies which result in increased indebtedness (Davies, 1996).

Supply control measures are an extremely costly method of raising prices and supporting incomes. By idling productive resources, distorting factor choices, and altering the pattern of agricultural innovation, large amounts of real income are forgone. They freeze production structures and hamper adjustments to changes in economic and technological conditions.[42] They, therefore, prevent efficient allocation among producers and regions, lower competitiveness and much of the cost to consumers and

taxpayers leaks away to increase the wealth of asset owners, thereby encouraging rent seeking behaviour. Instead of assisting farmers, agricultural support yields windfall gains for the owners of quotas, who are not necessarily the intended beneficiaries of farm policies. The identification of those who actually own land or intangible assets reveals a mismatch between farm policy objectives and the social groups who ultimately benefit from government transfers.

Studies undertaken in the OECD on the use of these supply control measures suggest that they can create significant market distortions for the commodity being controlled as well as having "spillover" effects on competing products and factors (OECD, 1997; 1995*a*; 1990*a*). In the long run, these distortions are reinforced by the effects of supply controls on structural change and technological innovation. Quantitative restrictions may also change the factor intensity of production, with consequences for resource use and possible implications for the competitiveness of related downstream and upstream agro-food industries. Their prolonged use diminishes their effectiveness. Removing quantitative restrictions will improve technical efficiency by making it possible for farmers to use the most efficient production techniques and to exploit economies of scale.

Like other price and income support measures, the largest producers receive the largest benefits and, in relative terms, the largest burden is on consumers who spend the highest proportion on their income on food – generally the least well off. Nationally determined quotas may also crowd out other possibilities for development better suited to local conditions such as niche markets where local producers have an advantage in production through quality and distinctiveness.

Supply control involves a good deal of administration. Compliance with restrictions on factor use must be verified, whilst restrictions on output require control over movement of produce. Such measures could be undermined by fraud. This also contributes to the institutional rigidity whereby quantitative restrictions have been difficult to dismantle once in place.

In recognition of the potential difficulties associated with supply controls, Ministers noted in the 1987 Communiqué that: "where production restrictions are imposed or productive farming resources withdrawn by administrative decision, these steps should be taken in such a way as to minimise possible economic distortions and should be conceived and implemented in such a way as to permit better functioning of market mechanisms". The available evidence on supply controls in the OECD indicates that, in general, they have not been implemented in ways that would satisfy the above criteria.

3.3.3. Direct payments

In contrast to market price support, direct payments are in general considered to be more transparent and can in principle be targeted to any specific group of farms, farmers or regions. However, direct payments, which are financed by taxpayers, do have an impact on the allocation of resources between agriculture and the rest of the economy. Nevertheless, in most OECD countries, direct payments are still largely related to output levels, although sometimes subject to maximum limits per farm or farmer or based on historical levels of inputs, allowing the links with current output to be weakened.

The effects of direct payments on the rural economy will depend on how they are financed and on how payments benefit non-farmers. The 1987 OECD Communiqué pointed out, direct income support measures are most suited to farmers with low incomes and to those in disadvantaged rural areas.

Work at the OECD has identified some of the characteristics of direct payments that would be most compatible with the 1987 Ministerial Principles (OECD, 1994*c*). This work suggests, in order to avoid creating production incentives, that direct payments should either be fixed, or if variable, should be related to a parameter which is outside the farmer's control. Ideally, direct payments should not be determined by current or future levels of production or levels of input use. Payments would be better targeted to a particular policy objective rather than attempt to achieve multiple, and sometimes conflicting, objectives and care should be taken to not adversely affect the achievement of other policy goals. In general, the more carefully a given measure is targeted, the greater is the possibility that it will achieve its objective least overall cost. The OECD study also recommended voluntary participation in direct payment programmes.

There is very wide variation in the extent to which new direct payment measures reflect the characteristics and recommendations summarised above. Some measures remain closely linked to production or factors of production while in others a significant degree of production neutrality appears to have been achieved. Carefully targeted measures have been implemented in some instances while in others the need for trade-offs among multiple objectives have resulted in less specific measures. Some payments are based on former levels of production or input use such as the payments to crop growers in the EU resulting from the 1992 CAP reform and in Canada, transitional payments to land owners to cushion the impact of the elimination of transportation subsidies in 1995. In Norway and Switzerland, since the beginning of the 1990s, there has been a movement away from mainly production linked payments towards programmes with weaker links to production and which are more targeted to farm income support, environmental objectives and rural development.

3.3.4. Input subsidies

Although input subsidies are largely motivated by output-enhancing and farm income objectives, they can differ in the degree to which they affect rural economies, depending on their design and implementation. By reducing costs of the subsidised input, these measures enhance producers' gross margins. They also affect relative input prices and consequently the resource allocation pattern within agriculture and the surrounding rural area as well as the overall volume of resources used in agriculture.

The effects of input subsidies on the rural economy depend on a combination of factors. The reduction in the cost of subsidised inputs may be accompanied by an increase in output and more intensive use of variable inputs relative to those which are in fixed supply (Gardner, 1987, p. 107, Table 4.2).

However, the increase in input use is unlikely to be the same for all inputs and owners of other inputs may not benefit from the subsidy. If there is substitutability between inputs, a subsidy on one input generally leads to an increase in the use of that input. If the substitutability between inputs is high, the owners of other inputs may lose as farmers of the unsubsidised input are able to substitute the subsidised input for other inputs, thereby reducing demand and lowering price.

Similarly, if there is little substitutability between inputs, a subsidy on one input would lead to similar increases in the use of all inputs. A low degree of substitutability means that other input owners will gain, since the demand for their input expands along with the increased use of the subsidised input. Finally, if the input, for example land, is in fixed supply, a subsidy on land would affect land price rather than land use.

3.3.5. Structural adjustment payments

- *Notwithstanding ambitious aims, achievements have been modest.*
- *Conflicting objectives, generous price support and overly complex administrative procedures have been the major hindrance.*

Agricultural structural policies are concerned with issues relating to employment, land use, forestry and the scale of farm enterprises and comprise many varied measures. Among these the following policies can be distinguished: measures to improve the structure and efficiency of farm production as well as processing to strengthen the competitiveness by improving the quality of factors of production, modernising the equipment and increasing the scale of operation, and assisting farmers to leave inefficient production units; measures to maintain farming in less favoured areas by compensating for their natural or economic handicaps; measures to diversify economic activities within or outside farming in rural areas; and to implement agro-environmental measures to strengthen positive and minimise negative externalities resulting from farming.

The relative importance of each objective may vary over time and from one country to another. In the EU, each member country disposes of the same EU tool and it uses it differently depending on its own aim (Urff and Boisson, 1996). In some cases, the structural measures may be used as a policy instrument for controlling the external effects of agriculture, for example the management of environmental problems in the Netherlands or the diversification of farming activities in the United Kingdom. In other instances, it is part of a policy for improving the productivity of agricultural structures (*e.g.* Greece, Portugal, France). Finally, in other countries, the modernisation policy has an obvious social aim and the redistribution objective predominates. In Spain and Italy, for example, investment aid is awarded to small and large farms in roughly equal proportions.

For certain categories of farmers or regions there may be substantial effects by providing a certain level of income in rural areas or supporting a rapidly changing agriculture through the modernisation process. Structural policies by offering alternative or additional employment and income opportunities outside farming to the farming population, in rural areas, may ease adjustments in farm size and in resource allocation. This should improve the efficiency and competitiveness of the farming sector in these regions. It could also reduce inter-regional disparities. However, their cost-effectiveness should be carefully scrutinised. Their overall effectiveness has been influenced primarily by three factors: multiple and often contradictory objectives, their concurrent implementation with generous market price support policies and administrative difficulties in their implementation.

The multiple objectives make an overall evaluation of structural policies difficult. Moreover, they are only one of the many factors affecting the development of agricultural structures. The initial socio-economic situation of the rural area and the general economic context, for example, can amplify or hamper the effect of agro-structural policies. Their effectiveness could be assessed on the extent to which they have strengthened production structures and competitiveness (supply-side efficiency) and whether they add to total rural household demand so stimulating output and employment (demand side).[43]

On the supply-side it could be argued that structural policies are ambiguous. As pointed out by the Greek and French case studies, not all of their objectives are mutually compatible. One conflict frequently apparent is between measures which seek to assist market forces and those which oppose them or compensate for their effects. Their overall objective is to adapt farm structures to their economic environment through specific intervention relating to the fixed factors of production. The justification of these programmes to support farm consolidation and enlargement in order to capture the economies of scale apparent in larger units heavily hinges on the belief that smaller farms are less technically efficient than larger ones. Structural policies targeted to less-favoured and hilly areas are consistent with the retentionist tendency of price support policies and by contributing to farmers' income they maintain farming in these areas. However, it is difficult to assess precisely whether the development of these areas would have been much different without the policies. Nevertheless, it is not obvious how the increased efficiency objective could be reconciled with the objective of preserving small farms in less favoured and hilly areas.

Moreover, structural policies are often implemented in conjunction with price support policies with different objectives. Agro-structural policies sometimes aim at encouraging increasing factor mobility and promoting a smaller number of larger economically viable farms and by diversifying economic activities, would facilitate the move of farm labour from agricultural production to other on- and off-farm activities in rural areas. Output-related agricultural support, however, tend to maintain high returns to agricultural factors of production and discourage diversification.

On the demand-side, it is not at all clear the extent to which structural policies add to or substitute for those which would have been provided by the private sector. Available evidence points to the fact that the measures seem to have a relatively low impact, in financial terms and in terms of the percentage of farmers receiving aid as well as in achieving their stated objectives (see French and Greek case studies).

Since participation in many of these measures is voluntary, their effectiveness will depend upon whether they are sufficiently attractive to farmers to be accepted in those regions where they are

needed. As the case study on Crete has demonstrated, generous price support policies have undermined the attractiveness of agro-structural policies. The OECD study on early retirement schemes concludes that although such schemes have had some success in encouraging and facilitating resource adjustment, their uptake has been relatively low (OECD, 1995*a*, pp. 103-121). The low level of participation was attributed to a number of factors, including the relatively low level of pension payments permitted and the onerous eligibility criteria associated with many of these schemes.

Agro-structural policies suffer from the handicap of requiring a considerable degree of administration and their effectiveness heavily hinges on the efficiency of institutions responsible for their implementation. Evidence shows that the level of managerial efficiency of institutions is considered quite low with the enormous number of complicated administrative procedures, at both the national and local level. In the EU, for example, there were 411 programmes in relation to agriculture alone (Fischler, 1996), while in the United States, the US General Accounting Office (US GAO) identified that over the 1983-92 period rural areas received assistance from 828 federal programmes (US GAO, 1994).[44]

3.3.6. Overall assessment

The impact of agricultural policies on rural development could be primarily assessed against two criteria: First, there is the question of the extent to which the payments associated with agricultural policies raise living standards and employment simply by increasing expenditure in assisted rural areas. Second, and more important, is the extent to which agricultural policies were successful on the supply side by raising rates of growth to bring about improvement of living standards. The latter criterion is more difficult to assess since rural problems are caused by a multiplicity of interrelated factors. Policy measures are only one of many influences on economic development and it is difficult to isolate the impact of policies from that of other factors. In fact, one of the most important influences is the overall buoyancy of the national or even international economy as a whole (Begg, 1995). Opportunities for migration and investment mobility, for example, are less in recession. An increase in population growth in remote rural areas could simply reflect the economic downturn in the economy as a whole rather than the increase in prosperity for these rural areas. By analogy, migration into less-favoured rural areas could be associated with a rise in unemployment in the more prosperous regions rather than with increasing employment opportunities in remote rural areas.

With these caveats in mind, it could be argued that agricultural support policies in OECD countries have exerted varying degrees of influence on the level and the mix of resources utilised in agricultural production. By maintaining producer prices at levels inconsistent with market realities, they have attracted into and retained in the sector higher levels of resources than would have occurred without such support. By prolonging the involvement of marginal producers in agricultural production, these policies have a positive influence on employment, particularly in rural areas where there are often few alternative employment opportunities. Output-related agricultural support affects both the supply and demand side of agricultural markets, increasing production and discouraging consumption. In the absence of such policies, agricultural production would have increased at a lower rate or even decreased. It would also have tended to be more concentrated in areas with favourable conditions and to have led to greater contraction of agriculture in less favoured rural areas. Moreover, agricultural support policies resulted in an excess of resources, particularly labour and land remaining in agricultural production, thereby boosting agricultural and rural populations, or at least curtailing their rates of decline.

Furthermore, under the influence of market price support policies the use of intermediate inputs such as fertiliser, chemicals and farm machinery has increased (OECD, 1995*b*). This high input agriculture has sustained a high level of employment and of value added in sectors related to agriculture by forward and backward linkages. These include the supply of farm inputs, transport, banking and other services. Preventing a more rapid decline in the farming population and supporting their incomes through price support and – to a far lesser extent – direct measures, resulted in higher consumption by farmers and farm workers and thus contributed to employment and value added in the rural retail sector, as well as in the construction and service sectors. Against this background, it could be argued

that output-related agricultural policies positively contributed to maintaining the social-economic strength of rural areas.

However, an assessment of the effects of agricultural policies on rural economy should address three crucial questions:

- Is the impact wholly positive?
- Is it cost-effective?
- Are output-related agricultural policies sustainable over time?

Is the impact wholly positive?

Notwithstanding the aforementioned potential positive contribution of agricultural support policies to rural economy, a number of factors may reduce or even offset this benign effect. First, although in the absence of support the incentives for rural to urban migration might been much stronger, it is not clear that the policies have been the most effective in preventing rural exodus and reversing the long-term trend of young people leaving the countryside in many rural areas. Second, the degree of support varies by commodity. Resources may have been attracted into less labour-intensive, that is more land and or capital-intensive products. Third, the policies were unable to prevent the widening of disparities in the agricultural sector and in the rural areas (EC, 1996). In fact, they may have even exacerbated such disparities because most of their benefits are conferred to the most affluent rural areas. Further, by bidding up land rents, farm support might have deterred other non-farm industries from locating in rural areas. Forth, the incentives created by agricultural assistance have hastened the adoption of labour-saving capital and favoured more capital-intensive farming methods in many OECD countries. Evidence suggests that agricultural support by providing incentives to substitute capital for labour can be associated with reduced farm labour demand and could increase capital intensity so much that the demand for labour eventually falls.

To the extent that agricultural support benefits are capitalised into fixed assets such as farmland and buildings, they stem the loss of population from rural areas, thereby attenuating the effect of support on capital-labour substitution and the associated lower farm labour force. Evidence in the United States shows that the effect of higher land values was not large enough to offset the consequences for rural population loss of the induced capital-labour substitution in agriculture (Goetz and Debertin, 1996). Moreover, the fact that agricultural support policies kept land in farming can be regarded as successful only if by maintaining the land conservation function, the particular landscape and bio-diversity formed by the patterns of farming are goals to which society gives priority. It may be questioned whether the right balance between different land uses has been achieved and, if it is, whether it would be justified everywhere (Urff and Boisson, 1996). At any rate, pursuing this goal by price support policies results in high prices for land and makes it more costly to reallocate land for other uses.

Is it cost-effective?

The maintenance of farm incomes is perhaps the dominant objective of agricultural support policies in virtually all OECD Member countries. The stated objective of many governments is to secure a satisfactory and equitable standard of living of farmers and to stabilise farmers' incomes.[45] In general, policies designed to retain resources in agriculture effectively contributes to the problem of excess capacity in the sector, which in turn lowers the rate of return on farm labour. Thus, the effectiveness of such an approach for supporting farm incomes is questionable in the long run.

Work carried out by the OECD Secretariat on the relative efficiency of agricultural policy instruments commonly used in OECD countries for transferring incomes to farmers concludes that less than one-third of what is spent on support programmes results in additional farm income, and an even smaller proportion results in a net increase in farm household income (OECD, 1995*a*, pp. 45-67). Furthermore, the limitations of such policies are increasing over time as the proportion of gross receipts

accounted for by purchased inputs is high and growing so that the impact on net farm income of market price support policies is very low.

Market support has also become increasingly inefficient as a way of helping those in farming who are most in need of income assistance as the benefits conferred are proportional to output and hence to farm size (economic and physical). Moreover, given that, in many instances, agricultural land is owned by non-farmers, an important part of the income generated by price support is transferred to non-agricultural landowners, many of whom do not even reside in rural areas (Annex Table 4). Such policies undermine the development of the rural non-farm economy by bidding up the costs of location-specific factors and increasing the rural cost of living. These arguments shed some doubt on the cost-effectiveness of agricultural support policies, even if the legitimacy of rural development objectives are not questioned.

Further, the relationship between farm income and family income is even more tenuous as the economic well-being of a significant proportion of farm households has only limited dependence on farming. This raises questions about the effectiveness of output-related agricultural policies for achieving the income objective. Commodity programmes cannot be reasonable welfare programmes even with various targeting adjustments. Obviously, the distribution of benefits can be altered. It is not clear, however, that commodity policies could be used effectively to provide substantial aid to poor rural people without overwhelming leakage to the non-poor or heavy administrative complexity and cost. Low productivity and remuneration of agricultural labour does not necessarily imply that total income levels of farm households are lower than those of other households. Increasingly, people living on farm holdings receive income from non-agricultural employment and other sources, such as pensions. This implies that the capacity of output-related agricultural policies to influence directly the income situation of households on small farms is very limited.

With increased off-farm employment of farm households, farm family income has become linked more closely to economic conditions in the non-farm sector. This implies that economy-wide policies, including labour and social policies, are of considerable importance in rural areas. Social policies which upgrade, for example, communication, relationship and parenting skills have been identified as important for building the social structure of rural areas. Delivering these social policies can be problematic in rural areas where access is a key issue. Likewise, policies that address rural problems through the encouragement of off-farm employment creation may have allowed more people to continue to farm and live in rural areas.

Another effect of agricultural policies is that they inadvertently reduced the need for more business acumen behaviours as these policies have reduced the need for farmers to develop more complex ways of competing or of co-operating with one another. The signals that these sorts of policies give are in the long-term highly inimical to the development of rural areas (OECD, 1990*b*).

Are output-related agricultural policies sustainable over time?

Fundamental technological and economic forces will continue challenge policy makers. Agriculture in OECD countries has been subject to substantial structural change emanating from the development of new production techniques, increased productivity, increased world competition (globalisation) and changes in the pattern of demand. Production-related support policies can only slow down but cannot hold back the economic forces leading to structural change. For example, the more supply-control system is used to offset the effect of technical progress, the more expensive and less efficient in achieving its own objectives it becomes. A permanent slowing down would require a continually increasing level of support, which is clearly not feasible. Agricultural support policies may have slowed-down the pace of invention, development and adoption of new farming methods, but technological progress will continue to raise productivity (OECD, 1995*b*). The continuing trend towards increasing integration of the agro-food sector in the whole economic system, including rural economies, suggests that efforts to improve the economic well-being of farm families through traditional agricultural support policies are increasingly inefficient.

Economic efficiency requires that factors of production are allocated to produce the highest possible level of output. In agriculture, the main cause of inefficiency in most OECD countries is that too many resources are used in the sector. Within agriculture itself, resources may be similarly misallocated. Economic efficiency in general requires the abolition of policies which influence production decisions. Output-related agricultural support obstructs incentives for improvements in efficiency. By retaining more resources in agriculture and discouraging consumption, it has a cost in terms of economic efficiency, which is in turn reflected in high budget costs and in high consumer price of food.

3.4. AGRICULTURAL POLICY REFORM AND THE RURAL ECONOMY

- *Agricultural policy reform will enhance agriculture's contribution to the development of rural economy, but its pay-off is neither instantaneous nor without cost.*
- *The impact of reform on adjustment will not be uniform across rural areas.*
- *The more economically diversified the rural area, the easier will be the adjustment process.*
- *Remote rural areas with unfavourable conditions for agriculture will continue to face adjustment problems.*
- *The impacts of policy reform could be greater in the downstream and upstream sectors than within farming itself.*

Policy reform, that is, a reduction of the overall level of agricultural support and a shift away from measures linked to production or factors of production to measures that increase the role of market mechanisms in influencing agricultural production and consumption decisions, will reinforce the process of structural adjustment which can lead to a more efficient use of resources in agriculture and the overall economy. It will create pressures on factor returns and resource allocation and it will give rise to many adjustment pressures. The manner and speed of economic adjustment would be influenced by a wide range of factors, such as the existing economic structures, the relative competitiveness among different farm-types, sectors and regions, the place of agriculture in the rural economy, demographic and social characteristics of the affected population in rural areas as well as the sequencing and credibility of reform. Moreover, the adjustment process will also depend on a multitude of exogenous forces such as the overall state of the economy, technological progress and changes in consumer preferences. In addition, the ultimate outcome will also depend on the extent to which governments adopt and implement direct income payments to meet the needs of low-income farmers, particularly those in disadvantaged regions, or those affected by structural adjustment, as mentioned in the 1987 OECD Ministerial Communiqué for agricultural policy reform. Inevitably, it is extremely difficult to ascertain the final outcome with any precision because of the many factors involved.

The OECD has carried out studies on the aggregate effects of reform for OECD Member countries (OECD 1994*a*; Martin, *et al.*, 1990). Although these studies are based on certain assumptions, they provide information on the re-allocation of factors of production. These OECD studies indicate that agricultural policy reform could lead to: increased average household real incomes; a flow of resources out of the sector in many OECD Member countries; a decline in hired farm labour; lower factor prices, particularly in land rents; a less capital-intensive use of land; and a rise in the world market prices of many agricultural products.

Policy reform will affect relative costs and profitability of the resources used in agriculture and would set in motion a dynamic adjustment process. Resources with a higher value in alternative uses will be the first to be withdrawn from agricultural production. In this way, it could be expected that the brunt of adjustment would be borne by hired labour and borrowed capital rather than family labour and equity. Farmers would reduce inputs and, in some cases, cease production. The process would also lead to a reduction in the prices of inputs, particularly of those inputs such as land with limited

alternative uses. This would in itself set off another chain reaction as farmers adjusted to lower costs of production and a different set of price relationships.

Adjustment in the agricultural sector will also necessitate adjustment in the upstream and downstream agro-food sectors. In general, agricultural production would gravitate towards rural regions with favourable natural factor endowments and economic infrastructures. Thus, peripheral and remote rural regions with unfavourable conditions for agriculture will continue to encounter severe adjustment pressures. In other rural regions, resources would be released to be employed more productively elsewhere, where opportunities for employment in agriculture or other sectors emerge.

Agricultural policy reform will provide incentives for increased diversification of agricultural output towards products whose production has been discouraged by support policies. This diversity could be within agriculture, but could also entail non-agricultural activities such as tourism, forestry, fisheries and cottage industries. Further, the tendency to add-value to the product by handling, grading and processing of agricultural outputs would increase. Within the sector, some regional and processed products which have not been fully developed due to the attractive support offered for other products might have significant potential for the rural economies of these regions. Consequently, the commodity mix of agricultural trade could also change. Rural employment and other economic benefits associated with agricultural trade would shift from the regions producing traditional bulk commodities to regions producing more high value added (Edmondson, *et al.*, 1996).

New Zealand's experience supports the notion that removal of agricultural subsidies will result in some diversification and expansion of farm production as output adjusts to new incentives. Diversification took place into horticultural products, forestry, goats and deer and away from the sectors which had been highly protected such as wool and sheepmeat. Diversification was also accompanied by changes in production techniques. This shift of output-mix extended well beyond the confines of primary production. In Canada, the elimination of the long-standing grain transportation subsidies is expected to foster diversification in western grain-producing regions into activities such as livestock and high value added products (see Canadian case study).

3.4.1. Employment implications

The caveats mentioned in the preceding section foreshadow the difficulties in predicting the employment implications of policy reform for rural areas without reference to particular categories of farm labour, farm-type, rural region and country. However, the analysis of changes in the agricultural labour force presented in Chapter 2 indicates that agricultural support policies have been unable to prevent the long-term downward trend in agricultural employment or rural de-population in many rural regions.

Reform may have its main effect in accentuating existing trends in the agricultural labour force. In the first place it would accelerate the underlying long-term trends towards reduced employment in the sector. Second, it would accelerate the current restructuring of the labour force to one which relies heavily on farm family labour and flexible hired labour such as part-time, seasonal and casual workers, and agricultural contractors. At the same time, much of the effect within the farm family labour is likely to take place through increased underemployment and even disguised unemployment rather than exit farming (RDC, 1996).

From the overall economy's perspective, it can be argued that a decline of agricultural employment could be a very important stimulus to national productivity gains as it might represent a shift away from relatively low productivity employment to higher productivity employment. The drawback is that this occupational shift is often associated with a spatial shift in jobs (Matthews, 1991). The jobs which disappear are in rural areas, while the new employment opportunities arise primarily in urban areas.

Reform will have diverse consequences for farmers and it may have a significant impact on rural employment in certain regions. Some farmers will opt to leave agriculture, although the speed and manner of their exit may be affected by adjustment costs and rigidities. Those who stay may re-orient

their agricultural activities in order to improve the viability of their business and some may also diversify their source of income by seeking additional paid work outside agriculture.

Hired farm labour is likely to be more adversely affected than the owner-operator of a farm. Evidence also suggests that the hired labour households in agriculture tend to be employed mainly on larger farms usually located in the more economically integrated rural areas and for seasonal or contractual purposes. In some regions, such as in the South-Western United States and Southern Europe, hired farm workers are often immigrants.

Less competitive farmers who are currently shielded by high levels of support could expect initial reductions in income and wealth levels. Under lower levels of assistance, many farms run by individuals in this category would cease to be viable. Displacement of farm families is likely to be more prevalent in rural regions whose economies are dominated by agriculture and where farmers are isolated from alternative employment opportunities. For these rural areas the decline in agricultural employment could have important "knock-on" effects and can bring about an overall decline in the rural population with adverse impacts on rural communities and the redundancy of much infrastructural investment.

The outcome would be affected by a number of factors. For instance, the supply of farm labour is closely linked to the circumstances of the farm household. A high proportion of the farm labour input is made by farmers and their families. Family farm labour tends to be more "sticky" than hired farm labour insofar as the amount of farm family labour used in farm production appears to be much less responsive to changes in relative prices. This implies that farm families may continue to work on the farm especially if no other employment opportunities are available. In addition, low labour mobility can be reinforced because, for many workers, agriculture offers important non-monetary benefits such as open air life and independence, which are highly valued by many people. Moreover, an ageing farm labour force, the overlap of place of work and residence may be another factor discouraging labour mobility. Against this background, it could be argued that in some remote rural areas the main consequence of agricultural policy reform could be therefore an increase in underemployment or disguised unemployment rather than mass exodus from the sector (RDC, 1996; Errington, 1988).

Moreover, although the greater impact is anticipated to be on hired labour, it is by no means clear how the use of labour might be affected by the switch in the methods and patterns of production. The nature of employment change among hired farm labour such as a significant reduction in full-time jobs, some increase in part-time, seasonal and casual labour, and the movement of hired workers into self-employed agricultural contracting all have important implications for the rural economy and the rural labour market. In addition, the fall in input prices and the switch to other uses of land will stimulate the demand for labour.

Evidence suggests that the overall effects of reform on aggregate farm labour will be fairly small and that it is unlikely that the outflow would be significantly faster than the extrapolations of existing trends. Underlying demographic developments suggest that the bulk of people exiting the farm labour force will leave the labour force entirely for retirement or by natural attrition (OECD 1994*a*; RDC, 1996).

3.4.2. Land use implications

Removal of output-related support is expected to lead to a decline in the value of the assets used in the sector in countries and regions with relatively high assistance, at least in the short run (Box 3.3). The fall in land values would result in losses to landowners, especially those who had invested at high prices. Lower land values may limit capital transfers from the farm sector to agents outside the sector and may facilitate structural adjustment, by easing obstacles for potential newcomers in the sector (OECD, 1998*b*).

A fall in the relative price of land implies that land could be used relatively more in the production process, but substitution possibilities among factors of production could differ across regions and countries.[46] In some cases, agricultural policy reform may result in the substitution of land for other inputs, and farmers may regard expansion of area as a desirable adjustment.[47] This may increase the

demand for land, and limit possible decreases in its value. In other cases, reforms may result in the removal of land from production and lead to downward pressure on land prices. Price effects will also differ according to the possibility of alternative uses for farmland, the likelihood of a different mix of farm enterprises, which is limited in some rural areas and significant in others.

Mobility of land may be hindered by various institutional impediments. Possibilities for alternative use of various commodity specific assets could also be limited, at least in the short-run, with the result that they are left under-utilised or idle. The inability of the farm operator to exit farming, or laws and regulations regarding the use, zoning, transfer, or inheritance of land could prevent land adjustment (OECD, 1998*b*). Tax laws and financial market regulations could also inhibit the mobility of some capital assets, as could the lack of developed markets for used capital items. Moreover, some farm land near urban centres, even though it has competing uses, cannot be easily shifted to new uses in response to market forces because of specific policies preventing its transfer. The value of such land is not determined so much by the rent it earns from farming but rather by speculation and other exogenous forces.

Although it is difficult to postulate what the precise outcome would be, the expectation for policy reform is for an accelerated restructuring of agriculture. There is a likelihood, except where land has more profitable alternative uses, that agricultural land will remain in production amalgamated into larger farms. However, marginal land, often found in remote rural areas, would be under strong pressure to become derelict, particularly where the land has been used to produce highly subsidised products and the land has no or only limited alternative use (Sumelius, 1997; Baldock, Beaufoy, Brouwer and Godeschalk, 1996; Weiss, 1992). In some remote rural regions, traditional systems of farming which have created the particular landscapes could be threatened. The abandonment of agricultural land in such rural areas might require government intervention to prevent degradation of the environment and to support the sustainable management and use of the land. In the more economically integrated rural areas, agricultural production on marginal land could be discontinued and more land would be available for non-agricultural purposes, including outdoor recreation.

Policy reform could strengthen the incentive for farmers to reduce the intensity of production and to facilitate reallocation of land to non-agricultural purposes like forestry, leisure or nature preservation. The choice of whether to continue farming or to use land for which farming under market conditions has become unattractive for non-agricultural uses will depend on local circumstances. Land that is no longer needed for agricultural production can be used in a way which is environmentally sound and contributes to satisfy public demand. Some uses, such as recreation or infrastructure will develop if returns for such uses become greater than the returns from farming. For others this will not automatically be the case, either because heavy investment and a long gestation period is needed or because there are no markets for the goods for services concerned, for example, investments required for purely environmental purposes.

Furthermore, the suitability of land for alternative uses has to be taken into account. Forestry for wood production demands good quality soils. On poor agricultural land, extensive farming systems may prove to be the most efficient and least costly way to manage land in a sustainable manner, preventing irreversible degradation of the natural environment (Urff and Boisson, 1996). The management and exploitation of natural land and forest and extensive farming could become an important source of employment and income for the rural population of these areas and increase their attractiveness for tourism, residence and location of industry.

3.4.3. Implications for scale of farm units

As the empirical evidence shown in Chapter 2 demonstrates, over the past few decades, there has been significant shifts in the structure of the agricultural sector in OECD countries, with a move to a greater proportion of larger holdings. With the removal of support, the expectation would be that the greater flexibility associated with operating on a larger scale with a sizeable asset base could offer

larger farms an advantage relative to smaller farms, and could conceivably lead to amalgamation of farms in many regions.

However, the effects that reform would have on the scale and scope of farming operations are difficult to determine. First, factors such as inheritance and lack of availability of adjoining land could inhibit an increase in farm size. On the other hand, there may be more movement from the middle farm-size category many of which may no longer be viable. Second, change in farm size also depends on farm-type mix. Policy reform could accelerate the trend towards diversification of farms. As the New Zealand experience shows, the average farm size actually declined over time as farmers diversified towards horticultural products which takes place on farms of smaller physical-size.

It is not certain whether reform would seriously worsen the problems of smaller-scale farmers. Production-related policies tend to have a relatively smaller impact on farmers in this category than they do on larger farms. It could, therefore, be inferred that reform would mostly affect larger farms. Capital-intensive farms will be more likely to face significant contractions in output, while smaller farms would fare better due to their lesser dependence on capital and hired labour, and their greater dependence on cheaper, agriculture-specific inputs such as family farm labour. Furthermore, smaller-scale farmers are already highly dependent on alternative sources of income in many OECD countries. This would provide them with a degree of resilience in the face of falling farm returns.

Whether there would be a dramatic reduction in the number of very small farms depends on developments in part-time farming. Part-time farming and pluriactivity has been increasing over time. For some farmers this means part-time off-farm employment. Policy reform, would increase the trend as the earnings from these other activities became relatively more attractive and were also seen as a means of offsetting the drop in farm income. At the same time, new part-time farmers would be encouraged to enter the industry by the fall in the price of land and the removal of quotas.

3.4.4. Agro-upstream and down-stream sector implications

The impact of agricultural policy reform on the competitiveness of rural areas will increasingly depend on the efficiency of the agro-industrial complexes within which the farm sector is embedded. The farm sector is closely integrated with the economy as a whole and agricultural policy reform will also have repercussions on other sectors. The farm sector is linked to the economy in a network of upstream and downstream sectors. Some of these are in rural areas, while others are located in urban centres, indicating a strong agriculture linkage between rural and urban economies. Changes in agricultural production due to policy reform will affect the upstream and downstream sectors, and hence rural employment in varying degrees.

Agricultural policy reform will generate adjustment pressures in upstream and downstream industries, which may be even more pronounced than adjustment at the farm level. They could affect the structure and performance of the upstream industries, for example. In countries where farm output is likely to decrease, the demand for agricultural inputs would be expected to decline with ensuing reductions in the number of firms, productive capacity and size of labour force in those industries supplying inputs.

Evidence, including New Zealand's reform experience, shows that the short-term effects of policy reform on labour adjustment is more pronounced in the food processing and agricultural inputs sectors, which are often located in rural communities, than farming (see New Zealand case study; Box 3.3). It does seem likely that a higher proportion of job losses in the service sectors will be located in rural areas since service suppliers are more likely to be located close to their customers than are the manufacturers of inputs such as machinery or agro-chemicals.

3.4.5. Dynamic adjustment aspects of policy reform

The initial response to agricultural policy reform would be accompanied by a dynamic adjustment process as farmers will adapt to new output and input price relationships by adjusting production patterns and farming practices. Policy reform would strengthen the incentives to enhance the dynamic competitiveness of the agro-food sector through specialisation by distribution channel, vertical integration and through geographic specialisation to take advantage of transportation cost advantages or of local market conditions (Porter, 1980; Krugman, 1995). The ability of regions to compete in particular industries depends on a nexus of local conditions which must be simultaneously in place. These include a high degree of local competition, sophisticated local customers and suppliers, local institutional setting and the support of a social infrastructure capable of re-producing the main factors of production (Porter, 1990; Tirole, 1988). The location choice for any particular activity depends, *inter alia*, on the availability and quality of local skills, infrastructure and proximity to markets.

Although the ultimate outcome would differ between farm types, regions and countries, three general trends could be identified. First, policy reform will further increase the linkages between farming and the rest of the economy. Second, it will stimulate diversity of economic activities. Finally, it will increase pressures on the quality of human capacity of the agro-food sector.

Increased competition resulting from policy reform will lead towards greater integration among the various sub-sectors of the agro -food chain. Some of the key pressures that are likely to strengthen the links between the farm sector and its adjacent industries include increasing downstream concentration, new technologies and shifting consumer preferences towards higher quality, health consciousness and ''environmentally-friendly'' products.

Firms will increasingly tend to cluster, to be close to the markets and input supplies they provide each other, and to take advantage of the pools of skilled labour and specialised knowledge available at geographic centres of economic activity. Such factors can outweigh the diseconomies of higher factor costs and congestion (Libecap, 1996; Krugman, 1995).[48] Increasing downstream concentration in both processing and retailing will come about as a result of business strategies aimed at capturing economies of scale, increasing domestic market control and competing in world markets. Vertical co-ordination will be required to achieve an efficient overall organisation of all stages of agricultural production processing, transport, distribution and marketing.

Emerging technologies such as information technology have enabled processors and retailers to respond almost instantaneously to changing consumer demand, thereby increasing the need for closer integration with suppliers. The emergence of new information and improvements in communication technologies facilitate the transfer of information between potential customers and suppliers thus reducing transaction costs and enhancing flexibility of rural labour markets. As such, they tend to reduce the segmentation of the rural labour force, thereby slowing or even reversing the rural to urban migration trend. They also enlarge the areas of operation of agricultural services, input supply or output transport and processing, and thus affect farm-related sectors of employment, in addition to economies of scale in many of these services. This implies that immobility of the farm labour force, as a major underlying structural impediment is likely to be of lessening importance as the inter-flow of labour between farming and non-farming, and rural and non-rural economic activities would tend to increase.

The process of creating a competitive advantage in industries cannot be separated from the human production factors that set the process in motion. Knowledge, that is information enhanced with education, promotes growth of agricultural productivity by improving the entrepreneurial ability of farmers. The development of advanced production and marketing systems in the agricultural sector results from human capacities for innovation, organisation and learning. This development is shaped to a large extent by physical resource constraints and by geographical and historical circumstances.

Increased competition will require redistribution of economic activities from unskilled labour to skilled labour. As the OECD *Jobs Study* points out, people without or with very few qualifications are particularly vulnerable to long-term unemployment (OECD, 1995*d*). Agricultural policy reform is likely both to necessitate and to facilitate the nurturing of skills needed for managing a business in a dynamic

and competitive sector. These include basic managerial skills, technical agronomic and market expertise, organisational ability and business acumen. Farmers will be required to act more like businessmen in other sectors, and their capacity to acquire the necessary skills will largely influence the levels of employment and output in the sector under reform in a particular rural region.

Against this background, it can be postulated that the mechanisms whereby the efficiency gains arising from reform were to be materialised, particularly the attainment of economies of scale, would lead to concentration of economic activity in rural areas which are in the vicinity of large agglomerations (Urff and Boisson, 1996). Such rural areas will generally enjoy a competitive advantage in terms of quality and abundance of resources available such as skilled labour, distance to markets, economies of scale and the overall business environment. They are, in many respects, better equipped as bases for efficient well-organised agro-food chains than remote rural areas. The remote rural areas will, therefore, generally have to overcome serious drawbacks and location disadvantages relating to the future development of their agricultural sector.

However, policy reform may allow the low production costs of peripheral regions to become a more important locational advantage than would otherwise be the case. In addition, environmental restrictions may lead to opposition from non-farming inhabitants if more concentration and an increase in the scale of operation in food processing and marketing is required. The final outcome therefore becomes an empirical matter which depends on a number of factors including the relative magnitudes of economies of scale, transport costs and the size of the upstream and downstream agro-food sectors.

3.4.6. Conclusions

The agricultural policy reform process raises important questions concerning the likely impacts on the viability of rural areas, particularly the consequences for rural incomes, employment and land use. Agricultural policy reform will give rise to continuing and, in many cases, opposing adjustment pressures throughout the agro-food sector. Relative costs within and between regions and the geographic pattern of economic activity will alter. Economic efficiency gains will be achieved and consumer prices would decline if upstream and downstream agro-food sectors also rationalise.

In the long run, resource allocation will be improved by the transfer of labour, capital and other resources from agriculture to more competitive occupations within or outside agriculture. However, in the short run, the transfer of labour and capital from the agricultural to other sectors is not instantaneous and may create considerable hardship for the more marginal farmer and for those who find it difficult to adjust. As the social costs of adjustment usually become apparent rather quickly, whilst the benefits take time to materialise, it is important to acknowledge that there are costs involved, and that governments have a coherent strategy for dealing with them. Unexpected transitional costs could derail public support and thus the viability of reforms.

Increased efficiency in the use of resources would usually strengthen competitiveness of rural areas and provide a stimulus for lasting development. The adaptation of agriculture to market signals would also enhance integration of farmers into the rural socio-economic fabric. Agricultural policy reform will create incentives to explore new market opportunities which have been masked by output-related support policies. Increased incentives for diversification into new products or value-adding activities to meet consumers' preferences, developing niche markets, and an increase in part-time farming and pluriactivity could allow farmers to stay in rural areas and provide stimulus to rural economic development. These new activities could be in the same rural areas, another rural area or even in urban areas. The pace and time scale of such pressures will vary among sectors, regions and countries.

Given the diversity of rural areas, agricultural policy reform will affect various rural areas in different ways. In general, incomes of farm households in economically integrated rural areas would be affected the most because farmers in such areas were the principal beneficiaries of output-related agricultural support. Nevertheless, in such rural areas, farmers often enjoy multiple-income sources due to economic diversity and will be best equipped to endure reform pressures. Thus, farm workers will have

better opportunities to find alternative employment opportunities within their own rural area. Yet reduced returns on fixed factors of production caused by reform may affect these farms to varying degrees.

On the other hand, remote rural areas often lack comparative advantages and have handicaps such as peripheral geographical location and low population density which may isolate their economies from the mainstream of the national economy. Farmers are generally old and lack necessary managerial skills. The conditions for non-agricultural economic development are also unfavourable due to their peripheral position, poor infrastructure and unattractive investment opportunities. Thus, possibilities to compensate for the loss of farm employment are rather limited. An accelerated outflow of agricultural labour and a fall in agricultural incomes could lead to acute local and regional problems, especially those rural areas which are highly dependent on agriculture. Nonetheless, these pressures would tend to accentuate existing trends in farm structure, rather than fundamentally alter them.

Box 3.3. **Selected empirical studies on the effects of agricultural policies on rural economy**

Bernat and Hanson (1995): Using a combination of national-level Computable General Equilibrium (CGE) model and "top-down approach" of regionalisation, the study estimates the national and regional impacts of removing deficiency payments in the United States. The study indicates that elimination of the deficiency payment programme would result in efficiency gains at the national level, but because of reallocation of resources, rural (non-metropolitan) regions would lose and urban (metropolitan) regions would gain. Output and employment in rural areas would decline due to losses in farming, food processing, non-durable manufacturing, and services, but these losses are moderated by gains in rural durable manufacturing and construction. Rural areas in the North Central region are the most severely affected.

Doyle, Mitchell and Topp (1996): The paper assesses the effectiveness of agricultural support policies in sustaining wider rural development in the Scottish region of Dumfries & Galloway in the United Kingdom. It employs input-output and econometric techniques to estimate the spatial distribution of the income and employment effects and not just the global regional increases. The region is predominantly rural and the agricultural sector is representative of Scottish agriculture as a whole; it also contains a reasonably diversified industrial base. In 1993, agriculture accounted for 14 per cent of the region's output and 12 per cent of all farm support payments. It was estimated that in 1993 the effect of reducing farm support payments by 10 per cent would have been a fall in regional farm output of about 5 per cent, lower regional income by £24.4 million, while employment would have been reduced by as much as 1 400 jobs. This very high employment effects reflect the high estimates of the employment multipliers for the cattle and sheep sectors; halving these multipliers reduces the estimated job losses to nearer 900 jobs. Every £1 increase in agricultural output increased regional incomes by 1.25, while every job created in farming increased overall regional employment by 1.38. The results indicate that agricultural support payments increase total regional income by nearly twice as much and potentially create one job for every £3 000 to £5 000 of support. However, although the payments appear effective in stimulating the wider social and economic development of rural areas, a considerable proportion of the ultimate benefits accrue to urban areas. Agricultural support expenditure tends to be the highest in the most economically deprived rural areas. As such, these rural areas will experience the greatest reduction in output per full-time farm worker as a result of a 10 per cent reduction of agricultural support. However, taking account of the secondary consequences of reduced farming incomes on agricultural suppliers, the final impact of changes in farm support is more widely distributed and the more urban areas, where manufacturing and service business are generally concentrated, apparently experience significant negative economic impacts. The study concludes that insofar as the losses from declining farm support are not exclusively concentrated in the most rural areas, the implication is that the ultimate beneficiaries of continued agricultural support are not clearly the most disadvantaged areas in the region.

Léon and Quinqu (1995): The paper examines the effect of the 1992 CAP reform, which sought to reduce agricultural production whilst compensating farmers' incomes, at the regional level with an applica-

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tion to the French regions. In particular, it addresses the consequences of the reform on the distribution of agricultural value added among the regions and the impact on the technologies used in the various types of farms. The results show that the reform would not considerably change the distribution of value added among the French regions, when direct payments are taken into account. French producers and regions specialised in cereals and oilseeds would not actually be disadvantaged by the reform, when compared with livestock or other crop-oriented regions and producers. The compensatory payments counterbalance the losses of value added due to set-aside and cut in support prices. Concerning the intensity of production, the results suggest that the CAP reform is likely to provide incentives to adopt factor-saving practices in most productions, except in pig and poultry where the effect seems to be neutral, and in milk production, the intensification of which being also boosted by the compensation system.

Kilkenny (1993): The paper uses an inter-regional urban-rural computable equilibrium model based on a fully articulated rural-urban social accounting matrix (SAM) to investigate the effects of terminating coupled support in the United States on household incomes, employment, and farm and non-farm economic activity. It shows that the rural non-farm economy is highly dependent on the level of farm support. Farm subsidies stimulate some rural activity and that their removal would probably result in localised short-run losses. However, it also shows that farm subsidies undermine other rural activity, and that the benefits of increased farming do not outweigh tax plus efficiency costs economy wide. Terminating production-linked farm subsidies causes a decline in employment and income in the rural farm and non-farm sectors. This decline is especially strong under the assumption that all production factors are owned locally. Under the assumption of more spread factor ownership, that is, urban households own rural land, the economic incidence is less severe in rural regions as effects are distributed more widely among household groups. In both scenarios, termination of farm subsidies causes a decline in rural real product, albeit the rise in urban real product outweighs rural loss. The study also considers the effects of ceasing decoupled support. It shows that if decoupled subsidies are terminated, the rural non-farm household sector will be adversely affected. As the effect on resource use is lower with decoupled support, farm output will be little affected. Terminating decoupled subsidies would favour investment-goods producing sectors, because the decrease in farm subsidies would reduce the drain on available savings. That is, rural purchasing power would be reduced to the benefit of urban investors and probably result in localised short-run losses.

Rural Development Commission (RDC) (1996): The study develops a methodology to estimate the employment impact of changing agricultural policy, with a particular focus on the effects of the 1992 CAP reform, both at the national as well as regional level. The methodology entails the development of an employment module linked to a specific simulation model. This employment module uses input-output techniques in conjunction with official employment statistics to calculate the effects of changes in agricultural policy both upstream and downstream of farming. It also distinguishes the effects that are felt in the ancillary industries both upstream and downstream. In terms of the effects on farm employment the study finds that the short -run impacts will represent only about one-third of its effects in the longer-run. The study confirms that farm family labour is more ''sticky'' than hired labour and even in the longer run is more likely to remain in farming by experiencing underemployment or even disguised unemployment. Concerning the effects on employment in ancillary firms and elsewhere in the economy, the analysis reaffirms the fact that agriculture has strong vertical linkages both upstream and downstream and thus any change in agriculture will have repercussions that will be felt throughout the economy. Downstream effects were found to be larger than the upstream effects.

As a result of the 1992 CAP reforms, the study shows that there will be loss of 5 400 full-time farm jobs, 3.7 per cent of total, over a three-to-four year period. Two-thirds of the burden of these job losses would fall on the hired farm labour. The total number of farm jobs affected closer to 8 000 because of part-time and seasonal work. However, the effects of the reforms is rather smaller than the underlying long-term trends. Moreover, reforms could affect up to 156 000 jobs in ancillary industries such as agro-chemicals and food processing. The upstream and downstream effects are more important than the effects within farming itself. The largest ''first round'' employment impact of all will be found downstream of farming among those firms involved in the transport, initial handling and processing of farm products. The greatest ''first round'' effects upstream of farming will be felt in the relatively labour intensive service sector such as machinery repairs and are most likely to be found in relatively small firms based in rural areas. There would be considerable variations in the size and nature of the impact between different regions, but the loss of farm jobs would be concentrated in the east of England where arable farming predominates.

IV. TOWARDS A CONSENSUS ON POLICY RESPONSES

4.1. MULTIPLE RURAL DEVELOPMENT OBJECTIVES

- *A clear understanding of the underlying economic processes which generate disparities in the development of rural areas is necessary for identifying coherent rural development objectives and policies.*
- *Rural policy goals should be consistent with the overall national policy objectives.*

Rural development is a dynamic concept, encompassing multiple objectives such as equalisation of incomes of rural and urban populations, equal access to social services, creation of equal employment opportunities and protection of rural amenities. Justification for public intervention rests on the belief that the capacity of rural areas to sufficiently adapt to changing circumstances is sluggish because of market failures of various kind. The economic performance of rural areas is below par because of problems of economic structure and/or geographical peripherality.

Policies intended to counter disparities in economic performance between regions have been a feature of many OECD countries for long time. These have been rooted in a widespread belief that living standards and employment prospects in any one region or locality should not fall too far behind the national average. Nevertheless, the causes of regional growth differentials are, in general, poorly understood.

Spatial goals are not necessarily consistent with national goals and the pursuit of spatial equity as a policy goal does not always lead to the achievement of the more fundamental goal of social equity for the country as a whole. For example, the objective that rural/urban economic disparities should be reduced on equity grounds is valid only if there is direct relationship between spatial equity and social equity. A decline in the average income in a given rural area could occur with the improvement of income distribution within that area. Likewise, stability or even increase in population in a given rural area could occur with an increase in unemployment and social marginalisation. Consequently, rural development objectives should not be defined purely in spatial terms independently from the overarching social and economic processes which are occurring in a country.

Rural problems could be attributable not so much to intrinsic features of rural areas themselves but to the way in which a complex set of national and global economic environment and technological forces impinge on different types of rural area. Many of the economic and social problems in rural areas such as lack of employment opportunities, depopulation, inadequate provision of social services exist in a wider context. This implies that rural development objectives should be seen first, within the context of overall national objectives rather than within a distinctly ''rural'', as distinct from an urban, framework. An important consideration in the design of policy is how to strive for the right balance between the specifics of rural area problems and the more general processes which affect local socio-economic fabric.

4.2. POLICIES TO NURTURE AGRO-FOOD'S ROLE IN RURAL DEVELOPMENT

- *Economic efficiency and social aspects of agricultural policy must be clearly distinguished.*
- *Agricultural policies should aim to enable the sector to respond promptly and flexibly to new opportunities, while at the same time dealing with any problems of market failure directly.*

4.2.1. Policies to facilitate factor market mobility

- *Sufficient factor mobility will be of primary importance in the adjustment process.*
- *Appropriate cross-sectoral policies, tailored to complement agricultural policy reform, could be desirable to accelerate adjustment in rural areas.*

For agricultural reform to be successful, factors of production should be sufficiently mobile. Although reform would induce movements within and among sectors, some factors might be unable to adjust to new conditions, particularly in the short run. Many OECD Member countries, contemplating agricultural policy reforms aimed at reducing levels of support are finding it difficult to introduce such measures because of the potential negative impacts they could have on the viability of many rural areas. It is feared that the advent of reform would lead to sharp declines in farm incomes in the short-run with detrimental consequences for the farming populations and for many rural areas. The central point of this argument rests primarily upon the rigidities of factor markets in agriculture and the rural economy. This inability points to market and/or government failure, which leads to inefficiency and loss of economic welfare. Elimination of barriers to factor mobility should permit a better allocation of resources and thus contribute to an improved economic performance.

In addition to policies, adjustment of resources is influenced by regional, local and individual farm household circumstances. Many farmers, for example, face strong impediments such as advanced age, few non-farm skills, low educational attainment, lack of alternative job opportunities and high cost of moving. Such impediments will leave some farmers no choice but to continue farming, despite dwindling returns. Demographic forces and natural attrition, particularly through retirement, may have more effect on them than will agricultural reform. Other farmers may have little choice but to continue in their present occupations because of pervasive high unemployment in the economy.

Many farm specific assets are also too specialised to find uses in other sectors. Moreover, land markets in OECD Member countries operate within complex institutional structures relating to inheritance and types of tenancy (OECD, 1998*b*). Regulations vary between OECD Member countries so that a given change in agricultural policy may have rather different consequences for land use between rural areas. Many regulations restrict or control land holding or farm size, circumscribe other economic activities in an area, or give special tax treatment to landholders. Difficulty in converting these assets to other uses, in particular because of institutional impediments, may accentuate the impact of a decrease in support on asset values. In addition, imperfect information could be a major barrier to capital inflow across rural regions.

Policies to promote adjustment within the framework of broad agricultural policy reform have been studied by OECD (OECD, 1994*c*). OECD Member countries implement various labour market measures. These include training or re-skill programmes, social security safety nets, direct employment creation and early retirement schemes. The measures entail, to differing degrees, both economic efficiency objectives and equity elements. Direct income support measures for farm households could provide important benefits. They would reduce the immediate pain of adjusting to agricultural policy reform, encourage more efficient allocation of resources and also respond to equity considerations. As the 1987 OECD Communiqué pointed out, direct income support measures are most suited to farmers with low incomes, to those in disadvantaged areas and those most affected by agricultural policy reform. Direct payments for structural adjustment can be used to encourage factor reallocation necessitated by reform and to alleviate some of the impediments to this reallocation.

To be efficient and equitable, direct income support measures should be granted within a context of reduced assistance, should be complementary to reforms that improve the functioning of factor markets and participation should be voluntary, well targeted to stated objectives and available to all

eligible farmers. Payments to facilitate structural adjustment should normally be limited to a transitional period, while payments to encourage or account for environmental public goods or to guarantee minimum incomes could be justified as longer term measures (OECD, 1994*c*).

Direct income payments may have a role in facilitating a shift of farm resources to other uses, or compensation for certain agricultural policy reform. Such payments may reflect equity concerns to a certain degree. However, the pursuit of equity will not necessarily contribute to the sustainable economic development of rural areas. Social protection in the form of entitlements to income transfers carries the risk of discouraging re-entry into the labour market and thus obstructing labour market adjustment. As in other social programmes, relationships between social transfers and incentives to work and labour market participation must be taken into consideration. Social programmes may improve the incomes of those in poverty, but at the same time lead to disincentives to labour market participation. Hence, it could be more desirable to use income support payments to encourage rather than constrain labour market adjustment, with emphasis on education and training measures.

Extending to farmers the national social security net, job-training programmes, pre-pension schemes and other social and employment measures could ease the hardship suffered by those leaving agriculture due to business failure. These measures would allow social problems in farming created by structural adjustment to be dealt with in the same way as is done for other sectors. In some OECD Member countries this is already the case, which limits the need for special compensation schemes following reform.

Where training provision is concerned, it is important to recognise that it is not sufficient to develop technical skills specific to the product or service that the retrained farm worker or farm family worker will supply. In retraining redundant rural workers, there will often be a need to develop generic skills that are required for obtaining alternative employment opportunities in rural areas. However, training that encourages inter-regional mobility engenders a polarisation in regional labour markets. This might exacerbate spatial mismatch as there will be an implicit net transfer of human capital which will be perverse from a rural policy perspective, in that it will be from less-favoured to prosperous regions.

Concerning mobility of assets, barriers that impede their mobility should be removed to make the use of land and capital consistent with agricultural policy reform. Reform could focus on land zoning to allow for environmental and recreational areas; repeal or modification of laws and regulations that discourage new entrants from other sectors; and tax reform to undermine excess rents accrued by land speculators; provision of information, and the screening and monitoring functions of financial institutions to facilitate free flow of capital across rural areas.

Land tenure should also be scrutinised even though it is a complex and sensitive issue in many OECD Member countries. Policies that affect land use are critical to rural development. Proper deregulation of land use could give better incentives to land mobility during agricultural policy reform as well as rural development objectives. In this context local initiatives could be of importance as land left idle as a result of reform could be placed under local and regional management as an environmental protection measure.

4.2.2. Resource management

- *If environmental benefits for rural areas are intrinsically linked to farming, farmers could be encouraged to remain and helped to alter their farming practices to enhance those benefits.*
- *An indispensable precondition for the effectiveness of these measures is that policies should yield environmental benefits above those which would result from ''good'' farming practice.*

Agriculture will continue to affect, in both positive and negative ways, rural landscape and environment, primarily through its management and control of land. Some of the externalities generated by agricultural activities have been borne by rural residents, representing a failure of the market system. Agricultural policy reform will have positive consequences for the rural environment, but it may adversely affect the viability of the environment in those rural areas where traditional farming activities have produced environmentally favourable explicit or implicit "public goods" (OECD, 1998*a*). As such agricultural policy reform may cause some farm land to be abandoned or idled and farm capital such as buildings be left unused, which, in some cases, could lead to deterioration of the environment and amenity values in rural areas.

An important role of policy will be to make such costs and benefits apparent to the farmer. The objective is to ensure that the costs of resources and the environmental consequences of their use are internalised in the decisions of farm managers. Policies which take these dimensions into account would enable resources to be used in a manner that contributes most to the welfare of the society as a whole. Governments should identify the scale and costs of agriculturally generated externalities and develop policies encouraging farmers to adopt sustainable farming practices, which, in some cases, may be low-input and labour-intensive, especially in environmentally vulnerable rural areas. Changes in farming practices with respect to the environment may be brought about by regulations or by voluntary approaches. These policies should produce environmental benefits above those which the farmers would in any case produce without public policies.

4.2.3. Promotion of high-quality regional products

- *Uncertainty about quality can seriously distort the functioning of the market and the well-being of producers and consumers.*
- *Shift of policy emphasis from quantity to quality should enable some farmers to gain income through adding value to farm products and other economic activity.*

Agricultural products have specific geographic origins and at least some consumers, producers and retailers differentiate on this basis. Offering protected status to regional foods is often viewed by policy makers as a mechanism for adding value to products from a particular locality, thereby enhancing the competitive advantage of those products. This may also have positive spin-off effects for the sustainability of the rural economy through the development of local food networks promoting the production and consumption of local produce. Higher consumer incomes have created an increased demand for high-quality products. The challenges lie in the encouragement of high-quality, low-cost production and marketing of regional commodities for domestic and external markets.

The shift from administratively determined prices to prices which better reflect supply and demand conditions will provide increased incentives for the development of quality products. The issue is how to create a market for quality and on how quality is communicated to consumers. Consumers need to be informed about the quality of products and be able to recognise them. As modern economic theory demonstrates, markets operating with imperfect information are rarely optimal in economic terms (Laffont and Tirole, 1993). A market in which consumers do not have sufficient information to make a judgement about quality can lead to "adverse selection" and this, in turn, can reduce social welfare (Akerlof, 1970). If quality cannot be signalled and buyers cannot distinguish the quality of a product, higher quality products cannot get a price premium, and only lower quality products will be offered for sale.

Against this background, policies such as official quality classification or certification schemes can help ensure that information about the origin and nature of products is more reliable and objective, thereby improving the functioning of the market. Since some disadvantaged rural regions often produce products of relatively high quality and are thus the first to suffer from market imperfections due to

inadequate information, certification and labelling schemes run by public bodies can help to reduce these handicaps.

Quality labelling policies can facilitate market segmentation, opening up niches for certain types of producers, particularly those who cannot be competitive on the basis of production costs alone. Labelling allows for setting a range of prices for different quality products, segmenting consumers into different price/quality preference brackets, which improves the functioning of the market. It can also serve to group producers into categories, for example in accordance with their production costs for a given quality. This can enable some regions to specialise in certain quality segments and may help to maintain economic activity in disadvantaged rural regions. In addition to segmenting a market, labelling policies can serve as a market development tool. Promoting labels of origin can play a substantial part in joint drives to market regional assets in agriculture, industry, business and tourism and, by enhancing a region's image, can encourage local development.

However, official designation of a food as regional may not be sufficient to convey valued regionality to consumers if other elements of a food's marketing mix do not convey "authentic regionality" to consumers (Tregeat, Moxey and Kuznesof, 1997). Consumers also infer regionality from a product's physical attributes and place of purchase or consumption. The success of policy of such measures may therefore hinge upon careful considerations of wider marketing techniques for regional foods. Successful competition depends, *inter alia*, on the ability to preserve and enhance consumers' perception of their product's quality premium relative to competing products and on the ability to offer timely delivery of products adhering to rigorous quality standards.

Policies promoting products of high quality by geographical origin can contribute significantly to rural development in countries where there is a demand for goods produced by particular processes, or for regional or traditional goods. They can secure producers' incomes by promoting higher value products; generate employment in rural areas; protect consumers from being misled over origin products. However, such policies must not lead to practices that could jeopardise the reform process or hinder competition.

4.3. COHERENT APPROACH

- *Rural development requires a cross-sectoral approach.*
- *Sectoral and territorial rural development policies should be rigorously assessed against their contribution to the achievement of stated objectives.*
- *Although the appropriate institutional devolution for implementation of policies will depend on the specific circumstances and type of policies, efficiency, equity and accountability should be the guiding criteria.*

Although agriculture may play an important role in rural development, agricultural and rural development policies should not be equated. Agricultural policy is a sectoral policy, while rural policy is a territorial policy directed at the rural economy as an integrated entity. Farming activities may be a large or small part of rural economies, depending on the specifics of a given area and farmers are possible beneficiaries of rural policies. The scope of rural development goes beyond the agricultural sector and is multi-sectoral, including economic, social and environmental aspects. The challenge for policy makers is to identify policy options for strengthening the contribution of agriculture to the achievement of viable rural communities. This may require devising a more integrated policy approach, with its implications for institutional structures, than reliance on "traditional" agricultural policies to address rural economy issues.

Cross-sectoral policies could play a significant role in enhancing agricultural factor mobility and in mitigating some of the adjustment problems that would follow in the wake of agricultural policy reform, primarily by stimulating employment opportunities in other sectors. Just as agricultural policy reform

can contribute to rural development, so more effective rural development policies will be important as a complement to successful agricultural policy reform. An important challenge that policy makers are facing is the design and implementation of coherent policies capable of contributing to overall rural development objectives without injecting further impediments to adjustment or creating new distortions.

Direct income support measures to farm households, for example, could play an important role in maintaining the viability of certain rural areas. Nevertheless, direct income support to farmers will not necessarily increase total rural employment, although it will increase the welfare of some farmers. A mixture of cross-sectoral policies and direct income support would be the most efficient and equitable for targeted farmers and for rural areas alike. Payments to farm households would be ineffective in speeding structural adjustment in rural areas unless the impediments were reduced and productive outlets were provided for labour, capital and land.

Horizontal policies aimed toward diversification and provision of information and public goods would enhance the efficiency of agricultural policies by providing new outlets for the productive use of resources and dealing with structural impediments directly. Linking agricultural policies to other cross-sectoral policies for rural development makes them more targeted, thus better promoting structural adjustment in rural areas.

If the policy objective is to create employment opportunities in rural areas, then direct income support could be offered to eligible persons provided that they further their vocational or technical training in appropriate fields. Likewise, if the objective is to encourage new recreational or leisure facilities, then agricultural land might be converted to recreation areas. Furthermore, some farm capital such as traditional farm buildings could be converted for tourist accommodation, cultural museums, or similar uses.

For markets to work well, an economy requires a complex web of effective institutions, from basic property rights and well-run legal systems to effective and administrative capacity at the local level. An integrated rural development approach would require government action at different levels. Adequate, well designed and suitably targeted institutional arrangements to create the wider socio-economic and political framework in which local resources and initiatives can be harnessed are crucial. Nevertheless, more refined targeting of payments to differentiated categories of recipients inevitably means administrative complexity. An integrated approach also calls for a greater role for local economic actors in mobilising resources and a combination of "top-down" and "bottom-up" approaches to secure sustained development of rural areas. However, the design and implementation of such an approach must balance the need for greater economic efficiency and structural adjustment with social, equity, and environmental concerns in rural areas.

The main thrust of the integrated approach to rural development must be on upgrading of the competitive position of less-favoured remote rural areas and an improvement in their receptiveness to development. Nevertheless, in economically integrated rural areas the role for government intervention is likely to be limited because in these areas market forces can provide most of the signals necessary for further development.

Governments' concern with lagging development in rural areas implicitly assumes a belief in the existence of a market failure. In these remote rural areas the underlying socio-economic conditions for lasting development may not be in place. The markets are thin and a considerable portion of exchange of goods and services may take place outside the formal level. These areas have a weak economic base and the local economy and the geographic boundaries of the community are essentially the same. Although agriculture might be of major importance in these areas, measures confined to the agricultural sector will be insufficient. Policies should aim at enhancing viable employment opportunities by creating "poles of development" through the stimulation of indigenous potential. For development to be possible in these rural areas it will require the creation of a minimum economic and social structures and basic infrastructure. However, it is important to avoid keeping these areas in a situation of a chronic dependency on government assistance, but gradually help them to build a solid productive base that can be integrated into the larger economy (OECD, 1995*e*, p. 46). Policy initiatives have to strike a

balance between economic efficiency and social equity. Economic efficiency should be the main consideration in selecting and implementing strategies to enhance dynamic competitiveness of rural areas. From the prospective of a concern with rural economic development the critical question is the identification of conditions for which policy intervention is likely to lead to sustainable development of the rural area. While it might be desirable to provide transfer payments to a particular group on pure equity grounds, this should not be confused with economic development of the rural area.

Annex

I. APPROACH AND DATA

As the work of the OECD GCRD on rural indicators has developed a methodology for classifying regions according to their "rurality", this methodology was adopted in analysing structural change in the agricultural sector at the regional level. The methodology distinguishes two levels of geographical detail, local and regional. At the local level, communities are classified as being either "rural" or "urban", while at the regional level, regions are grouped into three categories, *predominantly rural regions*, *significantly rural regions* and *predominantly urban regions*. At the local level, the basic criterion adopted for rurality is the density of population, based upon a threshold of 150 inhabitants per square kilometre (for Japan the threshold of 500 inhabitants per square kilometre is used). At the regional level, the share of rural population at the local level is used. Predominantly rural regions, are regions in which over 50 per cent of the population lives in "rural" communities; significantly rural regions, are regions in which between 15 and 50 per cent of the population lives in "rural" communities and; predominantly urban regions, are regions in which less than 15 per cent of the population lives in "rural" communities (OECD, 1994*b*).

A major problem faced in gathering and grouping the data, however, relates to the lack of data at the territorial level adopted by the rural indicators work of the GCRD. Although data at the sub-national level exist for all Member countries, data on the territorial grid adopted by the GCRD rural indicators has proved difficult to obtain, particularly for the upstream and downstream agricultural sub-sectors. In addition to requesting the assistance of Member countries in gathering data, major efforts were made by the Secretariat to obtain regional data on farm structures from various sources. In particular, a considerable amount of time was devoted in obtaining data for the EU-12 countries from the EUROSTAT Farm Structure Surveys (FSS). These FSS surveys contain a wealth of statistics on farm structures, but the regional grid, in most cases, is more aggregate than that used by the GCRD's rural indicators. For example, Denmark, Ireland, Luxembourg and, up to the 1989/90 FSS Survey, Belgium and the Netherlands, are classified as single regions. Further, the FSS surveys are available only after a considerable time lag. Given that the territorial grid from the FSS base for the data on EU-12 countries is more aggregated than that used by the GCRD rural indicators work, it was decided to group the regions into three categories based on their share of rural population. Accordingly, in the cases where FSS regional agro-structural data were used for the EU-12 countries, predominantly rural regions are considered to be those with a share of rural population more than of 50 per cent; significantly rural are those regions with a share of rural population between 15 and 49 per cent and predominantly urban regions are those with a share of less than 15 per cent. These cases refer to Table 1 and 3, and Annex Tables 1, 2, 3 and 5.

Finally, it was not possible in many cases to obtain data on a consistent historical basis as data on the territorial grid of the GCRD rural indicators usually come from censuses which are only available every five or ten years and these years vary from country to country. Additionally, regional boundaries within countries change over time, thereby making data collection and analysis cumbersome. Notwithstanding these data difficulties, it has been possible to work with the territorial grid, as defined above, to extract some key trends and identify policy-relevant issues for consideration.

Obviously, there are strong similarities as well as some pronounced differences between the territorial units in the sample. Rural areas are shaped by a wide range of characteristics including physical (*e.g.* topography, climate and landscape, environmental conditions, water availability and quality, soil conditions), economic (*e.g.* basic indicators of economic vitality such as GDP per capita and

labour markets), social conditions mainly demographic structures and population characteristics (*e.g.* age) and policy conditions (*e.g.* agricultural support policies), which collectively exert an influence on farm structures and farm household behaviour, but which differ over space. However, the analysis was based on simple averages of farm structure variables for the three types of regions based on the population density criterion. Thus, the apparent diversity which characterises rural areas across OECD Member countries has only partly been reflected in the analysis. Structural changes as well territorial structural characteristics are best explained by the interaction of socio-economic variables rather than by any single variable. Thus, to unravel the great diversity that exists within as well as between Member countries it would be desirable to use a range of indicators to delineate regions according to their physical, social, economic and policy characteristics. Classifying territories by a single criterion can blur important socio-economic characteristics. Exclusive use of the population density criterion, for example, can result in boundary cases in which geographic areas with population densities less than the specified threshold level but bordering large urban centres are classified along with remote areas as predominantly rural, and vice versa.[49] In such cases, the importance of the agricultural sector diminishes automatically giving the impression that rural areas do not depend heavily on agriculture (Carabatsou-Pachaki, 1993). Time constraints meant that it has not been possible in the analysis undertaken for this study to reflect other socio-economic criteria such as the state of development of the regions (*i.e.* GDP per capita, education, age, etc.) and policy environment so as to group regions according to a range of criteria. Thus, in future work it would be desirable to elaborate territorial diversity by explicitly taking into account these characteristics.

II. DEFINITION OF CONCEPTS

The agricultural sector is viewed as encompassing the entire food and fibre system: primary sector (farming, hunting, forestry and fishing), downstream (manufacturing and distribution and includes food processing, transportation, and wholesale and retail trade) and upstream sub-sectors (agricultural services, agricultural input industries).

Farming

Austria: data include agriculture and forestry.

Family farm labour

Canada: it includes unpaid family workers as well as self-employed persons who operate a corporate farm and who are usually coded to be paid workers in their corporation.

EU: it includes the holder and holding manager and members of the holder's family (*i.e.* holder's spouse, other members of the holder's family.

Non-family farm labour

Canada: it refers to paid workers.

EU: all persons doing agricultural work for and paid by the agricultural holding other than the holder and members of his family.

Japan: it comprises labour employed for more than 7 months, labour employed temporarily and casual labour.

Full-time

Austria: farm owners and their wives who spend 90 per cent or more of their working time on the farm.

Canada: refers to census-farm operators who spend 1 to 99 days of off-farm work.

EU: includes persons who spend one or more annual work unit (*i.e.* 2 200 working hours) on the farm.

Japan: farm households which have no household members engaged in non-farm employment.

Norway: farm holders who derive at least 90 per cent of net income from the holding.

Other gainful activity

Austria: it refers to the number of owners who spend more than 50 per cent of their time in off-farm activities.

Canada: farm operators less than 65 years old reporting some days off-farm work.

EU: every activity other than activity relating to agricultural work carried out for remuneration. This includes gainful activities carried out on the holding itself (accommodation for tourists) or on another agricultural holding as well as activity in a non-agricultural enterprise.

Norway: it refers to work off-holding by holders and spouses.

Off-farm income

Austria: it only includes full-time farmers.

Canada: it includes wages and salaries (including wages from working on the family farm or another farm), non-farm self-employment income, investment income (including dividends from a farm corporation), pensions and government transfer income.

Japan: it includes receipts from forestry, fisheries, commerce, etc., salaries and wages, rent of leased land and investment income, income from off-farm employment, where such employment required living off-farm for at least one month, state pensions and social transfers, subsidies for agricultural and forestry equipment, receipts from agricultural insurance and receipts from the disposal of disused goods.

Norway: it refers to income from forestry and fisheries, wages and salaries, and income from other industries.

NOTES

1. To take account of the continuity between rural and urban areas some researchers have calculated an index of rurality. See for example Cloke and Edwards (1986).

2. However, the work on rural indicators undertaken by the GCRD, takes a somewhat different approach, since it covers the entire Member countries' territory, including urban centres, and is based strictly on population density (OECD, 1995*e*, p. 14).

3. As has been pointed out by Freshwater and Ehrensaft (1990), rural areas are characterised by macro-diversity and micro-specialisation.

4. However, in some OECD countries rural population is increasing. In England, for example, while metropolitan areas suffered a 4.6 per cent decline in population between 1981 and 1991, remote rural areas witnessed a rise of 10.2 per cent.

5. However, indicators on rural earnings have not improved, rural real household incomes have declined and rural poverty rates are higher now than at the beginning of the decade.

6. The European's Parliament's Report – the Hyland Report – issued in 1996 on European Rural Policy and the creation of a European Rural Chapter stress that the overall objective of rural policy is to develop and maintain rural communities that are viable in the long term.

7. In Canada and the United States, for example, two-thirds of government support to farmers is accrued by the large farms (*i.e.* those with annual sales $100 000 and over). Similar distributional effects apply in many OECD countries.

8. In addition to the market links between agriculture and non-farm sector described above there are non-market links such as the production and utilisation of public goods and through externalities.

9. There is an extensive body of literature on the sources of industry location. For a succinct review and contribution see Krugman (1995) and Kusmin (1994).

10. The inter-relationship of farm structure and the local community level has been scrutinised by the academic community. For a comprehensive review of the literature see Carlin and Saupe (1993) and Swanson (ed.) (1988).

11. Unfortunately due to unavailability of regional data it was not possible to look at other aspects of farm structures such as input mix and financial conditions of farmers.

12. In the United States and Canada economic size is often described in terms of output, while in the European countries farm size is commonly expressed in hectares and recently the economic size based on the ESU is increasingly used. A farm has an economic size of 1 ESU if its total ''standard gross margin'', that is production minus certain variable costs, has a certain value in ECU.

13. In the EU-12 there were 622.5 thousands fewer farms between the 1989/90 and 1987 Farm Structure Surveys.

14. Austrian farm data in general comprise farming and forestry, contrary to the EUROSTAT definition which excludes forestry.

15. This refers to census-farms. In contrast, the number of commercial farms has increased.

16. This aggregate picture disguises a more dynamic process in certain localities. Available evidence suggests that loss of arable land to urban and other (*e.g.*, transport) uses has been compensated for by improvement and conversion of other land from grass to crops (Whitby, 1991). Afforestation and land abandonment have largely confined to the remote rural areas.

17. In the EU-12, according to the 1989/90 EUROSTAT Farm Structure Survey, 54 per of farm holdings are situated in less-favoured area and occupy 50 per of total utilised agricultural area. These figures represent an increase from those reported in the 1987 Farm Structure Survey (*i.e.* 44.7 per cent of farms and 44 per cent of utilised agricultural area). With the exception of Germany and Ireland, average farm size in hectares is larger in less

favoured areas (or mountain areas) than in normal areas. Thus within the EU, the less-favoured areas are characterised by more extensive use of land.

18. More than half of farms of more than 100 hectares in rural areas are found in the non-adjacent rural areas.

19. A similar pattern emerges if changes in the distribution of farms is expressed in terms of gross farm revenue. In Canada, the number and proportion of small farms with less than C$10 000 in revenue and mid-sized farm with C$10 000-99 999 in revenue (both in nominal terms) declined.

20. Changes in the distribution of farms as measured by economic size show a similar pattern to that shown by changes in the average hectares. In the EU-12, only 17 per cent of farm holdings are of more than 16 ESU and 42 per cent of holdings less than 4 ESU. In Greece, Italy, Portugal and Spain more than half of the holdings are of less than 4 ESU (Annex Table 6).

21. According to the 1989/90 FSS Survey the highest average size in hectares are found in farms which are specialised in field crops-grazing livestock combined, cattle and sheep farms and the smallest in farms specialised in horticulture and permanent crops. However, in terms of the economic size, the largest average size is for granivores farms, followed by horticultural and dairy farms.

22. An alternative way of unravelling the regional similarities and differences in farm production specialisation is to classify farm types by gross revenues. Unfortunately such data are not readily available.

23. In the United States there has been a 65 per cent decline in hog farms over the 1980-94 period. It is argued that if present trends prevail, today's pork volume in the United States could be supplied by twelve plants and about fifty producers (Hurt, 1994).

24. In the EU-12, for example, cereals occupied as much as 30 per cent of agricultural land (EUROSTAT, FSS Survey 1987).

25. Caution should be exercised in making cross-country comparisons due to differences in definitions. In Canada, for example, hired labour includes paid family labour and an increase in hired labour could simply reflect a shift from unpaid to paid workers.

26. Participation in off-farm work could include, *inter alia*, one or more family members taking part-time work off-farm, investment in non-farm assets, involvement in further education or re-training, etc.

27. Caution should be exercised in making cross country comparisons of part-time farmers since OECD Member countries use different definitions (see Annex).

28. According to an OECD farm household income study, in most OECD countries, the single largest source is wage and salaries (OECD, 1995*a*).

29. The Arkleton Trust study, which examined farm household adjustment in 24 regions in 12 Western European countries, found that in 1987, on average 45.5 per cent of farm households had a regular off-farm activity, out of which 34 per cent had more than a half of their income from non-agricultural sources, although the proportion varied enormously between the study areas (Fuller, 1990).

30. The ability of part-time farmers to earn high incomes compared to full-time farmers and other rural residents is confirmed by numerous studies. See Gasson (1988) for a comprehensive survey of the literature.

31. Further, to the extent that the farm sector has become more integrated with the rest of the economy, it has also become more susceptible to changes in the overall economic environment in which it operates.

32. The dairy industry was found to be the most rural, with 62 per cent of its employment being in rural areas.

33. The wholesale and retail trade had strong job growth, expanding by 6.1 million jobs (about 80 per cent) during 1975-91. During the same period, as the national economy expanded, rural economies in general, and agro-food economies, in particular, expanded as well. Moreover, during the 1980s, non-metro growth in non-agricultural jobs slowed and employment in nearly every agro-food sector declined at the national level. Nevertheless, employment losses in US farming and its closely related industries were more than offset by job gains in industries that sell agricultural products, provide agricultural services or indirectly related to agriculture (Majchrowicz and Salsgiver, 1993).

34. If the sample is typical of the whole country, then an agricultural work force of 567 000 farmers and farm workers suggests a rural work force dependent on agriculture of 270 000.

35. A SAM is a unified way of presenting socio-economic data in a comprehensive and consistent manner and studying the interdependence of various sectors in an economy. It represents a snapshot of the economy during a given period and explicitly captures the economic interrelation of production activities, returns to factors, and household income distribution. Its structure imposes a conceptual discipline on the organisation of data and the specification of economic behavioural relationships.

36. In the EU, more than 210 000 farmers and agricultural workers will be assisted through encouragement of early retirement for the 1993-97 period. Support accorded to downstream processing and marketing of agricultural produce measures account for most of the payments deployed under Objective 5*a*.

37. Following the accession of Sweden and Finland Objective 6 has been established for the problems of very sparsely populated areas. This covers 0.4 per cent of the EU population and accounts for 0.5 per cent of total financial resources.

38. The relationship between size, as measured by gross sales, and farm household income is generally positive but not proportional because the cost structure of farms may differ according to their size and because off-farm income represent a significant share of total income of farm households, in particular for small farmers, but also for professional farmers (OECD, 1995*a*).

39. As shown in Annex Tables 4 and 5, the average economic size of mountainous areas in the EU-12 is about 40 per cent of the EU-12 average. For Canada, the Northern Hinterland areas are only 60 per cent of the national average.

40. In Switzerland, professional farmers are defined by a set of very restrictive criteria, one of them being that off-farm income should not represent more than one-third of total household income.

41. Under conditions of price-inelastic demand, quantitative restrictions on inputs can increase revenues to farmers.

42. In addition to the static effects of supply control measures, there is the dynamic effect of research and development. Over time, innovation has shifted the focus to production techniques that substitute intermediate inputs for land (OECD, 1995*b*). This is largely because land prices have risen under the impact of farm support, encouraging new technology to be more land-saving in nature than would otherwise be the case (Offut and Shoemaker, 1990).

43. It also depends on the extent to which the general public demands externalities and public goods such as the maintenance of traditional environment and way of life.

44. These are: 62 Objective 1 programmes; 82 Objective 5*b* programmes, 36 programmes for Objective 5*a*; 101 LEADER programmes and; 130 programmes under agri-environmental Regulation, reforestation and early retirement programmes.

45. For the EC, this objective is formulated Article 39 of the 1957 Treaty of Rome: ''to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture''.

46. Evidence demonstrates that in the near future a considerable part of the present area of agricultural land will no longer be needed for agricultural production and will be available for other uses. Estimates of the surplus area vary depending on developments in the demand for food and other uses of agricultural raw materials, the productivity of land used in agriculture, the demand for other land uses as well as developments in agricultural policies. In a study of the Netherlands Scientific Council for Government, scenarios based on alternative assumptions have been analysed resulting in estimates of the surplus area varying from 20 to 60 per cent.

47. In New Zealand agricultural policy reform in the 1980s resulted in a sharp decrease in land under crop, which fell from 21 million hectares to 18 million hectares in 3 years. In Sweden, agricultural policy reform in the early 1990s led to a small decrease in land under crop (OECD, 1998*b*).

48. It should be noted that the mainstream of economic thought regarding the inter-regional allocation of economic activities and the evolution of regional disparities does not provide a clear-cut answer. According to the standard international trade theory, the reform process itself promotes convergence in regional per capita incomes. However, from an economic geography perspective, that is, inclusion of transport costs, and taking into account the presence of economies of scale in production, imperfect competition and product differentiation, the new trade theory predicts that regional convergence is not automatic and the issue becomes an empirical matter rather than one which can be unequivocally predicted by theory (de la Dehesa and Krugman, 1992). Within the neo-classical tradition, the so-called endogenous theory of growth points also to the possibility that the poorer regions could continue to grow at slower rates than richer regions (Grossman and Helpman, 1991). In contrast to the neo-classical theory strands, for the ''cumulative causation school'' regional disparities tend to increase over time as a few leading regions exploit some initial advantage that becomes self-sustaining and self-reinforcing so that the initial advantage cumulates and grows stronger over time (Myrdal, 1957; Kaldor, 1970).

49. For example, when applied to Greece, this definition results in semi-urban communities and some urban cities which are district capitals being classified as rural communities because of their vast administrative territory (Carabatsou-Pachaki, 1993).

Annex

ANNEX TABLES

Annex Table 1. **Average economic size (ESU)**

	1985	1987	1990	1993	Annual average growth rate (%)
Canada[1]	43 889		57 371		5.5
Predominantly rural	42 812		55 432		5.3
Rural Metro-adjacent	*46 801*		*60 729*		*5.3*
Rural non-adjacent	*39 585*		*50 929*		*5.2*
Northern Hinterland	*23 509*		*34 036*		*7.7*
Significantly rural	48 381		65 088		6.1
Predominantly urban	45 158		60 551		6.0
Belgium	23.8	23.9	28.2	39.0	6.3
Denmark	30.9	34.9	37.3	48.7	5.8
Germany	17.3	16.7	19.0	22.5	3.3
Predominantly rural	–	–	–	–	–
Significantly rural	18.5	17.9	20.3	23.9	3.3
Predominantly urban	15.5	14.9	16.9	20.4	3.5
France	20.7	21.8	23.7	29.2	4.4
Predominantly rural	21.3	22.3	24.3	29.6	4.2
Significantly rural	17.3	18.6	20.0	25.5	5.0
Predominantly urban	34.2	36.5	38.5	47.2	4.1
Greece	4.2	4.1	4.4	6.2	4.9
Predominantly rural	4.6	4.5	4.4	6.2	3.7
Significantly rural	3.1	3.1	4.7	4.9	5.9
Predominantly urban	..	..	3.4	4.9	12.8
Ireland	8.7	8.8	11.6	15.0	7.0
Italy	7.2	7.4	7.5	7.6	0.7
Predominantly rural	5.2	5.5	5.5	5.7	1.1
Significantly rural	7.1	7.5	7.7	7.6	0.8
Predominantly urban	8.2	8.0	7.8	8.5	0.5
Luxembourg	18.8	20.0	22.9	29.0	5.6
Netherlands	43.8	45.2	51.6	69.1	5.9
Predominantly rural	–	–	–	–	–
Significantly rural	..	..	50.7	69.6	11.1
Predominantly urban	..	..	51.8	69.0	10.0
Portugal	..	3.9	3.9	5.0	4.4
Predominantly rural	..	3.6	3.7	4.3	2.8
Significantly rural	..	4.1	4.0	5.7	5.7
Predominantly urban	–	–	–	–	–
Spain	..	5.3	5.6	8.3	7.7
Predominantly rural	..	6.1	6.2	9.1	7.0
Significantly rural	..	4.7	5.2	7.8	9.0
Predominantly urban	..	5.8	5.7	8.2	6.1
United Kingdom	41.5	41.7	35.4	38.0	–1.1
Predominantly rural	–	–	–	–	–
Significantly rural	37.9	37.5	32.2	35.4	–0.9
Predominantly urban	48.2	49.6	41.4	42.5	–1.6
EU-12	–	10.8	11.4	14.3	4.8
LFA	..	7.0	7.2	8.9	4.1
MA	..	4.2	4.9	5.9	5.8

LFA = Less favoured areas; MA = mountainous areas.
Note: See Annex for the methodology.
1. The data for Canada refer to the average gross margin in 1985 Canadian dollars for 1986 and 1991.
Source: OECD Secretariat's estimates based on national sources and EUROSTAT FSS for EU-12 members.

Annex Table 2. **Farm structures by region, 1990**

		Physical average size (ha)	Economic average size (ESU)	% of farms	% of large farms	% of small farms	Farms by main farm type (1990)
Australia		3 830			7	87	Mixed farms
	PR	4 323		79	8	86	Mixed farms
	SR	2 249		19	9	86	Cattle
	PU	55		2	1	99	Other farms
Austria		12			30	50	Forage
	PR	13		72	29	51	Forage
	SR	12		27	31	48	Forage
	PU	9		1	15	73	Forage
Belgium		16					Dairy
	PR	–	–	–	–	–	–
	SR	–	–	–	–	–	–
	PU	16					Dairy
Canada (1991)		242	57 371[1]				Grains and oilseeds
	PR	261	55 432	76			Grains and oilseeds
	SR	133	65 088	16			Grains and oilseeds
	PU	120	60 551	8			Cattle
France		31	24		35	53	Field crops
	PR	30	24	70	40	47	Field crops
	SR	33	20	27	23	68	Permanent crops
	PU	40	39	4	47	40	Field crops
Germany		19	19		32	49	Dairy
	PR	–	–	–	–	–	–
	SR	20	20	62	22	65	Dairy
	PU	16	17	38	28	54	Dairy
Greece		4	4		15	45	Permanent crops
	PR	4	4	74	16	46	Permanent crops
	SR	4	5	26	7	41	Field crops
	PU	2	3	0	35	43	Permanent crops
Italy		6	8		11	78	Permanent crops
	PR	10	6	10	19	69	Permanent crops
	SR	5	7	67	10	79	Permanent crops
	PU	4	8	23	15	64	Permanent crops
Japan[2]		0.9			31	41	Rice
	PR	1.0		38	36	37	Rice
	SR	0.8		47	28	43	Rice
	PU	0.7		16	24	46	Rice
Netherlands		16	52		30	50	Dairy
	PR	–	–	–	–	–	–
	SR	..	51		57	27	Dairy
	PU	..	52		25	54	Dairy
Spain		15	6		13	77	Permanent crops
	PR	27	6	30	19	74	Field crops
	SR	12	5	49	9	82	Permanent crops
	PU	7	6	21	26	49	Permanent crops
United Kingdom		68	35		16	67	Sheep
	PR	–	–	–	–	–	–
	SR	72	32	65	15	77	Sheep
	PU	59	41	35	17	66	Sheep
EU-12		14	11	..	..	..	
	LFA	14	7	54	..	..	
	MA	9	5	27	..	..	

PR = Predominantly rural; SR = Significantly rural; PU = Predominantly urban.
LFA = Less favoured areas; MA = Mountainous areas.
Note: See Annex for the methodology.
1. In 1985 Canadian dollars.
2. The share of large and small farms refers to 1989.
Source: OECD Secretariat's estimates based on national sources and EUROSTAT 1989/90 FSS for the EU-12 members.

Annex Table 3. **Distribution of holdings by economic size (ESU) (1990) (%)**

	< 4 ESU	4 < 8 ESU	8 <16 ESU	16 > 100 ESU	> 100 ESU
Belgium	24	10	13	53	10
Denmark	6	15	18	61	15
Germany	32	14	16	38	14
Predominantly rural	–	–	–	–	–
Significantly rural	29	13	16	41	13
Predominantly urban	38	14	15	33	14
France	28	11	15	45	11
Predominantly rural	26	11	16	47	11
Significantly rural	35	13	15	37	13
Predominantly urban	17	5	12	66	5
Greece	64	20	11	4	20
Predominantly rural	65	20	11	4	20
Significantly rural	58	25	13	3	25
Predominantly urban	80	11	6	4	11
Ireland	43	18	17	23	18
Italy	68	13	9	10	13
Predominantly rural	74	12	8	7	12
Significantly rural	67	14	9	10	14
Predominantly urban	71	12	7	9	12
Luxembourg	25	10	13	51	10
Netherlands	3	12	13	72	12
Predominantly rural	–	–	–	–	–
Significantly rural	3	12	11	74	12
Predominantly urban	3	12	13	72	12
Portugal	80	12	5	3	12
Predominantly rural	83	10	4	3	10
Significantly rural	77	13	6	3	13
Predominantly urban	–	–	–	–	–
Spain	69	14	10	7	14
Predominantly rural	66	14	12	8	14
Significantly rural	72	14	9	5	14
Predominantly urban	69	14	9	7	14
United Kingdom	32	11	12	46	11
Predominantly rural	–	–	–	–	–
Significantly rural	33	11	12	43	11
Predominantly urban	31	9	10	50	9

Note: See Annex for the methodology.
Source: OECD Secretariat's estimates based on Eurostat's 1989/90 Farm Structure Survey.

Annex Table 4. **Distribution of holdings by tenure of operator (%)**

	1975			1987			1990			1993		
	Owner farmed	Tenant farmed	Share farmed	Owner farmed	Tenant farmed	Share farmed	Owner farmed	Tenant farmed	Share farmed	Owner farmed	Tenant farmed	Share farmed
Belgium	27	73	0	32	68	1	33	66	1	33	66	1
Denmark	86	14	0	82	18	0	81	19	0	79	21	0
Germany	71	29	0	64	36	0	57	42	1	54	45	1
France	52	47	2	47	53	1	43	56	0	39	60	0
Greece	..	..	..	77	22	1	76	22	1	75	24	1
Ireland	96	4	0	96	4	0	88	12	0	88	12	0
Italy	78	17	5	80	19	1	81	18	1	78	22	0
Luxembourg	59	41	0	52	48	1	50	49	1	48	52	1
Netherlands	56	44	1	64	35	1	67	31	2	65	34	1
Portugal	..	..	..	66	22	12	69	25	6	70	24	6
Spain	..	..	..	70	22	8	72	20	8	73	21	6
United Kingdom	56	44	0	63	37	0	62	38	0	62	37	1
EU-12	..	..	..	65	33	2	61	36	3	62	36	2

Source: OECD Secretariat's estimates based on EUROSTAT's Farm Structure Surveys (FSS).

Annex Table 5. **Farm labour characteristics by region 1990 (%)**

		Family labour	More than 55 years[1]	Male	Full-time	Family labour in OGA	Full-time by farm type[2]
Australia (1991)		74	..	70	..	..	..
	PR	78	..	71	..	..	..
	SR	69	..	68	..	..	..
	PU	52	..	62	..	..	..
Austria		86	66	78	30	35	..
	PR	88	66	78	31	35	..
	SR	84	66	78	30	35	..
	PU	47	59	73	30	29	..
Belgium		95	51	66	46	26	Dairy
	PR	–	–	–	–	–	Dairy
	SR	–	–	–	–	–	Dairy
	PU	95	51	66	46	26	Dairy
Canada (1991)		50	36	..	62	38	Field crops
	PR	54	38	..	63	37	Field crops
	SR	45	37	..	63	37	Field crops
	PU	34	35	..	57	43	Cattle
Denmark		86	46	71	47	31	Dairy
France		91	44	65	39	22	Dairy
	PR	91	43	64	40	21	Dairy
	SR	92	48	66	33	25	Permanent crops
	PU	85	41	66	51	16	Field crops
Germany		94	35	63	29	32	Dairy
	PR	–	–	–	–	–	–
	SR	95	33	63	30	30	Dairy
	PU	93	38	64	26	35	Dairy
Greece		100	54	58	12	21	Sheep
	PR	100	55	58	13	21	Sheep
	SR	100	50	58	11	22	Sheep
	PU	98	54	62	15	32	Sheep
Ireland		96	45	70	58	31	Dairy
Italy		98	61	60	10	31	Field crops
	PR	98	61	61	9	29	Field crops
	SR	98	61	61	10	32	Permanent crops
	PU	98	60	58	11	29	Field crops
Japan		100	44	82	16	..	..
	PR	100	43	81	18	..	..
	SR	100	44	83	15	..	..
	PU	99	45	84	16	..	..
Portugal		94	58	53	17	32	Mixed cropping
	PR	94	59	54	18	32	Mixed cropping
	SR	94	56	53	17	31	Mixed cropping
	PU	–	–	–	–	–	–
Spain		95	56	68	16	32	Mixed livestock
	PR	94	55	73	15	31	Field crops
	SR	96	56	65	17	30	Mixed livestock
	PU	96	56	72	12	38	Field crops
United Kingdom		70	48	70	51	27	Field crops
	PR	–	–	–	–	–	–
	SR	73	48	71	50	27	Field crops
	PU	65	49	68	52	26	Field crops

PR = Predominantly rural; SR = Significantly rural; PU = Predominantly urban; OGA = Other gainful activity.
Note: See Annex for the methodology and concept definitions. Full-time labour by farm type for the EU-12 countries refers to 1987.
1. For Austria, it refers to male labour.
2. For Canada, it refers to male labour.
Source: OECD Secretariat's estimates based on national sources and EUROSTAT 1989/90 FSS for the EU-12 Members.

Annex Table 6. **Relative importance of farm holder or manager, spouse and other family members in OGA, 1990 (%)**

	Holder/ manager	Spouse	Other family members
Belgium	82	6	12
Denmark	71	29	0
Germany	64	8	28
France	59	22	19
Greece	67	17	16
Ireland	47	29	25
Italy	48	18	33
Luxembourg	51	15	34
Netherlands	0	28	72
Portugal	44	15	40
Spain	57	10	33
United Kingdom	48	26	25

Source: OECD Secretariat's calculations based on Eurostat 1989/90 Farm Structure Survey.

Annex Table 7. **Relative importance of the agro-food sector in the overall economy, 1970-93 (%)**

	1970	1975	1980	1985	1990	1993
	A) Share in GDP					
Austria	..	..	..	..	..	..
Farming	6.9	6.0	5.0	4.1	3.3	3.1
Upstream	..	..	..	..	..	..
Downstream	4.0	4.1	3.7	4.0	3.8	3.4
Canada	..	..	..	..	..	..
Farming	..	5.2	4.4	3.1	2.6	..
Upstream	..	0.6	0.6	0.6	0.5	..
Downstream	..	..	..	..	..	..
Japan	15.1	14.9	13.2	12.5	11.1	10.9
Farming	5.1	4.6	3.1	2.8	2.2	1.9
Upstream	0.6	0.8	0.7	0.6	0.5	0.5
Downstream	9.4	9.5	9.4	9.1	8.4	8.5
Netherlands	12.6	10.5	8.1	8.9	8.7	8.1
Farming	5.8	4.6	3.2	3.8	4.0	2.8
Upstream	2.4	2.4	2.3	2.4	2.2	2.7
Downstream	4.4	3.5	2.6	2.7	2.5	2.6
New Zealand	..	19.5	17	13.4	14.7	14.3
Farming	..	9.8	7.5	5.6	5.5	5.8
Upstream	..	2.2	2.6	1.7	1.7	1.5
Downstream	..	7.5	6.9	6.1	7.5	7.0
Norway	..	..	..	..	..	..
Farming	..	..	..	3.1	3.4	2.9
Upstream	..	..	..	0.1	0.5	0.5
Downstream	..	..	..	..	..	..
Sweden	..	..	..	5.5	4.7	4.2
Farming	4.0	4.4	3.8	1.6	1.2	0.9
Upstream	..	..	..	1.7	1.5	1.1
Downstream	2.6	2.7	1.5	2.2	2.0	2.2
United States	..	20.3	19.9	16.3	15.2	14.2
Farming	..	1.8	1.7	1.2	1.2	0.9
Upstream	..	3.0	3.0	2.9	3.2	3.2
Downstream	..	3.0	3.0	2.9	3.2	3.2
	B) Share in employment					
Austria	..	..	..	..	..	..
Farming	14.5	13.5	10.8	8.9	8.0	7.0
Upstream	..	..	..	..	..	..
Downstream	2.0	2.1	2.2	3.4	3.3	3.0
Canada	..	..	..	..	..	..
Farming	..	6.5	6.0	5.5	4.6	..
Upstream	..	0.5	0.4	0.4	0.3	..
Downstream	..	..	..	..	..	..
Japan	..	..	..	..	..	..
Farming	..	13.8	..	9.3	7.1	..
Upstream	..	..	..	..	..	..
Downstream	..	10.6	..	12.0	11.7	..
Netherlands	12.7	..	10.0	10.2	9.1	8.9
Farming	6.4	..	5.3	5.5	4.4	3.6
Upstream	2.1	..	2.1	2.1	2.2	2.8
Downstream	4.2	..	2.6	2.6	2.5	2.5
New Zealand	..	18.3	19.5	18.8	18.6	18.2
Farming	..	8.4	8.5	9.7	9.2	9.5
Upstream	..	2.3	3.2	1.7	2.5	1.7
Downstream	..	7.6	7.8	7.4	6.9	7.0
Norway	..	..	..	..	..	..
Farming	..	..	..	5.0	4.8	4.2
Upstream	..	..	..	0.1	0.1	0.1
Downstream	..	..	..	..	..	..

Annex Table 7. **Relative importance of the agro-food sector in the overall economy, 1970-93 (%)** *(cont.)*

	1970	1975	1980	1985	1990	1993
	B) Share in employment					
Sweden	..	..	..	..	5.2	4.3
Farming	8.2	6.5	5.7	4.8	2.5	1.8
Upstream	..	..	..	..	0.8	0.7
Downstream	..	..	..	..	1.9	1.8
United-States	..	22.3	21.9	19.4	19.1	17.6
Farming	..	2.7	2.7	2	1.9	1.7
Upstream	..	2.9	2.9	2.5	2.6	2.3
Downstream	..	16.7	16.3	14.9	14.6	13.6

Definitions and sources:

Austria: *Farming* includes forestry, food processing includes industrial enterprise (> 100 employees), medium enterprises (20-99 employees), small enterprises (0-19 employees); *Österreichisches Statistisches Zentralamt, Statistiches Jahrbuch.*

Canada: *Farming* includes hunting and trapping.
Upstream: farm input supply.
Canadian Input-Output Tables; Data provided by the Canadian authorities.

Japan: *Farming* includes agriculture, forestry (forest food) and fisheries.
Upstream sector: input industries to farming and farm investment.
Downstream: processing (grain milling, butchery and feeding of fishery products), restaurant and distribution industries (transportation and wholesale/retail trade of the products in the farming).
Economic Accounts in the Agro-food industry, MAFF.

Netherlands: 1993 is based on projections made by LEI-DLO.
Farming: for 1970-88 includes forestry and agricultural services, but they are excluded for the years after.
Upstream: supply industries to farming as well as to processing.
Downstream: trade and transportation.
National Input-Output tables. Data provided by the Netherlands authorities.

New Zealand: *Upstream:* input supply industries with a direct input to the farming sub-sector (agricultural services, forestry, food, beverages, textiles, wood products, chemical products, metal products, finance and business services, government services, etc. Also included in this sub-sector is the transport of inputs to the farming sub-sector. *Downstream:* processing includes food, beverages and tobacco, textiles, apparel and leather products. Transport industries are rail, road freight, water, air transport and storage. *SONZA, 1994,* p. 116; MAFF Policy Technical Paper 92/7, p. 53, July 1992, P. Narayan and R. Johnson (ed.).

Norway: *Upstream:* defined as NACE REV1 Code 01-4, *National Accounts.*

Sweden: *Downstream:* food processing; Data provided by the Swedish Board of Agriculture.

United States: *Upstream:* input supply industries with a direct input to the farming sub-sector (*i.e.* agricultural services, forestry, food, beverages, textiles, wood products, chemical products, metal products, finance and business services, government services, etc.). Also included in this sub-sector is the transport of inputs to the farming sub-sector.
Downstream: processing includes food, beverages and tobacco, textiles, apparel and leather products. Transport industries are rail, road freight, water, air transport and storage. *BEA/USDC, Input-Output tables.* Data provided by the US authorities.

Annex Table 8. **GDP contribution of the agricultural sector by region (%)**

	1980	1985	1986	1988	1989	1990	1991	1992	1993	1994
Finland				7.2	7.5	7.3	6.7	6.4	6.3	6.3
Predominantly rural				14.8	15.4	15.2	14.3	13.5	13.6	13.6
Significantly rural				5.0	5.0	4.9	4.5	4.2	4.0	4.2
Predominantly urban				0.4	0.4	0.4	0.4	0.4	0.3	0.3
France										
Predominantly rural								2.4		
Significantly rural								6.0		
Predominantly urban								3.6		
								0.4		
Greece								15.2		
Predominantly rural								25.2		
Significantly rural								18.4		
Predominantly urban								1.8		
Netherlands	5.9	6.1	6.6			5.9	5.6	5.5		
Predominantly rural	–	–	–			–	–	–		
Significantly rural	6.0	5.0	7.3			8.2	7.4	7.2		
Predominantly urban	5.9	6.4	6.5			5.5	5.3	5.2		
Norway					1.8					
Predominantly rural					2.7					
Significantly rural					2.0					
Predominantly urban					0.0					
Portugal						5.8				
Predominantly rural						14.8				
Significantly rural						5.5				
Predominantly urban						1.4				

Source: OECD Secretariat's estimates based on national sources:
Finland: Data provided by the Finnish authorities.
Greece: EUROSTAT, REGIONS Statistical Yearbook, 1995.
Norway: *Economic Accounts at Regional Level: Methods and Data for Norway, 1993,* Statistics Norway.
Netherlands: *Regionale economische jaarcijfers, 1993,* CBS.
Portugal: Data provided by the Portugese authorities.

Annex Table 9. **Disparity indicators for agricultural employment and GDP, by region**

		Employment			GDP		
		Min.	Max.	SDV	Min.	Max.	SDV
Austria	1991	0.7	30.1	7.2			
Canada	1991	0.0	47.6	10.3			
Czech Republic	1995	0.3	10.4	4.6			
Finland	1990	0.7	37.3	9.7	0.4	39.5	9.8
France	1992				0.0	14.4	3.0
Greece	1990	1.2	45.5	13.2			
Iceland[1]	1990	1.7	28.9	8.8			
Iceland[2]	1990	4.6	25.5	5.7			
Netherlands	1992	0.9	4.2	0.9	1.7	9.8	2.2
New Zealand	1991	2.7	32.5	7.5			
Portugal	1990	1.5	84.2	17.1	0.4	24.7	7.1
Spain	1991	0.4	50.5	10.5			
Sweden	1993	0.4	9.0	1.7			
United States	1992	0.0	51.9	8.8			
United States[2]	1992	0.0	30.2	4.2			

Max.: Maximum value; Min.: Minimum value; SDV: Standard deviations.
1. Agriculture and fishing.
2. Food processing.
Source: OECD Secretariat's estimates based on national sources.

Annex Table 10. **Distribution of regions by share of agriculture in employment and GDP (%)**

	%	Employment			GDP			Total number of regions
		< = 4%	> 4% and < 12%	> = 12%	< = 4%	> 4% and < 12%	> = 12%	
Austria	1991	18	40	42				77
Canada	1991	47	30	23				266
Czech Republic	1995	17	59	24				76
Finland	1990	5	27	56	6	32	63	88
France	1992				43	50	3	96
Greece	1990	8	8	85				13
Iceland	1990	13	0	88				8
Japan[1]	1991	11	53	36				46
Japan[2]	1991	0	0	100				46
Japan[3]	1991	96	4	0				46
Netherlands	1992	92	8	0	42	58	0	12
New Zealand	1991	14	14	71				14
Norway	1990				15	3	0	18
Portugal	1990	4	7	89	18	39	43	28
Spain	1991	13	27	60				52
Sweden	1993	75	25	0				24
United States	1992	33	38	29				765

Note: Percentages might not add due to rounding.
1. Primary sector.
2. Food processing.
3. Input supply.
Source: OECD Secretariat's estimates based on national sources.

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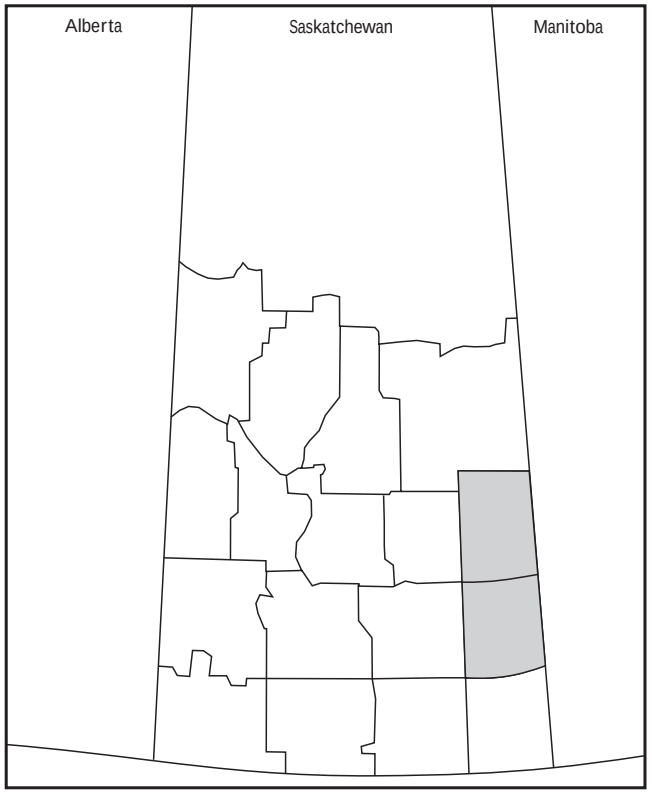
AGRICULTURAL POLICY REFORM AND THE RURAL ECONOMY IN OECD COUNTRIES: CASE STUDIES

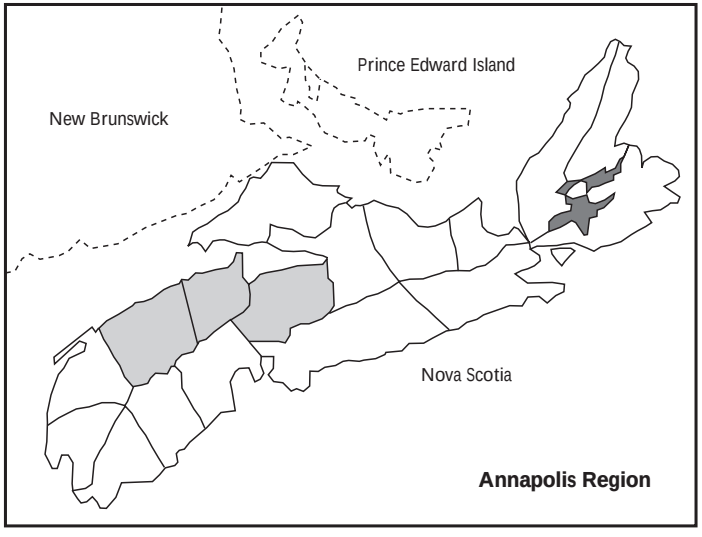
CASE STUDY – CANADA: ANNAPOLIS AND YORKTON REGIONS*

* This study was prepared by the Canadian authorities. It is based on reports prepared by R. Rounds (1997), ''Agriculture and the Rural Economy – Canadian Case Study: The Yorkton Region of Eastern Saskatchewan'' and BICON Consulting Associates (1997), ''Impact of Agri-food Policy Changes on the Annapolis Region of Nova Scotia''.

◆ **CANADA** – *Location of Yorkton and Annapolis regions*



Yorkton Region



Annapolis Region

EXECUTIVE SUMMARY

The study examines the effects of agricultural policies on rural development and focuses on two regions: the Yorkton region of eastern Saskatchewan and the Annapolis region of Nova Scotia. The Annapolis region is a predominantly rural area of just under 18 000 people, and its economy is strong and growing relative to other regions of Atlantic Canada and to most rural regions across Canada. Agriculture employs 7 per cent of the region's labour force. The agri-food sector is highly diversified, producing the widest range of crops and livestock. The region's farm sectors prospered during 1981-91. The Yorkton region is an area of 29 700 km^2 in the Canadian prairies, with a population of 78 000 in 1991. Total population in the region has been declining since the 1940s. Concurrently, the population is ageing. Agriculture is the dominant industry in the region, accounting for 28 per cent of all employment. Manufacturing or processing account for less than 3 per cent of the labour force. Agriculture in the region is not very diversified, and off-farm income is very important.

In the Annapolis region, supply management policy for the poultry and dairy sectors and the Feed Freight Assistance (FFA) programme were the most important agricultural policies. Income support programmes and the Western Grain Transportation Act (WGTA) subsidy were the major transfers to farmers in the Yorkton region during the period 1981-95. These policies favoured export of raw commodities and discouraged local or regional value-added efforts. In 1995, the Government of Canada announced and commenced implementation of a number of major policy changes impacting the agriculture and agri-food sector. The most notable changes concerned reform of the grain transportation support system, including the termination of the WGTA and the FFA. To cushion the impact of eliminating the WGTA subsidies, a number of transition programmes in the form of direct payments not linked to commodities were introduced. The impact of 1995 agricultural policy reforms on the agri-food sector and the economy of the Annapolis region is expected to be less than in other parts of Nova Scotia or the Atlantic Provinces. The supply managed commodities are expected to adapt to the policy reforms with little impact in the short run. The elimination of the FFA will increase feed costs to the region's livestock and poultry producers. While the value of local feed grains is expected to go up, the increase is not expected to have a major impact on local grain production. Higher feed costs will affect the hog sector the most. Crop diversification is expected to accelerate as new or alternative crop opportunities are sought. The food processing sector in the region is well established and, with the exception of the hog processing, a viable part of the economy, accounting for almost as much economic activity as the farm sector. The crop-based processors will be relatively unaffected by the policy reform and are expected to expand. While agri-food is important to the region's business activity, other non-food manufacturing and service activity occupy 85 per cent of the region's labour force. Providing that supply management policies in the dairy and poultry industry remain in effect that over the next five years, reductions in government transfers to the region's farmers are not expected to have a significant impact on the Annapolis region economy and labour force. The termination of the WGTA was a policy change of primary significance to the restructuring of the Yorkton regional economy because it affects both agriculture and the rural communities. Increased transportation costs will reduce margins on grain production for export. Less grain will be exported and, therefore, available to feed livestock or be processed into higher value products. Overall, this should stimulate new enterprises and services, which could reduce population out-migration. New agricultural policies should induce value-added elements both on-farm (*e.g.* feeding grain rather than shipping it) and in rural communities. Some industries based on agricultural raw materials may locate in rural communities if a competitive advantage is offered by location, transportation, or the availability of a suitable labour force willing to work for lower wages. Agri-food diversification, however, will have to be accompanied by development in other industries to stabilise the regional economy. Particularly in the Yorkton region where off-farm income is very important in farm family budgets, diversification of the rural economy is essential to the survival of many farms.

I. INTRODUCTION

The rural areas of Canada, with few exceptions, have long been reliant on the production of primary resources and the subsequent export of these primary resources. This economy is now changing, moving from its dependence on primary production towards more innovative and value-added resource-based industries and new business opportunities. New information technology, new markets, international and domestic pressures and changes to the policy environment, ranging from trade agreements, globalisation of markets, to reduced government resources and the need to diversify and produce more value-added products, set the stage for a number of adjustments and opportunities. These changes are particularly impacting rural areas where agriculture is significant.

Although the agriculture and agri-food sector is always adjusting, the policy framework, within which it has operated for some time, has taken a new direction. In 1995, the Government of Canada announced and commenced implementation of a number of major policy changes impacting the agriculture and agri-food sector. This report looks at the demographic and economic profiles of the Yorkton region of eastern Saskatchewan and the Annapolis region of Nova Scotia during the period 1981 to 1995 and describes the impact of the agriculture and agri-food policies and policy environment during this same period. It provides observations on some of the factors affecting regional economic development over the last decade, as well as some preliminary light on the major current economic and social adjustments, occasioned by the recent shifts in government policy, by technological innovation and by changes in demand and supply patterns.

II. THE ANNAPOLIS REGION OF NOVA SCOTIA

The Annapolis Census Region of Nova Scotia is made up of the counties of Annapolis, Kings and Hants, an area of 8 441 km^2. Population in 1991 was 117 801. The towns of Kentville-Wolfville with a 1991 population of 8 981 are the largest urban area in the region and the major agri-food service centre. The Annapolis region is adjacent to Halifax, the largest urban area in Atlantic Canada with a 1991 population of 330 000.

Farming has been a mainstay of the Annapolis region since the early 1600s when the rich farmlands along valleys of the Annapolis and Avon Rivers were first cultivated. Since those times, the agri-food sector in the region has become highly diversified, producing the widest range of crops and livestock of any farming area east of Ontario. The region now accounts for over one-half of Nova Scotia's agricultural production and is more dependent on agriculture than any other region in the province. At the same time, the region is quite diverse; in addition to agriculture and related economic activity, other high profile components of the economy include gypsum mining, pulp and paper manufacturing, Canadian Forces Base Greenwood, tire manufacturing and Acadia University. A significant number of residents of the Hants County area of the region are employed in Halifax Metropolitan Region.

2.1. Overview of the economic situation

Growing rural population
Viable mixed economy
Increasing labour force participation
Strong transportation and communication infrastructure
Strong agriculture and food sectors
Non-farm activities most important

Population

The Annapolis region, with just under 18 000 people, represents about 1/8 of the population of the province and 0.4 per cent of Canada's people. At 14 persons per km^2, the population density of the

Table 1. **Annapolis region population, 1981-91**

	Total	Urban[1]	Farm	Rural non-Farm
1981	105 382	29 751	5 708	69 923
1991	117 795	34 855	4 360	78 580
Net growth (in %)	14	17	–24	12

1. Those living in an area with at least 1 000 people and a density of at least 400 people per km^2.
Source: Census of Canada, Statistics Canada, 1981 and 1991.

region is less than for the province; however, it is much higher than the nation's average (2.9 people/km^2).

Population growth in the Annapolis region from 1981 to 1991 (14 per cent) was almost double the growth for the province. This growth in population in a rural area is in contrast to most other rural areas of the province and eastern Canada, where the population is either declining or holding steady. Factors contributing to the rising population of the Annapolis region include a growing mixed economy providing non-farm employment opportunities, a favourable climate, a stable and successful agriculture and food sector, the highest capability land resource in Atlantic Canada, high quality community services, proximity to the major urban area of the province, a favourable area for retirement communities, and healthy tourist and service sectors.

Almost 30 per cent of the population in the Annapolis region lives in several small towns. Over the 1981-91 period, the population in these towns grew at a rapid rate (17 per cent), one third higher than the national urban growth rate and more than five-times higher than the urban growth rate for the province as a whole.

Two-thirds of the regional population are non-farmers living in the rural areas. The farm population represents about 4 per cent of the regional population. Over the 1981-91 period, the rural non-farm population grew by 12 per cent, slightly lower than the national rate and slightly above the rate for the province as a whole. At the same time, the farm population in the region declined 24 per cent, a rate of decline midway between the national rate of 20 per cent and the provincial rate of 29 per cent. In 1991, 34 per cent of Nova Scotia's farm population were located in the region up from 31 per cent in 1981.

Labour force

There were 55 485 people in the Annapolis region labour force in 1991, representing 13 per cent of the total provincial labour force. Thirty per cent of the labour force was employed in the goods and services sector, 40 per cent were engaged in non-public sector pursuits and 30 per cent in the public sector. The primary sector[1] employed 10 per cent of the labour force with primary agriculture being predominant at 7 per cent of the labour force, a very high number in comparison to the remainder of Nova Scotia (2 per cent). Trade (17 per cent), manufacturing (12 per cent) and public administration (13 per cent) are the three major employment sources. Education and health are also very important employment generators in the region.

Over the 1981-91 period, the region's labour force expanded by over 25 per cent, almost twice that experienced in Canada and Nova Scotia. Much of the increase is attributable to a 48 per cent increase in the female labour force and a 11 per cent increase in the female labour force participation rate. At the same time, the male labour force increased by 18 per cent, a rate significantly higher than both the provincial and national rates. Unemployment rates for the region (11 per cent in 1991) were lower than for the province and similar to national rates over the ten-year period.

An important factor supporting economic growth is the level of education of the labour force and the amount of intellectual capital that exists in the Annapolis region. While the percentage of those workers who did not complete secondary schooling tends to be slightly higher than for Canada or Nova

Table 2. **Labour force distribution by sector, 1991 (%)**

Industrial Sector	Canada	Nova Scotia	Annapolis
Agriculture	4	2	7
Other Primary	3	5	3
Manufacturing	15	12	12
Construction	7	7	8
Transportation and communications	7	8	7
Trade	17	18	17
Financial	6	5	3
Business services	6	4	2
Public administration	8	12	13
Education	7	7	7
Health	9	10	9
Accommodation and food	6	6	5
Other Services	7	6	6

Source: Regional Labour Market Dynamics in Atlantic Canada, Canadian Institute of Research in Regional Development, for the Atlantic Canada Opportunities Agency, 1995.

Scotia, the rate of workers with post secondary, non-university training is at an higher rate than either of the larger societies. This is true for both male and female workers. University training of workers (22 per cent) is at a lower rate than that found in the provincial (28 per cent) or national (26 per cent) work force.

Economic activities

The Annapolis region contributes significantly to Nova Scotia's economy. The region generates 13 per cent of the jobs and maintains 13 per cent of the business operations of the province. The economy is diverse with 3 679 commercial businesses and public service agencies operating in the region in 1993, providing a range of goods and services for domestic and foreign customers. While the region is the centre of agriculture and food processing in Nova Scotia, a number of other large employers contribute greatly to the region's economy – Michelin Tire, Spandex Elastic (clothing), Minas Basin Pulp and Power (paper products), gypsum mines, Armed Forces bases, educational establishments, and trade and public services.

The job creating performance of the region's economy varies by economic sector – between 1981 and 1991 the slower growth sectors were the primary sector (about 4 per cent), construction (13 per cent) and the financial sector (15.5 per cent). While employment in the manufacturing sector fell in Canada (–7.5 per cent) and Nova Scotia (-6 per cent), the Annapolis region enjoyed a 30 per cent increase in employment in this sector over this period. Business and personal services (67.2 per cent), accommodation and food (54.4 per cent), public administration (56.0 per cent) and most of the region's other economic sectors all exceeded the provincial and national rates of employment growth.

In the period from 1981 to 1991, overall employment grew at a rate twice that for the province and reflected the rapid increase in economic activity in the region, particularly in manufacturing. The food and beverage sector constitutes a significant portion of the manufacturing activity in the region. Poultry and meat processing, fruit and vegetable processing and related activities provide a market for farm products and employment for the local population.

Public administration at 13 per cent of the labour force, higher than that for the province and almost double that for the nation, is an important part of the Annapolis economy. Acadia University, two Canadian Forces Bases, a large Federal Agriculture Research Centre, a Provincial Agriculture Extension Centre, a Land Survey Training Facility, a major vocational and technical training campus, and the local offices of Municipal, Provincial and Federal departments and agencies are all located in the region.

Agriculture plays a very important role in the Annapolis economy, with twice the allocation of labour force as that for Canada and three times that for the province. The service sector is especially important both to the region's economy and to the agricultural industry. The region businesses provide

a wide variety of business and personal services. The agri-food sector is well served by businesses that provide feed, fertiliser, veterinary, machinery sales and repairs, finance, transportation and other needed services. There are approximately 50 agriculturally related or supported service supply businesses in the region employing about 5 per cent of the region's work force.

Economic infrastructure

The region is well served by various forms of transportation. Although coastal shipping is no longer as important to the region as it was during the period of sailing ships (18th and 19th centuries), several small ports on the Bay of Fundy still provide access for smaller coastal vessels which can navigate the very high tides of the Bay. Railway train service is limited to a freight line in the Hants area of the region. Rail transport has been largely replaced by a major all weather high-speed highway through the centre of the region, running from Halifax to Yarmouth. The majority of the secondary roads to the main highway are paved and provide access to urban services for all rural parts of the region.

Goods are moved locally by a modern trucking system. Air transport is provided at the Halifax International Airport, which provides service to all the major airports of the world. A major deep water port is located at Halifax and it provides access to major container lines of the world. Ferry service from Yarmouth to the State of Maine provides a direct access to the major markets of the North-Eastern USA. These services are within a two-hour drive or less for the residences and businesses of Annapolis. With world class telecommunication services available in all of the region, many firms in the area take advantage of their advantageous location and trade their goods and services in a global market.

2.2. The agri-food sector in the Annapolis region

Family farm businesses
Intensive cropping
Higher than national productivity of land and labour
Large capital investments
Livestock production most significant
Fruit and vegetable production uniquely

A changing agriculture

At the beginning of the 20th century in Atlantic Canada, thousands of self-sufficient mixed family farms were scattered across the areas hills and valleys. After the conclusion of World War II, thanks to the agricultural technology revolution, improved education, and out-migration of youth, rural communities in this part of Canada underwent drastic changes. Farm population decreased dramatically, rural community services were lost or reduced, farms were abandoned or amalgamated, extensive capital was substituted for labour, and land resource use was rationalised.

The mid-20th century pressures for rural economic and social change were felt in the Annapolis region. Unlike many other rural areas in Atlantic Canada, for reasons of favourable location, soils, climate, proximity to population centres, and other factors, the Annapolis region has evolved and managed to maintain a strong agri-food sector, currently accounting for about 50 per cent of Nova Scotia's agri-food activity.

Land use

Approximately 14 per cent of the region's land area is reported as farmland – 121 960 hectares in 1991. This represents about 31 per cent of the agricultural land in Nova Scotia. In 1991, there were 1 322[2] farms in the Annapolis region with an average size of 92 hectares, typical for Atlantic Canada, but

much smaller than the Canadian average of 242 hectares per farm. This reflects the intensive type of farm operation found in Annapolis as compared to the extensive grain and livestock operations of western Canada.

Type of agriculture

Farms in the region are more highly capitalised and land use is more intensive than other farms in the province. Capital investment at C$ 366 136 per farm in 1991 is well above the provincial average of C$ 291 187. This reflects the nature of the farms – intense production, high levels of technology, higher than industry averages of labour productivity and higher land values. The region's farmers are known for being innovative, technologically advanced and good managers. They produce virtually all of the tree fruits and potatoes, over two-thirds of the intensive cereal grain production, the majority of the vegetables and small berry crops grown in the province. The region is the centre of the province's poultry production, both for eggs and meat, and the majority of the hogs are raised here. Dairy production, especially in the eastern Hants County part of the region, is very efficient by world standards and supplies well over one third of the dairy products for the province. Approximately one-third of Nova Scotia's cattle farms are located in the Annapolis region.

Although animal agriculture is the single most important farm activity, production of fresh and processed vegetables, berry crops and tree fruits are very important to the farm economy of the region. Favourable soil and climate conditions permit growers to produce crops that are not suitable to other parts of the Atlantic region. For example, high bush blueberries and other tender fruit crops can be produced here, and well over 50 per cent of Atlantic Canada's apple production is located between the north and south mountain ranges of the Annapolis Valley.

Tenure and farm size

The majority of farms in the region are owner-operated family farms, with some run as family partnerships and companies. A small number of farmers are producing under contractual arrangements with vegetable and fruit processing firms. Absentee ownership or share cropping is not common.

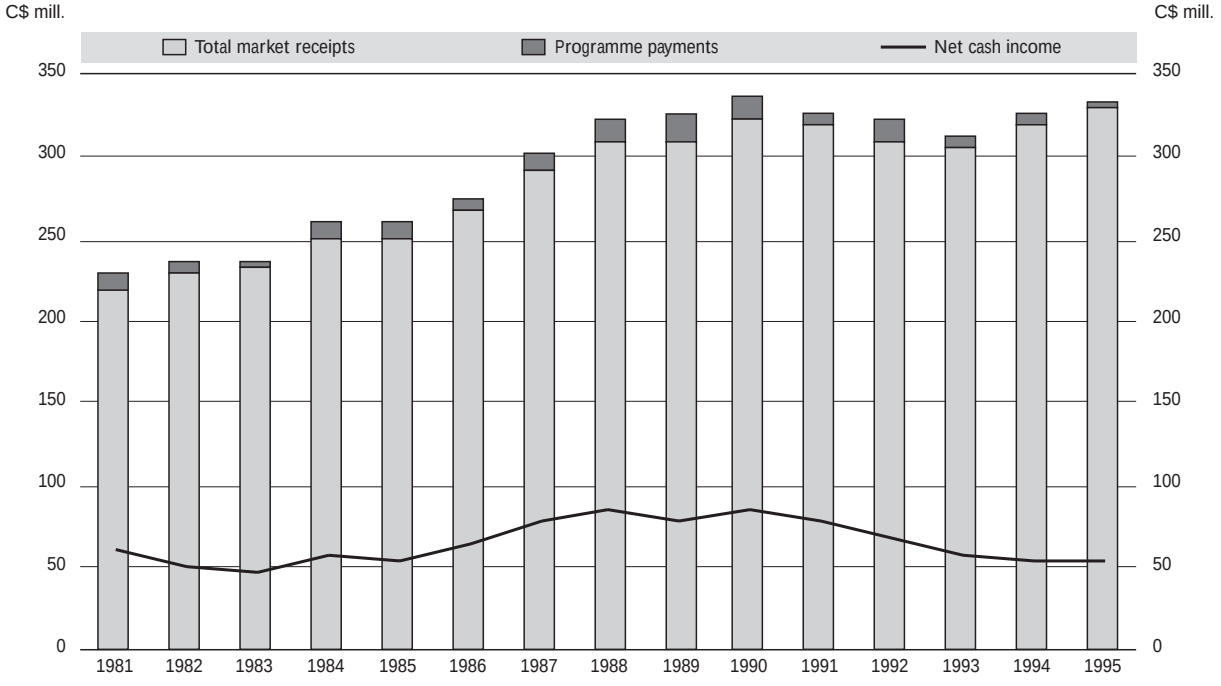
The number of farms in the region tend to be evenly distributed across farm size, as measured by farm cash receipts. However, there are more farms in the high receipt categories than is true for Nova Scotia as a whole. This is a reflection of the number of large size commercial farm operations in the region, relative to the rest of the province. In 1991, 44 per cent of the province's farms generating over C$ 100 000 annual farm receipts were in the Annapolis region. Fourteen per cent of the farms in the Annapolis region generated over C$ 250 000 annually in 1991, compared to 7 per cent for Canada and 9 per cent for Nova Scotia as a whole.

Farm income

Aggregate cash receipts up 45 per cent from 1981 to 1995
Nominal net income peaked in 1990
Region contributes half the farm income of the province
Gross revenue per farm 153 per cent of provincial and national averages

Between 1981 and 1996, aggregate cash receipts[3] from farming in Nova Scotia increased steadily rising from C$ 227 million in 1981 to reach an estimated C$ 329 million in 1995. During the same period, the net cash income[4] from farming operations rose to a peak of C$ 86 million in 1990, when it represented about 26 per cent of the total cash receipts. Since then, farm net cash income has fallen to a level of approximately C$ 53 million in 1995, representing about 16 per cent of the gross returns.

◆ Graph 1. ***Aggregate farm receipts and net cash income: Nova Scotia***



Source: AAFC: Farm Income, Financial Conditions and Government Assistance, Data Book, Policy Branch, 1997.

For the Annapolis region in 1990, farm receipts were C$ 180 million, just over 50 per cent of the provincial receipts to farming. An approximation of the region's net farm income suggests that 49 per cent of Nova Scotia's net income from farming is derived from the Annapolis region. Census 1991 data indicates that gross revenue per farm in the Annapolis region was 153 per cent of farms in Nova Scotia or Canada.

III. THE YORKTON REGION OF EASTERN SASKATCHEWAN

The Yorkton region is located in eastern Saskatchewan, sharing an eastern border with the province of Manitoba, encompassing an area of 29 700 square km. The region has several rural towns, the largest one being the City of Yorkton which lies near the centre of the region. Yorkton is 160 km north-east of Regina and 300 km south-east of Saskatoon, the provinces two major urban centres. The region, therefore, is remote, with 2-3 hour travel time to any metropolitan area.

Located in the Canadian prairies, the region is characterised by a flat to gently undulating landscape. Most land is cleared of forest and used for cropping or pasture. Forested areas that remain are both small and dispersed. The short growing season varies from approximately 110 days in the south to 90 days in the north.

3.1. Overview of the economic situation

Declining population
Ageing population
Agriculture major source of employment
Some processing

Table 3. **Yorkton region population, 1981-91**

	Total	Small centres	Large centres	Rural
1981	86 120	9 009	43 238	33 873
1991	78 154	8 120	41 075	28 959
Net growth (in %)	–9	–10	–5	–14

Source: Census of Canada, Statistics Canada, 1981 and 1991.

Population

Total population in the Yorkton region has been declining since the 1940s and continues to decline. Population in 1991 was 78 150, a decrease of 9 per cent since 1981. In contrast, Canada's population increased by 12 per cent, and that of Saskatchewan by 2 per cent during the same decade.

The rural population[5] declined from 28 999 in 1986, to 26 010 in 1991 (–12 per cent). A small Aboriginal population living on nine rural reserves increased from 2 010 in 1986 to 2 209 in 1991 (+10 per cent).

The Yorkton region comprises 38 small centres with populations of less than 500 residents, and 18 larger centres with populations greater than 500. Population in small centres decreased by 10 per cent between 1986 and 1991, dropping from 9 009 to 8 120 residents. The average population of the 38 small centres was 214 in 1991. These small villages provide few, if any, services to local populations (Stabler, Olfert and Fulton, 1992).

Similarly, the resident population of all 18 larger centres declined 5 per cent between 1986 and 1991. The average population of larger centres was 2 282 in 1991. The City of Yorkton, with a population of 15 315 in 1991, serves as the wholesale-retail trade centre. Melville, Esterhazy, Moosomin, Canora and Kamsack with populations between 2 000 and 5 000 are local service centres.

A general pattern of population ageing has resulted from depopulation in the Yorkton region. The prime age work force is under-represented in both the province and the region. In 1991, persons under 15 years of age comprised 24 per cent of the provincial population, but only 21 per cent of the Yorkton region population. Individuals over 65 years of age comprise nearly 22 per cent of the 1991 population in the Yorkton region, compared to 14 per cent of the provincial population and 12 per cent of Canada's population.

Urbanisation increased from 39 per cent to 52 per cent between 1971 and 1991, in spite of the fact that all communities lost population. A loss of members of the prime age workforce in all areas except the City of Yorkton and the smaller urban centre of Esterhazy has been partially offset in other smaller urban centres, towns and villages by an influx of retiring, primarily local rural residents. Dependency ratios in smaller centres reach or exceed unity, suggesting as low as 1 person in the 15-64 labour force age group for every dependent.

Levels of formal education are lower in the Yorkton region than in Canada or Saskatchewan. In 1991, 19 per cent of Yorkton adults had less than Grade 9 education compared to 11 per cent for Canada and 12 per cent for Saskatchewan. The percentage with more than Grade 9 but less than complete secondary schooling also is highest in the Yorkton region. Conversely, the number with complete secondary and university degrees is lowest in the Yorkton region. Much of this is due to the older population in the region. Some improvement in average educational levels is, however, apparent between 1981 and 1991 in all areas.

Labour force and income

The labour force in the region is concentrated in three industrial sectors: primary production, manufacturing and services. With a limited local and regional market, the economy depends on the production of goods and services for export. In 1991, primary industry[6] accounted for 34 per cent of the

Table 4. **Labour force distribution by sector, 1981-91**

Industrial Sector	Saskatchewan		Yorkton Region
	1981 (%)	1991 (%)	1991 (%)
Primary industries	26	21	34
Manufacturing industries	6	5	3
Construction industries	7	5	5
Transport/storage industries	5	4	5
Communications industries	3	3	2
Trade industries	17	16	15
Finance, insurance, real estate	4	5	4
Government services	n.a.	8	5
Education services	7	8	8
Health, social services	8	10	10
Other industries	n.a.	16	12

Source: Statistics Canada, 1983, 1984, 1992.

regional labour force compared to 21 per cent for the province and 6 per cent for Canada. Agriculture is the dominant primary industry in the Yorkton region, accounting for 28 per cent of all employment.

There is also a major potash mine located near Esterhazy, which employs 4 per cent of the labour force. The mine is a source of off-farm employment for many farm families. No local value-added industries have developed with the mine, and the population of Esterhazy is declining.

The dominance of primary industries throughout the region is reflected in lower than Canadian average participation in other sectors of the labour force. Manufacturing accounts for 15 per cent of the national labour force but only 3 per cent in the Yorkton region. The regional labour force also lags behind the Canadian and provincial percentages in construction, communication, trade, finance-insurance-real estate, government services and other industries. It is on par with or slightly above average for transport, education services and health and social services.

The experienced labour force[7] in agriculture in the Yorkton region remained stable between 1981 and 1991, while the total regional labour force declined by 8 per cent due completely to a decline in the non-agricultural labour force.

Agri-food value-added processing accounts for most manufacturing employment in the region. Established enterprises include a meat packing plant and an oat milling operation in Yorkton, a canola crushing plant in Harrowby and a number of small seed cleaning operations scattered throughout the region. Development since 1991 includes a flax straw fibre plant in Canora, a mustard seed processing industry in Melville, and an inland grain terminal under construction in Yorkton that has the capability not only to store, but also to process agricultural commodities.

Average family income in the Yorkton region in 1991 was 75 per cent of the Canadian average, and 87 per cent of the provincial average (Statistics Canada 1992: 1991 Census of Canada – Profile of census divisions and subdivisions in Saskatchewan).

3.2. The agri-food sector in the Yorkton region

80 per cent wheat and small grain farms
Farms highly capitalised
Significant decline in farm net income over late 1980s
Off-farm income important for most farm families

A changing agriculture

Agriculture on the Canadian prairies has been restructuring for decades owing to technology and global economics. The trend of decreasing numbers and increasing size of farms continued between 1981 and 1991. The number of farms in the Yorkton region decreased from 9 205 in 1981 to 7 295 in 1991, a 14 per cent decline. Conversely, the average size of farms increased from 286 to 335 hectares, a 17 per cent increase.

Land use and type of agriculture

Saskatchewan's agriculture is less diversified than that of Canada. Farms producing wheat and small grains are the dominant farm type accounting for 80 per cent of all farms in 1981, and 75 per cent in 1991 in Saskatchewan. Over the ten year period canola production increased dramatically in both land area planted and number of producers. Wheat, barley and oats dominated the grain production in the Yorkton region in both 1981 and 1991. There was some increase in the production of other field crops and in miscellaneous speciality farms but these are not yet significant enough to have a major impact on the agricultural profile of the region.

For Saskatchewan farms reporting livestock, the average number of cattle and sheep per farm is approximately the same as the national average, but the number of pigs and poultry was considerably lower than average. Farms in the Yorkton region have lower average numbers of all livestock per farm than the provincial average. The trend to higher numbers of animals on fewer farms is occurring, but is not as pronounced as in the rest of Saskatchewan or in Canada. Data for agricultural regions that overlap the Yorkton region show a decrease in cattle and poultry numbers between 1981 and 1991, while hog and sheep numbers increased.

Farm capital

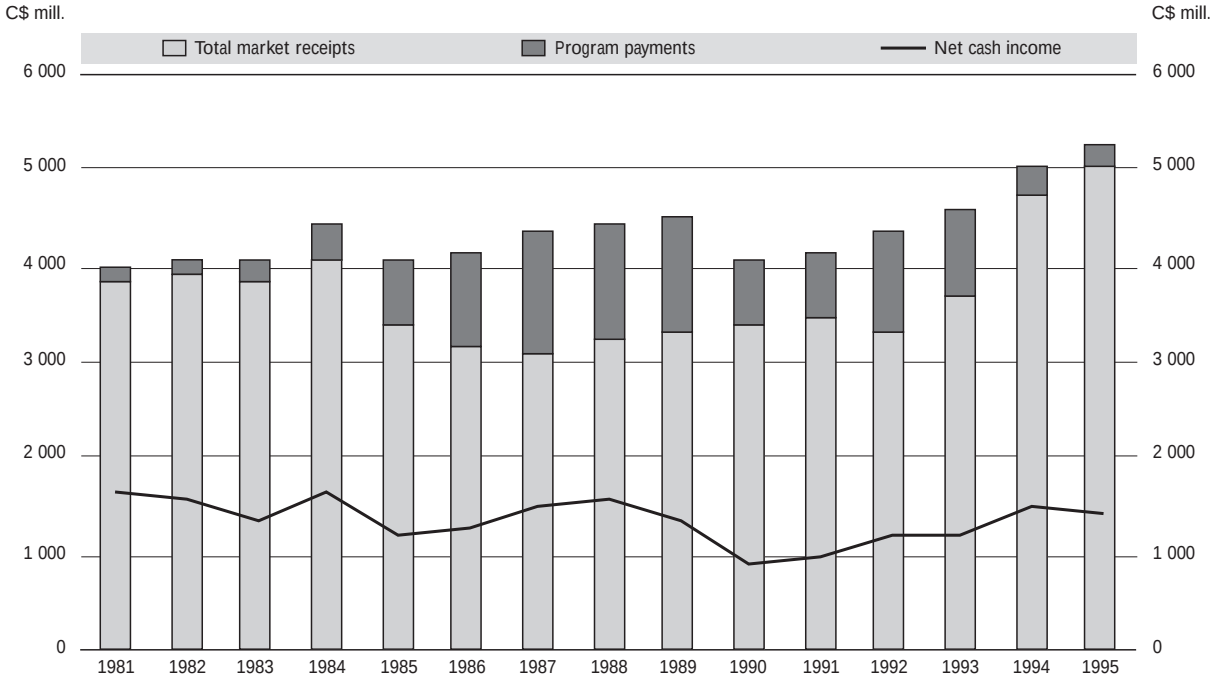
Saskatchewan agriculture is highly capitalised in equipment and machinery. In 1981, the number of automobiles, tractors and balers per farm in Saskatchewan was on par with all Canadian farms, but the number of trucks, grain combines and swathers was higher than average. The average Canadian farm had C$ 54 850 invested in equipment and machinery in 1981. Saskatchewan farms, however, averaged C$ 73 390. Comparable 1991 figures are C$ 85 000 per farm in Canada, and C$ 109 650 per farm in Saskatchewan.

Land and buildings account for the highest percentage of total farm capital investment. Average per farm capital was C$ 410 000 in Canada and C$ 470 000 in Saskatchewan in 1981. By 1991, total farm capital had increased to C$ 131.2 billion in Canada (1 per cent), and decreased by C$ 26.7 billion in Saskatchewan (15 per cent). Average per farm capital, however, increased to C$ 468 600 in Canada and C$ 600 600 in Saskatchewan as the number of farms decreased. Farms in the Yorkton region have total capital values that are 84 per cent of the provincial average values, with machinery and equipment accounting for a higher share, and livestock a lower share of the total. Between 1981 and 1991, a significant shift in shares occurred: the proportion of total capital in land and buildings in Saskatchewan decreased by 12 per cent while the percentage in equipment and machinery increased by 9 per cent.

Farm income

Saskatchewan farmers experienced a serious decline in market receipts from the mid-1980s to the early 1990s, following droughts, other natural disasters and when international commodity prices were pressured down from export subsidies. Total market receipts for Saskatchewan producers dropped from C$ 4 billion in 1984 to C$ 3 billion in 1987. The federal and provincial governments responded by increasing transfer payments to producers to maintain cash receipts and net cash income for the sector. By 1990 net cash income[8] for the sector dropped below C$ 900 million. An estimate of the average net operating income per farm (including government transfers) in the Yorkton region was C$ 15 000 in 1991.[9] Market receipts and, to some extent, net cash income have seen a marked recovery since 1992.

◆ Graph 2. ***Aggregate farm receipts and net cash income: Saskatchewan***



Source: AAFC: Farm Income, Financial Conditions and Government Assistance, Data Book, Policy Branch, 1997.

Off-farm income became very important for small and medium farms in the Yorkton region during this period. Average off-farm income per farm family in the region is estimated at C$ 29 000 for 1991. Slightly more than one-third of farm operators had off-farm employment over the period 1981 to 1991 in the Yorkton region. In 1991, nearly half of the farm operators who worked off-farm did so for more than 200 days per year.

Agricultural labour force

Self-employed workers account for 70 per cent of all agricultural workers in the Yorkton region in 1981. Paid (17 per cent) and unpaid workers (13 per cent) comprise the remainder of the agricultural workforce. The number of self-employed farm workers decreased to 62 per cent in 1991, while paid workers increased to 25 per cent and the percentage of unpaid workers remained stable. The incidence of paid labour on farms has increased more rapidly in Saskatchewan than in the rest of Canada.

IV. MAJOR AGRI-FOOD POLICIES, 1981-95

A broad range of federal and provincial government policies were in place in both the regions over the period under study including social, economic, land use and environmental programmes designed to improve the economic and social welfare of residents. This report focuses on those federal and provincial economic programmes which impacted on the primary agriculture sector and directly related manufacturing and service sectors during the 1981-95 period.

Agriculture in Canada is constitutionally a shared responsibility of the federal and provincial governments. Federal government policies for the agriculture and agri-food sector deal with trade development, income support, research, food inspection, and regional development assistance programmes. The provincial governments in Nova Scotia and Saskatchewan have a policy focus on rural

development, rural community development and planning, infrastructure, education and extension, resource development and environmental issues. The federal government co-operates and cost shares joint programmes in most of these areas with the provincial governments.

4.1. Policy influences of the 1980s

Increase competitiveness of agri-food sector
Stabilise incomenorm alleviate farm debt concerns

The federal and provincial agricultural policies of the 1980s were influenced by a general concern for improvements in the level of farm family well being and an increase in the strength and size of the agri-food industry. The policy statements of the early 1980s stressed expansion of agricultural production to meet rapid world population growth and increased demand for food. Governments, both federal and provincial, embarked upon "agri-food strategies" designed to improve the competitiveness of Canadian agriculture in the world market.

As the 1980s progressed, interest rates rose, international subsidy wars escalated, farm product prices remained stable or declined, and concern increased with the declining level of overall net farm income in Canada. Between 1981 and 1984, Canadian farmers long-term debt rose approximately 20 per cent and the farm financial situation deteriorated for a large number of farmers, despite increases in output and productivity. Farm operating losses and related financial difficulties caused structural changes in primary agriculture. Many farmers had to take part-time or full-time jobs off the farm to supplement their incomes. The stressful financial situation in agriculture also impacted upon supporting segments of the sector, farm services were forced to consolidate and reorganise.

The economic volatility in Canadian farm sector is evident when comparing net farm income with income based gross domestic product (GDP) between 1981 and 1994. Accrued net farm income was about 20 per cent lower in 6 years and 10-20 per cent higher in 5 years between 1981 and 1994. Farms producing supply managed commodities (*e.g.* dairy, poultry, eggs) were more stable than those exposed to world markets (*e.g.* grains, cattle).

The federal and provincial governments responded to the issues of the 1980s by retooling some existing policies, funding new initiatives, increasing funding available for farm credit and embarking upon federal-provincial-producer cost sharing of farm income stabilisation programmes. Federal policy was designed to offset unpredictable or uncontrollable elements that threatened the survival of many farms, to protect heavy investment in farm capital, to maintain farm income and to protect export markets.

4.2. Government transfers and major programmes

Significant financial transfers to farm sector
Annapolis region major benefit from supply management policies and FFA
Yorkton region major benefit from income assistance programmes and WGTA
Regional development assistance significant in Annapolis region

Government transfers to the agriculture sector of Nova Scotia amounted to an average of C$ 88 million annually during the ten year period 1986 to 1995. These included both financial transfers and regulatory transfers (where no government expenditure is involved but the sector receives a benefit

Table 5. **Federal and provincial government transfers to producers**
Average annual transfer 1986-95
(In C$ million*)

Type of program	Nova Scotia				
	Federal	Provincial	Joint fed/Prov	Average annual transfer	Annapolis share*
Revenue enhancing	31.3	15.7	2.1	49.1	24.5
Cost reducing	3.6	11.1	–	14.7	7.3
Productivity enhancing	3.8	12.4	3.5	19.7	9.8
Quality control	2.4	2.4	–	4.8	2.4
Total	41.1	41.6	5.6	88.3	44.0
Type of program	Saskatchewan				
	Federal	Provincial	Joint fed/Prov	Average annual transfer	Yorkton share*
Revenue enhancing	440.8	31.8	301.0	773.6	100.6
Cost reducing	459.8	136.6	.3	596.8	77.6
Productivity enhancing	42.6	13.4	5.3	61.3	8.0
Quality control	20.7	.7	–	21.4	2.8
Total	963.9	182.5	306.6	1 453.1	189.0

* Estimated by BICON (1997).

Notes: Government transfers to producers have been classified by Programme objective:
Revenue enhancing transfers include programmes and policies which are associated with the output market. The category includes three types: 1) direct output payments *i.e.* stabilisation and special adjustment programmes; 2) programmes related to market development; and 3) benefits from regulatory measures including supply management, tariffs and duties which do not involve direct government expenditures. Benefits from regulatory measures are determined by the difference between domestic prices and appropriate reference prices multiplied by domestic production.
Cost reducing policies and programmes are designed to help reduce input costs to producers. The most common examples during the period of the study were subsidised credit, capital investment subsidies and transportation subsidies.
Productivity enhancement policies have the objective to enhance long term productivity and competitiveness of the primary agriculture sector. Included in this category are funds for regional development, transfer and adoption of new technology, new crop varieties, improved livestock breeds, research, extension and farm development incentive grants. Human resource development and training initiatives and funding for sustainable agriculture and the environment are also included in this category.
Quality control includes policies and programmes designed to enhance or maintain product quality, food safety and health of crops and animals.

Source: Farm Income, Financial Conditions and Government Assistance Data Book, Policy Branch, AAFC, February 1997; the Nova Scotia Regional Office of the ACOA; and unpublished data.

through government regulation). Approximately 35 per cent (an average of C$ 27 million per annum) of this calculated transfer to Nova Scotia was derived from supply management regulations (tariffs, product supply regulation and inter-provincial trade regulations). The allocation to the Annapolis region is estimated at an average of C$ 41 million[10] per annum over this same period. Also of note, is that the Annapolis region received C$ 13.8 million in regional development incentives to the food and beverage sector from Atlantic Canada Opportunity Agency (ACOA) during this time period.

For Saskatchewan, which typically produces more than half of the prairie grains and oilseeds, programme transfers during this time period ranged from C$ 1.2 billion in 1986 to C$ 2.3 billion in 1991, with an annual average of C$ 1.45 billion over the ten year period. Of this amount, only about 2 per cent was through supply management regulations. A rough estimate for the Yorkton region suggests that the region received average benefits of C$ 190 million annually, over the ten year period.

Revenue enhancing transfers

The most significant revenue enhancing policies and programmes affecting the province of Nova Scotia and the Annapolis region during the period were the supply management policies related to the

poultry and dairy sectors and the Dairy Support Programme which provides a subsidy on industrial milk. Other revenue enhancing policies which had an impact on the Annapolis region, include:

- the EEC Beef Countervail;
- a Farm Support and Adjustment Programme in place in 1991 and 1992;
- import tariffs in place throughout the study period;
- tobacco Supply regulations in place during the 1986-95 period;
- the Special Income Assistance Programme of 1990; and
- the first payment under the Feed Freight Assistance (FFA) Adjustment Programme in 1995;
- a number of other small and specialised programmes were in place from time to time throughout the study period, *e.g.* assistance to apple producers in 1985 and 1988, potato virus compensation in 1991 and the Canadian Market Development Initiative 1992-95.

Federal and provincial revenue enhancing transfers were an extremely important revenue source for Annapolis region farmers throughout the study period. Annual payments over the period to producers from both federal and provincial governments (excluding the calculated transfers for supply managed products), rose from about C$ 5.6 million in 1986 to about C$ 14 million in the 1990-92 period and then declined to C$ 10 million by 1995 as new policy and programme approaches began to take effect. The 1995 figure is inflated by the inclusion of a C$ 3.2 million FFA adjustment payment to Nova Scotia.

In Saskatchewan, the major revenue enhancing programmes during this period included:

- The Western Grain Stabilisation Programme (1976-90) which provided stabilisation payments to eligible farmers when the average cash flow from eligible commodities fell below the previous five year average.
- Special Canadian Grains Programme which provided assistance to grains and oilseed farmers to cushion the effect of the subsidy war between the European Community and the United States (1986-88).
- Canadian Crop Drought Assistance Programme (1988, 1989 and 1990).
- Special Income Assistance Programme (1990).
- Farm Support and Adjustment Programme (1991-95).

In the late 1980s, with continued low market receipts to grain and oilseed producers, and federal concern with the continued need for federal *ad hoc* emergency transfers to producers, two new income stabilisation programmes were agreed to by the federal and provincial governments. The Gross Revenue Insurance Programme (GRIP) compensated farmers when their individual market revenue fell below their individual "target revenue" (based on a 15-year moving average price). The Net Income Stabilisation Account (NISA) is a self-directed whole-farm savings programme designed to help producers stabilise their net income. Both became operational in 1991. These new programmes were national, with some regional variation. For Saskatchewan and other western provinces, GRIP and NISA replaced the WGSA.

Cost reducing programmes

The most significant of the cost reducing programmes in the Annapolis region was the FFA programme. This programme was introduced as an emergency measure during World War II, however, it remained in place throughout the study period until the early 1990s. The FFA provided a freight subsidy on feed grains moving from western Canada to Quebec and the four Atlantic provinces as well as British Columbia, the Northwest Territories, the Yukon Territory and parts of Ontario. This subsidy played a crucial role in building up the livestock and poultry sector in the Annapolis region.

For the Yorkton region the most significant cost reducing policy was the Western Grain Transportation Act, under which federal freight rate benefits were paid directly to the railroads to offset producer freight costs for shipping grain and grain products from country elevator positions to port for export. In the Yorkton region, relatively stable producer freight costs ranging between C$ 6-8 per tonne for wheat

and C$ 8-10 per tonne for barley were sustained until 1981 and then increased slowly. In 1994-95, the last year for the subsidy payment, producers in the Yorkton region were paying about C$ 12 per tonne for wheat and C$ 9 per tonne for barley for rail service to Vancouver or Thunder Bay port facilities. Between 1986 and 1994, the federal subsidy transfer to Saskatchewan ranged from between C$ 260 million to over C$ 400 million annually depending on the amount of grain moved.

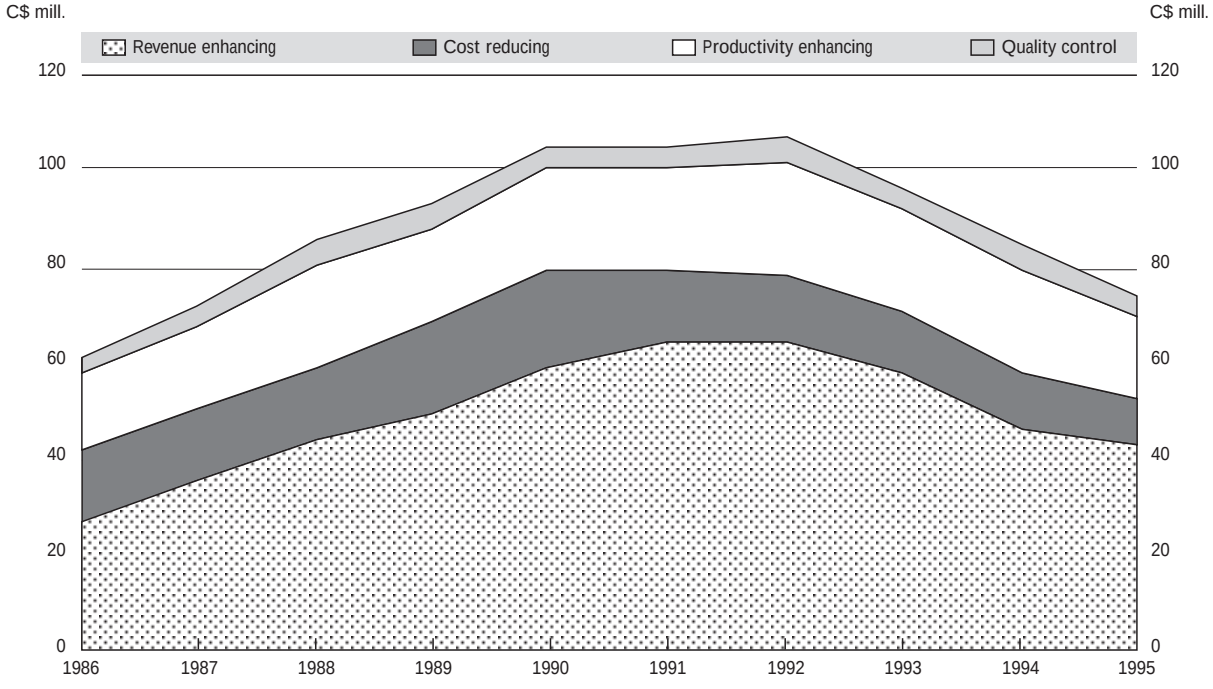
Both the federal and provincial governments established emergency policies in the 1980s to assist producers with very high interest rates. The federal government through the Farm Credit Corporation provided credit for the high risk farm sector. In addition, a Farm Debt Review Board was established in each province in 1986 to assist producers in dire financial straits make appropriate financial arrangements with lenders. As of December 1996, 12 504 applications (48 per cent) were received from Saskatchewan farmers. Saskatchewan has approximately 22 per cent of Canada's farms.

Other transfers and expenditures

Government expenditures on research and product development also provided significant benefit to the regions. The AAFC Kentville Research Station is located in the centre of the Annapolis region at Kentville and throughout the review period it played a key role in the development and transfer of new technology to the region's farmers. The provincial Agriculture Extension Programme provided advice on improved production practices, implemented departmental financial assistance programmes, and provided planning assistance to producers and their organisations.

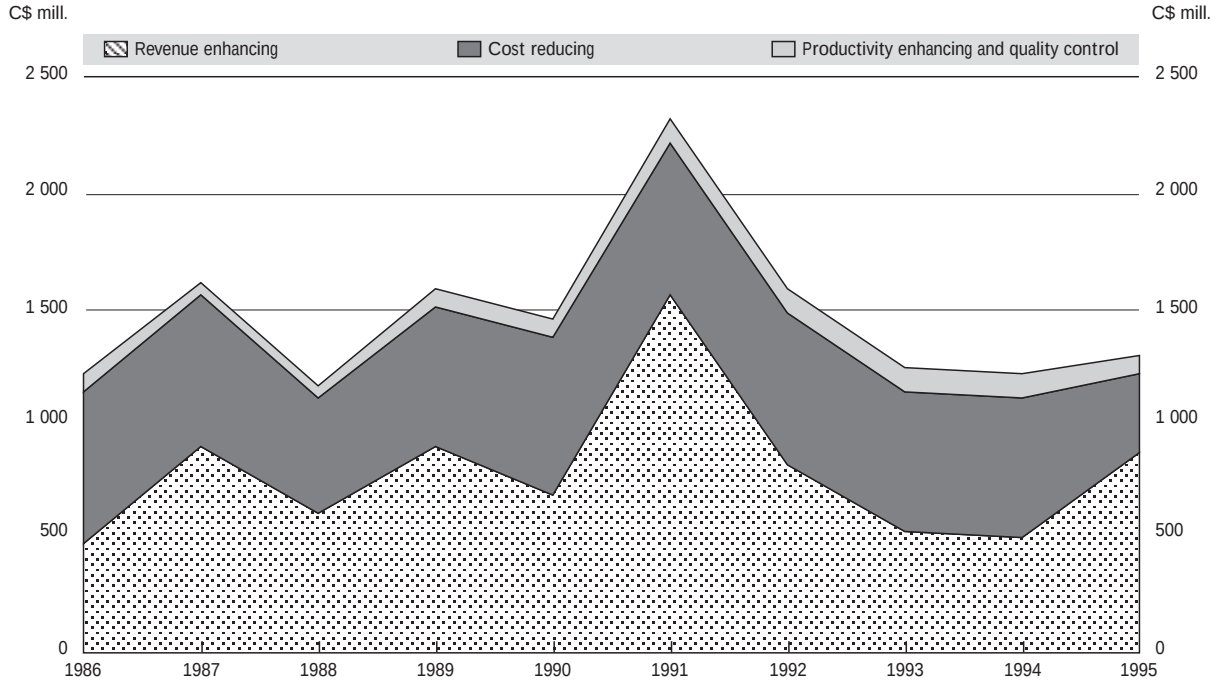
Regional development initiatives supplemented the agricultural policies of the federal and provincial governments. Federal and federal-provincial regional development expenditures played a significant role in the expansion and modernisation of the agri-food sector in the Annapolis region. In Nova Scotia, two federal-provincial development agreements for the primary agri-food sector were in place

◆ Graph 3. ***Government transfers to producers: Nova Scotia***



Source: OECD Secretariat calculations.

◆ Graph 4. ***Government transfers to producers: Saskatchewan***



Source: OECD Secretariat calculations.

throughout the study period. These agreements provided development incentives to assist farmers develop and drain land, modernise and expand their facilities and farm equipment, introduce new crop and livestock varieties and breeds, develop and transfer technology, improve marketing skills and practices, improve business and academic skills and enhance the long-term productivity and viability of their individual enterprises.

In Nova Scotia, the federal government through its regional development agencies contributed industrial development incentives over the 1986-95 period to modernise and expand the food and beverage sector in the region. These contributions represented 35-40 per cent of the total expenditure for this purpose in the province over the 1986-95 period.

In Saskatchewan, a variety of programmes under Canada-Saskatchewan Economic Regional Development Agreements and also through the Prairie Farm Rehabilitation Act provided technical, financial and material assistance to the farm and agri-food sector for infrastructure and development projects. The mid to late 1980s saw a broadening of efforts to assist Saskatchewan in diversifying the agri-food sector, particularly by promoting processed products and value-added agri-food production.

Of significant benefit to the Annapolis region, throughout the review period, were the federal and provincial government funded food inspection and animal health programmes for the agri-food sector. Food grading and inspection provided by both governments to producers and processors located in the region, provided consumers with assurance that the food products produced and processed in the region were standardised, wholesome and nutritious. The animal and plant health concerns of producers were allayed by a variety of federal and provincial animal health programmes and supporting laboratory facilities. Producers were provided with relatively inexpensive animal and plant health advice by qualified veterinarians and plant scientists.

V. IMPACT ON THE AGRI-FOOD SECTOR, 1981-95

5.1. Annapolis region

Stable and consolidated poultry sector
Significant growth in vegetable and fruit production
Rationalisation in dairy sector
Food processing expands

The government transfer benefits of almost C$ 450 million received by the Annapolis region during the period 1986 to 1995, contributed significantly to the net income and economic viability of farms in the region. Farmers and food processors in the Annapolis region reacted positively to the many programmes at their disposal in the 1980s and early 1990s. The innovators and early adopters took advantage of intensive technical and information support by expanding and modernising their operations.

The region is particularly impacted by supply management policies given the concentration and importance of the dairy and poultry sectors to the region's agricultural economy. The structural reform which occurred throughout the dairy and poultry sectors of Canada during this period also occurred in the Annapolis region. During the period under review, the Annapolis region dairy sector underwent major adjustment; the manufacturing and cream shipper part of the dairy sector virtually disappeared, the number of farms decreased (24 per cent from 1981 to 1991) though milk production remained relatively constant, the number of milking cows declined by 20 per cent, while average production per cow increased 19 per cent. Quota for fluid milk sales became established and quickly took on monetary value, representing a significant investment cost for new entrants and those producers seeking to increase their milk sales.

The poultry (eggs and meat) sector stabilised and consolidated a larger base of production in the region. While the total number of poultry producers in the province declined, the region as a whole saw an increase. Approximately two-thirds of Nova Scotia's poultry production are now concentrated in the region. Poultry meat production has been the main contributor to the expansion. Farm-related infra-structure requirements, as well as the relatively high farm incomes derived from dairy and poultry production, result in relatively greater spin-offs for the region's economy.

Other farm sectors with in the region also prospered during the review period. Hog production held its own in the province as the region's share of the provincial production increased to about 70 per cent. This increase was driven by farm consolidation into the region and a provincial focus on increasing hog production adjacent to a major hog killing facility located in the region.

Fruit and vegetable production grew significantly – a result of favourable markets, infusion of new technology, land improvement and irrigation equipment. With the exception of the expansion of the wild blueberry sector (which tends to be located in the northern part of the province), most of the expansion in Nova Scotia's fruit and vegetable sector took place in the region. This has had major effects on the food processing businesses located in and around Kentville, at the geographic centre of the Annapolis region. With the help of government business development programmes and the increase in raw product supply, food processing experienced rapid expansion during the period.

There have been some concerns over the chemical pollution of the soil aquifer and Cornwallis River resulting from the intensive cropping in the river valley. The Cornwallis Valley is the most intensively cropped in the province – tree fruits, vegetables, berry crops, and grain crops (corn, wheat and barley); the hog and poultry sectors are all concentrated in this area. The largest concentration of food processing facilities in the province is located in the Cornwallis area. A broad range of facilities including, abattoirs, juice plants, a potato chip plant, a major pastry operation, poultry meat processing and egg plants, vegetable washing and packaging operations and tree fruit storage/warehouse units.

The demands for water and the resulting effluent from these plants puts considerable pressure on the Cornwallis water shed.

The region has been a leader in searching for ways to reduce the use of chemicals required for intensive crop production. World class research at the Federal Agricultural Research Station has pioneered the work in Integrated Pest Management (IPM) and this has resulted in a major reduction in the applications of sprays used for tree fruits, other fruit crops and vegetables.

During the period under review, the Annapolis region benefited more than other part of the province. Given its favourable climate, availability of good land, a history of successful farm and food operations, a well-educated work force and an innovative attitude the region was well positioned to take advantage of all the programme assistance available. Aside from the revenue enhancing aspects of the policy measures, money became available for capital investment assistance, new technology, marketing initiatives, and human resource development.

Policy initiatives encouraged training and skills development, more production specialisation and speeded up the consolidation of farm operations. While the programmes emphasised income stability and risk reduction, their unstated goals were efficiency, economies of size, and the benefits of specialised crop and livestock production. This led to polarising of farm units into two types – the large commercial farm operations with high dependence on farm income as the main source of family income, and those operations which are smaller and highly dependent on off-farm income to support the family.

Programmes and policies in effect during the 1980's impacted on decision-making, tending to distort the decision process of managers by creating an artificial set of economic circumstances. Grants became an integral part of farm financial planning, affecting credit access and distorting realistic business investment and strategic planning.

Capitalisation of programme benefits was another outcome of the infusions of public money into the sector. Capital and operation costs tended to rise, bid up by the known value of the assistance. While the degree of increase varied, depending on the way programmes were delivered, the result was the same – some of the benefit flowed through the hands of those who were targeted by the programme. Land values often are most affected by farm programmes as benefits are used to bid up the price of land. However, this was not the case in the Annapolis region as enough farmers were leaving to make land available for those operators who wished to expand their acreage. But, the cost of structures and equipment was bid up due to the major capital incentives offered through the productivity enhancement policies. It was a prosperous era for the farm service and supply sector.

The regional development funding available to the Annapolis region was provided at levels much higher than was the case outside Atlantic Canada, thus it is difficult in the Annapolis situation to single out the impacts of the federal and provincial subsidy payments to the agri-food sector from the regional development funding.

5.2. Yorkton region

Minimal diversification
Few value-added activities, but increasing
Continued out-migration
Off-farm employment important

Two factors are fundamentally important to understanding the relationship between agricultural policy and rural development in the Yorkton region. First, agriculture produces far more grains, oilseeds and red meat than the local, regional or Canadian markets demand. This forces commodities into the competitive export market. Second, agricultural policies have historically been designed to protect production, heavy investment in agricultural capital and export markets. Lacking a broad rural policy, agricultural policy often was viewed as a surrogate for rural policy and led to the long-held belief that what was good for agriculture was good for rural Saskatchewan.

The Prairies were comparatively and competitively advantaged in supplying the world with raw commodities. To remain competitive, however, farmers had to progressively improve efficiency and increase individual production. The established tradition of supplying the world with raw commodities mitigated against alternative development. This situation served rural Saskatchewan well when technology limited the amount of land a producer could operate. In the first half of the century, a myriad of small farms with large families effectively supported small agricultural communities, and if farming was good, rural areas were healthy. As technology improved, one farmer could operate a progressively greater land area and the number of farms and people on the land began to diminish. Owing to the total dependency of many communities on agriculture, they began to decay as rural depopulation deprived them of customers in businesses, children in schools and other aspects of community. This, in turn, progressively decreased the availability or increased the cost of local goods and services for farm families.

The unpredictable climate, and yields, coupled with external market pressures and the need to preserve markets in an export economy brought a major infusion of federal subsidies during the 1981-1995 period. These helped to preserve, at best, a status quo for gross revenue in the agricultural sector, and continued to mitigate against diversification, both in production and in the broader rural economy. Some policies and programmes such as the WGTA, applied only to exported commodities. Programmes, such as the Tripartite red meats programme and domestic feed programmes, were required to protect production in livestock agriculture.

In spite of efforts, net farm income fluctuated widely and many farmers continued to leave the business. Programmes such as the Canadian Rural Transition Programme assisted farm families to make the transition from farming to other employment options. A variety of guaranteed, advanced or special loans programmes helped other farm families survive the economic difficulties of the 1980s. Economies of scale forced by globalization pressures, however, continued to drive farm numbers down and farm size up, further hurting rural communities. The net result of decades of restructuring in agriculture is reflected in the almost universal decline of populations in the rural communities of the Yorkton region.

As the number of farms and the need for farm labour decreased, young people were unable to find employment in agriculture (Green and Meyer, 1997). Because local, agricultural-dependent communities had not diversified their economies, few alternative opportunities were available, and those seeking employment moved to distant metropolitan centres. The grow it-box it-ship it syndrome in the grains and oilseeds sector has resulted in multiplier effects as low as 1.2 for the grain economy in rural towns and villages (Stabler, 1995). As rail lines and grain elevators are abandoned, some communities lose the little benefit they enjoyed historically. The age structure of the population of the Yorkton region reflects these events in the decline in young people, the low and declining percentage of those in the labour force (15-64 years) and a concentration of seniors. The cumulative effects are obvious in the significant population decline occurring in the region, and in dependency ratios near unity.

With most major agri-food processors located in metropolitan areas, the opportunities for the development of other than small value-added industries in regional centres is restricted. This situation is exacerbated by an ever-decreasing local/regional population as a market for the products of small and medium-sized industries (SMEs). Lacking marketing skills and access to export information, SMEs were at a competitive disadvantage. This need is being addressed by new policies and programmes in the mid-1990s.

The exodus of young adults from the area not only decreases the total available labour force, but also created a ''brain drain'' in the region. This is reflected in the continuing high share of persons with less than Grade 9 education and the low share of those with university degrees. The result is a less formally educated labour force, which may restrict economic diversification. Rural industry in Saskatchewan is traditionally low tech with low wages compared to both provincial and national averages.

Farm family income is a complex mix of farm income, one or more off-farm employment incomes, and government support programmes. Of these, off-farm income from reliable or career employment may be the only stable component in the family budget. An increase in non-farm employment is a key

element in regional rejuvenation. Increased rural development, therefore, is essential to farm family survival, and the farm labour pool is an essential element of the labour force required to develop or expand non-agricultural enterprise. Both agricultural and rural diversification are necessary to stabilise the entire economy.

VI. CHANGING POLICIES AND PROGRAMMES, 1995-97

Forces for policy reform

By the early 1990s, changing global markets, the technology explosion, the need to reduce overall federal and provincial expenditures, global pressure from Canada's GATT and NAFTA trading partners to reduce and or eliminate agricultural subsidies, environmental concerns, and an overall move to greater self-reliance ushered in a new direction for agriculture and agri-food policies. Realising that long-term solutions required new approaches a series of agricultural policy reforms were introduced over the 1995-97 period, which are expected to have a major impact on the agri-food sector in Canada.

6.1. Federal policy changes

The 1995 and subsequent Federal Budgets reduced Agriculture and Agri-food Canada's (AAFC) annual expenditure levels from C$ 2.1 billion in 1994-95 to about C$ 1.6 billion in 1998-99. The focus of AAFC's policies changed from the direct commodity intervention policies of the 1970s and 1980s to growth initiatives for the agriculture and agri-food sector. AAFC expenditures are more evenly balanced between farm income support programmes, now mostly in the form of trade and production neutral whole farm safety net systems, and measures designed to foster greater market success. The major thrust of the new policies is to:

- help the sector develop skills and tools to manage its own adaptation in the wake of subsidy reductions and other changing forces;
- transform passive support into assistance facilitating growth, competitiveness, employment and rural community development;
- build alliances and partnerships, especially with industry.

Some of the changes which directly affect the regions of the study are:

- termination of transportation subsidies under the Western Grain Transportation Act in Western Canada and under the Feed Freight Assistance Act in eastern Canada;
- reduction of the dairy subsidy and refocusing the remaining funds, in consultation with the dairy sector, to support a successful post GATT orderly marketing system (Annapolis region);
- enhance trade and market development programmes to support agri-food exporters;
- streamline the research infrastructure and reallocate resources to industry-led cost-shared research initiatives;
- continue to move toward a national whole farm safety net system in Cupertino with farm organisations and the provinces;
- maintain food safety as a priority of the inspection system while reducing overlap and duplication, and sharing the cost of services that provide a benefit to industry.

Programme changes

As the new policy environment and programme changes came into play in 1995 the levels of government transfers under the old revenue enhancing programmes in Saskatchewan dropped from a high of C$ 1.5 billion in 1991 to C$ 323 million[11] in 1995. Some of the reduction was due to budget cuts but there was also less need, as markets improved dramatically after 1993. Cost reducing transfers declined from C$ 678.7 million in 1991 to C$ 326.9 million in 1995, most of this a result of the termination of the WGTA.

In Nova Scotia, the percentage decline in transfers was not as great as in Saskatchewan but were still significant. Revenue enhancing transfers decreased from C$ 64.1 million in 1991 to C$ 39.9 million in 1995.[12] Cost reducing transfers declined from C$ 14.6 million in 1991 to C$ 10 million in 1995. Productivity enhancing transfers were reduced by about 50 per cent from a peak of approximately C$ 9.8 million in 1990 to C$ 5.0 million in 1995.

In 1995, the federal government launched a number of short term programme initiatives to help the sector adapt to the new policy environment. Three major programme areas were included in the launch: Adjustment Programmes, Companion Programmes and Adaptation Programmes.

i) Adjustment Programmes are transition funds to help farmers adjust to the elimination of subsidies such as the FFA and the WGTA. Nova Scotia was allocated 16.2 per cent or approximately C$ 11.5 million of a C$ 72 million adjustment fund to help the livestock industry in eastern Canada adapt to its new unsubsidised circumstances. The first payment from the FFA Adjustment Fund was made to Nova Scotia producers in April 1996. At least half of this amount will flow to producers in the Annapolis region.

   In western Canada the federal government made a one-time capital payout of C$ 1.6 billion to landowners and created a C$ 300 million WGTA Adjustment Fund to help farmers adapt to the loss of the WGTA subsidy. The priorities for this fund, established through consultations with farm organisations and others, are for assistance to Manitoba and eastern Saskatchewan to help adjust to additional freight cost increases as a result of changes to the Canadian Wheat Board freight pooling methodology, to provide assistance to the alfalfa dehydration industry and to support agricultural infrastructure improvements, especially construction and/or upgrading of rural roads.

ii) Companion Programmes, funded from the safety net programmes which constituted the bulk of federal revenue enhancing transfers in the 1986-95 period, are programmes directed towards aiding producer's ability to manage risk or to complement adaptation efforts in the province.

iii) Adaptation programmes fund initiatives which are broader in scope than adjustment programmes and are aimed at strengthening the sectors economic performance and ability to adapt. The Canadian Adaptation and Rural Development Fund (CARD) has C$ 240 million over four years to provide the agriculture and agri-food sector and rural Canada with tools to co-ordinate and create new economic opportunities for both producers and communities. Industry led adaptation councils are being established in each province to set priorities, make allocation decisions and manage the province's share of CARD funds.

6.2. Impact of policy reforms

6.2.1. Annapolis region

Region is strong and prospering
Reforms result in less distortion of market signals
Supply management policies will affect future for dairy and poultry
Greater income stability
Higher feed grain costs
Policies have helped raise investments and farm receipts to all time high
The cost of ''rollovers'' to the next generation will be high
Region will be least affected by reforms
Innovative managers will adjust and prosper
Further polarisation of commercial and par-time farm operators
Food and suppliers will prosper in the region
Region will generate a larger share of the provincial farm income

Both the federal and provincial governments have made major budget cuts and have cut and/or amended most of the 1980s subsidy programmes. Though the impact of policy reform on agriculture and food is expected to be less in the region than other parts of Nova Scotia or the Atlantic provinces, the farming community will have to adjust immediately to the decrease in cash flow from government programmes.

The elimination of the FFA will increase feed costs to the region's livestock producers, but primarily to the hog and poultry industries, both of which are dependent upon imported feed grain. The FFA Adjustment Payment will reduce the impact in 1996 and 1997; however, beyond that, livestock producers will have to adjust to the increase in the "real" cost of purchasing feed grains. It is forecasted that for large hog and poultry producers the impact will be up to C$ 50 000 in reduced annual benefits. Industry leaders, while not enthusiastically welcoming the change, express the attitude that the industry may be better off in the long run if it adjusts to the true signals from the market.

While the value of local feed grains is expected to go up, the increase is not expected to have a major impact on local grain production. Some individuals may expand existing grain production in an effort to hold costs, but most poultry and hog production will continue to rely on grain moved into the province.

Higher feed costs will affect the hog sector the most. Increased costs cannot be passed on through higher prices as the market price is established on a North American basis. The sector, already under pressure because of the highest production costs in North America, may well falter under the additional strain. This will extend ripple effects to the processing and service sectors. The major hog processing facility in the region is already operating at minimal competitive levels; any further decline in the supply of market hogs could put it in jeopardy.

The supply managed commodities are expected to adapt to the policy reforms with little impact in the short run. The dairy and poultry sectors are protected by international trade agreements and inter provincial trade restrictions. This represents a temporary protection for a large portion of the agriculture and food business activity in Annapolis region and without this policy protection, the sectors would have to face a much more uncertain future.

Beef production in the province is probably least affected by the policy reforms. Primarily a second enterprise or part-time farm operation, the sector probably will continue on this basis relying on locally grown forage/grain and other sources of by-product foodstuffs (*e.g.* processing waste).

The policy reforms should have a positive effect on crop production. Farmers will be seeking alternative feed sources. Forage quality improvement and more protein crop production are expected to provide ways to adjust ruminant agriculture to the higher purchased feed costs. Crop diversification is expected to accelerate as new or alternative crop opportunities are sought. Already, the region's producers are growing a new range of crops, including, grapes, vegetables for export, strawberry plants, nursery stock, ornamental plants, herbs, and greenhouse crops. The region is well suited for these new ventures, both from a production advantage and from a marketing position – within an hour drive of the largest population concentration in the province and accessible to major foreign markets.

The food processing sector is well established and, with the exception of the hog processing sector, a viable part of the economy, accounting for almost as much economic activity as the farm sector. Food processing is based on tree fruits, potatoes, berry crops, poultry, hogs and beef. The crop-based processors seem well positioned and will be relatively unaffected by policy reform. It is expected that these operations will expand and similar operations will develop for the processing of alternative crop-based products – medicinal herbs, spices and culinary crops, pharmaceutical crops, nutraceutical food products and other new opportunities.

Given the major reductions in policy funding and the withdrawal of most investment assistance, a reduction in new capital expenditure on farms would be expected. However, to date, this does not seem to be the case. Favourable prices (supply managed commodities and crops) and a general optimism in the industry have kept demand for long-term lending strong.

Another indicator of this optimism is the fact that the commercial banks are now expressing more interest in the agriculture sector, evidenced by the establishment of account specialists and agrologist

positions in the Atlantic region. After the high interest rates and a perceived bad experience in the mid to late 1980s, banks lost interest in the farming sector. There is now active pursuit of this sector's financial business. The one exception of optimism may be in the tree-fruit sector where new orchard plantings have declined since the removal of a long standing planting assistance programme.

The average age of farmers seeking loans from the provincial lending authority has gone up two years in the last ten years. This is one of the effects of the favourable climate of the eighties. At that time, many young people entered the sector, assisted by the favourable policy environment. Farm assets, including quotas, were bid up (capitalisation of programme benefits) and now, it is more difficult for new entrants to come into the industry – assets are much higher and the capital assistance programmes are gone. This will be an important issue in the future when the present highly capitalised farm operations established in the last 15 years are rolled over to a new generation.

Effects of the agri-food policy reforms on regional economic performance

Assessment of the impact of agri-food policy reforms on the regions economy remains to be measured over the longer term and is complicated by the presence of significant regional development expenditures in the region, even though these have been reduced since 1993.

The impact of agricultural policy reform on the economy of the Annapolis region is expected to be less than in other parts of Nova Scotia or the Atlantic provinces. While agri-food is important to the region's business activity, other non-food manufacturing and service activity occupy 85 per cent of the labour force. The local regional development agency, recognising the diversity of the region, is promoting it as a desirable retirement area, a location for small business start-up and as a residential area for commuters to the Halifax metro area.

Environmental issues which may arise as a consequence of the federal and provincial policy amendments to assistance for drainage and land development include:

– less land being tile drained, which may be beneficial to waterfowls and the fresh water fishery;

– fewer land management systems put in place – contouring, grass ways, which will increase soil runoff and stream siltation;

– less land taken out of second growth bushland for cropping – farmers will look for other alternatives – abandoned farm land, more intensive production, etc.;

– more intensive crop production – more manure, more chemicals in a concentrated area which increases the risk of chemical and bacterial surface and ground water pollution.

Environmental consequences from FFA elimination may include:

– reduction in hog and poultry numbers leading to reduced bacterial runoff to the regions streams and lowered levels of offensive odours adjacent to urban areas in the region;

– an expansion of corn and small grain production in order to offset higher feed costs leading to more intensive crop production, shorter rotations and more chemicals and higher applications of barnyard manure.

Measurement of the short-term impact of agri-food policy changes in this diverse economy is a difficult task. However, other sectors of the economy in the region will be impacted by the agri-food policy changes. In the short run, construction and the services sectors will be most affected. Reduction of public transfers into the sector will ultimately reduce activity in building construction, land development, equipment purchases and related activities. Reduced governments' expenditures on R&D, quality control and other programmes will reduce public service employment in the region. This will impact on retail, housing and recreational spending at local businesses. For small communities, the reduction in payrolls by several good paying government jobs can be significant. However, providing that supply management policies in the dairy and poultry industry remain in effect over the next five years, reductions in government transfers to the region's farmers are not expected to have a significant negative impact on the regions economy and labour force. The agri-food community is well represented

on local government councils and boards, and the farm interests are well served in land-use planning, environmental issues, zoning, local services, education and taxation.

6.2.2. Yorkton region

When the WGTA was terminated in 1995 and new freight cost pooling methods for Canadian Wheat Board exports were introduced at the same time, freight costs of C$ 36-39 per tonne for wheat and C$ 38-41 per tonne for barley became the responsibility of producers in the Yorkton region. The impact of rapid change on producers was to be cushioned with the one-time WGTA Adjustment Fund (WGTAAF) payment of C$ 1.6 billion to landowners and a C$ 300 million transitional assistance fund. The Yorkton region received C$ 91 860 945 from the WGTAAF.

The WGTA policy change is of primary significance to the restructuring of the regional economy because it impacts both agriculture and the rural communities. Increased transportation costs will reduce margins and put pressure on grain farms to diversify and/or additional pressure to increase in size, further reducing the number of farm families. Less grain will be exported and, therefore, available to feed livestock or be processed into higher value products. Overall, this should stimulate new enterprises and services, which could reduce population out-migration. Agriculture and agri-food diversification should provide some boost to economy of the region; however, this will have to be accompanied by development in other industries to stabilise the regional economy.

One major change occurring rapidly not only in the Yorkton region, but also across the Prairies, is the increased production of pigs and other livestock made feasible by cheaper local feed grains. Major investment is occurring in high-tech, high volume pig production units. Also, consolidation has already occurred among the major pork processing firms, and expansion is expected to double the industry's capacity within two years.

The fact that many agricultural policies and programmes, especially the WGTA, favoured export of raw commodities and discouraged local or regional value-added efforts became apparent during the 1980s. The new round of farm programmes is less intrusive and should induce value-added elements both on-farm (*e.g.* feeding grain rather than shipping it) and in rural communities. The fact that the processing industry around the region is predominantly metropolitan-based companies will be difficult to overcome. Opportunities do exist for local processing, especially for niche markets. Also, some industries based on agricultural raw materials may locate in rural communities if a competitive advantage is offered by location, transportation, or the availability of a suitable labour force willing to work for lower wages.

Within the Yorkton region, processing employment is marginally higher than the provincial average, but constitutes only 7 per cent of all employment. Employment in all other major industrial categories other than farming, however, is below the provincial average. The challenge to the Yorkton region is to create alternative employment in diversified agriculture, manufacturing, trade and services to arrest the outflow of its population. Owing to the importance of off-farm income in farm family budgets, diversification of the rural economy is essential to the survival of many farms. Continued technological development in primary production will decrease the need for labour, increase production and further technological innovation. Employment, therefore, must be generated in other sectors.

Federal, provincial and community efforts in rural development are increasing in the Yorkton region. Provincial programmes began with Community Economic Development Committees which garnered funds to develop Regional Development Corporations (RDCs). Efforts were made to attract or expand businesses and services. RDCs were located in the regional centres of Norquay, Moosomin and Melville. The RDC programme expires in 1997 and is being replaced by Regional Economic Development Authorities (REDAs) in Melville, Moosomin and Yorkton. Funding for the REDAs is cost-shared by the province and member communities. The focus of each REDA will be sub-regional rather than based in a single community.

Federal programmes include a Business Development Centre in Broadview and a new Community Futures centre in Yorkton. Plans in Yorkton are to house the Community Futures programme, the REDA office and an existing Saskatchewan Economic Development Regional Service Centre in a single build-

ing to co-ordinate all regional development initiatives. Major emphasis in regional development is to encourage agricultural value-added industries to process primary commodities. Recent expansion and development of agri-food industries hold promise for economic diversification for the region.

The combination of new generation safety net programmes in the agriculture and broad, co-ordinated agri-food and rural development initiatives at all levels of government signal a new way of thinking for the Yorkton region. The recognised need for both on-farm and community diversification, fuelled by economic vulnerability, should lead to greater self-reliance and a more stable and diversified economy for the region.

NOTES

1. Primary industry is defined as agriculture, fishing, forestry, mining and oil extraction.

2. Farm numbers in this report come from Census data. Census farms include any farm having sales over C$2 500 annually from agricultural production.

3. Cash receipts: market receipts plus direct program payments.

4. Net cash income: cash receipts less operating expenses. Does not account for depreciation or changes in farm inventory.

5. Those not living in centres of more that 50 people.

6. Primary industry is defined as agriculture, fishing, forestry, mining and oil extraction.

7. Experienced labour force is anyone who has worked since January of the previous year.

8. Net cash income (market receipts plus program payments less operating expense) is a measure of the cash available to producers from the farming business. It underestimates the actual cash position of farm families since savings, farm wages paid to family members and off-farm income are not included. It also does not include depreciation costs or changes in on-farm inventory.

9. Approximated from taxation data on agricultural census divisions partially overlapping the Yorkton region. Includes farms which reported revenues of C$ 10 000 or more for the year. *Source*: Whole Farm Data Base, Taxation Data Program, Statistics Canada.

10. Based on Annapolis region's 50 per cent share of provincial gross farm receipts.

11. This excludes the federal government transfer made under the Western Grain Transition Programme which is a one-time transfer to compensate for the loss of the WGTA.

12. This excludes the federal government transfer made under the FFA programme.

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CASE STUDY – FRANCE: BRITTANY AND BURGUNDY*

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EXECUTIVE SUMMARY

The study examines the role of the agro-food sector in the rural economies of the region of Brittany and in the region of Burgundy, and it provides a preliminary evaluation of agricultural policies, including agro-structural policies in these regions. Situated in the northern half of France, the diversity of both regions is reflected in the relatively high degree of "rurality" and in the importance of agro-food sector in the rural economies of the regions. In both regions, the share of rural population and the contribution of the agricultural and agro-food sectors to value-added and employment are higher than the national average. However, per capita GDP in both regions is much lower than the French average. While the population density in Brittany is close to the national average, in Burgundy where the population is more widely scattered and ageing, it is half of this. In contrast to Brittany, where there are virtually no disadvantaged or mountainous areas, Burgundy exhibits very pronounced intra-regional disparities. Burgundy has the third largest area of disadvantaged areas in France and almost half its total surface area is made up of fragile rural zones. Each region consists of four departments.

In terms of production and farm structures, there are differences between Brittany and Burgundy. Brittany specialises heavily in livestock products, principally dairy and non-land based products (calves, pigs, poultry and eggs). Its main crops are fodder and vegetable crops. Burgundy, on the other hand, produces marginally more crop products. Two of its Departments specialise in cash crops – principally cereals – while two others practice extensive livestock farming, particularly beef cattle (Charolais). The region is also famous for the VAOC wines it produces. Brittany's agro-food processing sector, which is the second largest in the country, produces a vast range of products, albeit of fairly low value-added. Although this can also be said of parts of Burgundy's agro-food sector, particularly meat and dairy processing, other industries in the sector produce very high value-added products: the canning industry; condiments, vinegar and sauce manufacturers and beverages. Another difference is that Burgundy has extensive forests.

Concerning agricultural policies, some of Brittany's production (*e.g.* milk) is heavily subsidised under the CAP while other sectors are much less supported (*e.g.* vegetables and certain animal products). The region has also largely benefited from measures to adjust production structures, particularly start-up subsidies for new entrants. Moreover, both its agricultural and downstream industries benefit from regional structural measures under EU objectives 2 (*i.e.* development of declining industrial areas) and Objective 5*b* (*i.e.* development of rural areas). In the Burgundy region, support under the CAP is accorded mainly to cash crops, particularly cereals, and to extensive cattle farming. As regards structural adjustment measures, Burgundy seems to have utilised aid more for the cessation of dairy farming and early retirement than for start-up subsidies to new entrants.

The report argues that the 1992 CAP reform will affect the two regions in various ways. It will accelerate expansion of farms, both in size and economic weight, via the continuing capacity of the larger production units to accumulate and via government incentives to older farmers to take early retirement. The CAP and the reform process, in each region, are leading, in particular, to rapid extension of field crop farms, taking up newly available land; further intensification and concentration in farms engaged in intensive stockbreeding; maintenance or expansion of units engaged in extensive farming; more marked regional or infra-regional specialisation, with the most diversified or most dispersed systems generally proving less "competitive" in taking up direct assistance or production rights and quotas, or simply as in the past having less external economies of proximity than well organised regional production systems; continuing fall in the agricultural work force, through the continuing substantial productivity gains over the recent period; as a result, the decline in the demographic and social importance of agriculture in rural areas has not been slowed. Finally, the report concludes that if the agro-food sector is to continue to play a dynamic role in the regions' rural economies it will have to adapt to new agricultural policy directions. To this end, it is necessary, *inter alia*, that the sector becomes more competitive by improving product quality and range, increasing the value-added of its processed products, diversifying farm income sources and paying due attention to environmental concerns.

I. INTRODUCTION

Although the contribution of the primary sector[1] to France's gross domestic product is declining, at 3.4 per cent in 1990-92, it is still higher than in many OECD countries. In addition, compared with other countries at a similar level of development, the sector continues to employ a relatively high proportion of the labour force (5.4 per cent in 1990-92). The agro-food industry's share of employment and gross domestic product, lower than those of the primary sector, were relatively flat during the 1980s and accounted for 2.6 per cent of all employment and 3.0 per cent of gross value added in 1990-92. With around 24 per cent of the 12-country European Community's (EC) farmland, France has the highest agricultural output in the European Union (EU) and in 1994 accounted for 21.3 per cent of the EC's overall farm output. France's foreign trade in agro-food items shows a steady surplus through exports of drinks, wine and alcohol, cereals, dairy products, sugar and confectionery and live animals. The surplus stood at FF 47 billion in 1994, and 80 per cent comes from EU trade.

France shows considerable regional diversity in terms of climate, relief and soil quality, giving scope for a wide variety of agricultural production, equally distributed across livestock and crops. Wine, cereals and fruit and vegetables make up the bulk of plant production, while livestock farming predominantly produces milk and beef. In 1993, French farms made up 11 per cent of the European total. They are over twice the average size of European farms,[2] but there are considerable differences between, for instance, the very small vineyard holdings in Burgundy and the large cereal farms in the Paris basin.

Even though it supplies only a little over a third of all rural jobs, agriculture is regarded in France as playing an important role in rural areas, not least in terms of land use and management. Since the 1970s, the rural population has fallen very little, and there was even a slight rise in the late 1980s. By 1990, the rural population stood at 26 per cent.[3] But there has been a marked decline in the population in remote rural areas,[4] whose proportion went down from 5.2 per cent in 1968 to 3.7 per cent in 1990.

As a member of the EU, France applies the Common Agricultural Policy (CAP) to its farm sector. In addition to common market organisation, the policy includes direct payments to production, measures to adjust production structures (Objective 5*a*), regional structural measures (Objective 5*b*) and agri-environmental measures. In France, the promotion of rural development is integrated with physical planning and development policy, whose chief principles are decentralising decision-making, securing equal access to services, and allocating resources more effectively.

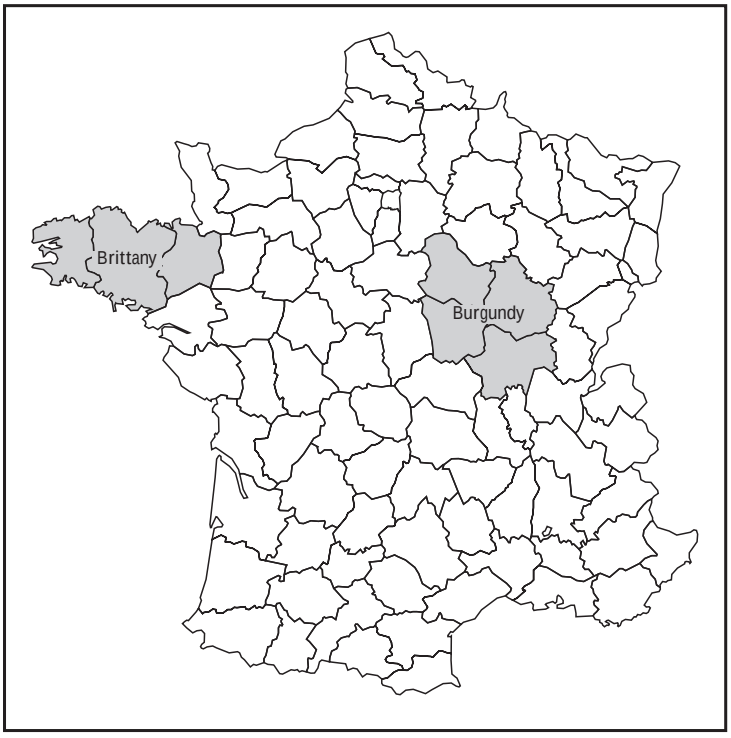
Regional diversity in France is reflected in the scale of the rural population and the significance of the farm and agro-food sector in the local economy. Situated in the northern half of France, the two regions selected for the pilot study, Brittany and Burgundy, both have a high rural population, around 43 per cent, well above the national average. The contribution of the agricultural and agro-food sector in these regions to regional value added and employment are also above the country average (virtually double in Brittany). In both regions, per capita GDP is much lower than the French average. While the population density in Brittany is close to the national average, in Burgundy it is only half of this. From the rural development standpoint, the choice of these regions means that a substantial range of circumstances can be covered, though not the full range that France presents, particularly with regard to mountainous and Mediterranean areas. In addition, Burgundy exhibits very pronounced intra-regional disparities.

After outlining the general features of Burgundy and Brittany in Section 2, the study identifies the significance of the primary and agro-food sector in each region in Section 3, and then describes the implementation of farm policies in Section 4. Section 5 is devoted to a critical assessment of policy, and Section 6 presents the conclusions.

II. GENERAL FEATURES OF THE TWO REGIONS

Situated in the northern half of France, Brittany and Burgundy cover 2.7 and 3.2 million hectares respectively, with some 1.8 million hectares of farmland in each case. Both regions have an oceanic climate, somewhat mitigated in the case of Burgundy. Brittany has a mild, wet climate with moderate

◆ **FRANCE** – ***Location of Brittany and Burgundy***



rainfall, but Burgundy's climate is also influenced by continental and Mediterranean factors which widen the temperature range and reduce rainfall.

Burgundy presents a varied physical environment, mostly plains and plateaux at modest altitude with a semi-mountainous area going up to 900 metres, the Morvan, in the centre; this forms the watershed. There is considerable geological variety as well: marl, limestone, sandstone and granite. The region has extensive and diverse woodland, large cereal-growing areas in Yonne and on the plateaux, and a mosaic of renowned vineyards (EUROSTAT, 1993). The physical environment in Brittany is more uniform. Situated in the western part of the Armorican chain, it consists largely of a tormented peneplain whose highest features are close to 400 metres. The soil is frequently acid, with low fertility and impermeable. The predominant rural landscape is bocage (pasture and hedges).

For administrative purposes, Brittany consists of four departments: Côtes d'Armor, Finistère, Ille-et-Vilaine and Morbihan. There are 1 268 communes, including 1 102 rural communes. Côtes d'Armor and Morbihan are more "rural" than Ille-et-Vilaine and Finistère, which contain the region's two chief cities, Rennes and Brest. Economic development is largely in the south-eastern half of the region, in particular around Rennes and Vannes, where industrial and tertiary employment is concentrated. The tourist areas on the coast, particularly Auray and Saint-Malo, are expanding. But central Brittany, which is rural, without substantial towns and off major transport routes, is losing population. The rural communes close to the main towns are developing apace (EUROSTAT, 1993).

Like Brittany, Burgundy consists of four departments: Côte-d'Or, Nièvre, Saône-et-Loire and Yonne. They differ from one another, and also show considerable internal disparities. Burgundy has 2 044 communes, including 1 899 rural ones. Côte-d'Or is the most prosperous department. The main city, Dijon, and its surroundings contain two-thirds of the department's population, whereas the remainder of its area is lightly populated. With an industrial tradition, Saône-et-Loire suffered during the economic crisis, but the Saône valley remains relatively dynamic. There is a concentration of vineyards around

Mâcon. In the south-west, the Loire valley lacks dynamism, a situation exacerbated by the livestock crisis. Yonne is an agricultural department. The region around Sens, in the north, benefits from the influence of Paris. Apart from the Auxerre basin, the population is ageing. Nièvre, with a low and ageing population, is the poorest of the departments in Burgundy. There is an imbalance between the mountainous Morvan in the east, with ecological and natural advantages, and the busy industrial Loire valley to the west, especially around Nevers (EUROSTAT, 1993).

The two regions also differ in terms of density and size of population. While Brittany is overall as densely populated as the French average, Burgundy is among the least populated parts of Europe. Its population density is only half the average for France (Table 1). Population growth in Burgundy has become very slim, and the region no longer attracts people from elsewhere. Density is particularly low in rural areas, as over one-third of the population is concentrated in the region's 15 communes with over 10 000 inhabitants. The population of Burgundy has aged sharply since 1970, furthermore, and it is among the 25 most ageing regions in Europe. As a result of early retirement during the economic crisis, the employment rate[5] in Burgundy is slightly lower than the French average. The same is true of the average unemployment rate. Brittany shows disparities between high population density in Finistère and Ille-et-Vilaine (125 and 123 inhabitants/square kilometre) and the below-average levels in Côtes d'Armor and Morbihan (79 and 93 inhabitants/square kilometre). The long-standing high population growth in Brittany has slackened, and the proportion of elderly people is rising. At the same time, employment rates are comparable to the French average, as is the average unemployment rate. Last, one of the region's main assets lies in its human resources: Brittany has one of the highest school enrolments in France.

At the beginning of the 1990s, Burgundy and Brittany both had a high proportion of rural population, well above the French average (Table 1). Nevertheless, both regions experienced a steady decline in rural population between 1946 and 1975, levelling out thereafter. Rural population as a proportion of the total population in Brittany fell from 70 per cent in 1946 to 42 per cent in 1975 and then held steady during the 1980s at around 43 per cent. A similar, though less pronounced, trend is found in Burgundy over the same period.

The two regions in the case study play relatively modest roles in the French economy. Combined, they contribute only 6.4 per cent to France's gross domestic product. Although Brittany's weight is more significant, and its economic structures have modernised rapidly over the recent period, per capita GDP there represented only 81 per cent of the average for France in 1991, ranking it 16th among French regions. Ille-et-Vilaine had the highest per capita GDP in 1991, and made the greatest contribution to Breton GDP. Brittany is among the regions with the lowest average wages. Per capita GDP in Burgundy is higher than in Brittany. Among departments in Burgundy, Côte-d'Or had the highest per capita GDP in 1991. At the same time, households in Burgundy have incomes slightly below the national average. Assistance from the EU concerns the areas affected by industrial restructuring (Objective 2) and areas with a marked rural character and a risk of economic decline or desertification (Objective 5*b*).

A region of varied activity, Burgundy is a little more agricultural and industrial than the French average. The primary sector and the agro-food industries account for 5.4 per cent of the region's value added. Services are the most important sector in the economy. Industrial activity is diversified. Apart from the metal sector (iron and steel, metalworking and, above all, mechanical engineering), the major sectors in employment terms are electrical engineering and electronics, agro-food and textiles and clothing. Parachemicals and pharmaceuticals are two dynamic sectors. Industry located in Burgundy is highly dependent on decision-making outside the region: 70 per cent of employees work for groups whose parent company is based in Paris or abroad. The tertiary sector accounts for 64 per cent of jobs, including a third in government service. The wealth of historic artifacts and its gastronomic reputation, notably for wine, make Burgundy particularly attractive to tourists. In Brittany, the primary sector and the agro-food industries account for 13.5 per cent of regional value added. As in Burgundy, the service sector is predominant in the economy, accounting for no less than two-thirds of total value added. Industry in Brittany is dominated by the agro-food sector, but car-making, electronics and, in particular, telecommunications are also well to the fore in the regional economy. Tourism, chiefly along the coast, is another strong point.

III. AGRICULTURE AND THE AGRO-FOOD SECTOR IN BURGUNDY AND BRITTANY

The primary sector is significant in both regions, but overall the agro-food sector has greater weight in the Breton economy. Its contribution to regional GDP and employment is over twice the national average. This has helped to preserve the relatively high density of rural population. In addition, agriculture and the agro-food industries represent a considerable proportion of Brittany's exports, 37 per cent in 1994. In addition, products from the Breton agro-food sector account for 10 per cent of France's agro-food exports. In contrast, the agro-food share of employment and value added in Burgundy is smaller (Table 1). Even so, agricultural and agro-food output forms one of the main items in Burgundy's exports: 26 per cent of total exports, as against 15 per cent in the rest of France. It should be noted that Burgundy's agriculture and forestry (and notably its vineyards) account for 7 per cent of France's agricultural exports. In addition, farming and forestry remain significant in the regional economy: their contribution to value added is a little under twice the national average and, though in sharp decline, their contribution to employment is also above the average for France. Burgundy contributes 5.3 per cent of French farming's output of plant products, and 3.5 per cent of livestock products.

3.1. Agriculture

3.1.1. Brittany

Farm production in Brittany specialises heavily in livestock products, which account for roughly 90 per cent of deliveries (Annex 1: Table A1). In addition to milk production, in which a large proportion of farms in Brittany are involved, the region specialises in off-land livestock production, for instance pigmeat, poultry and eggs. These have developed with the help of market organisation and technical support. This has also been the case for some vegetables. The majority of pigmeat and vegetable producers belong to producer groups organising the marketing side.

Although farms in Brittany are small, it is the leading French region for a number of livestock products and vegetables. It supplies 54 per cent of French pigmeat deliveries, 23 per cent of veal, 30 per cent of poultry and eggs, 19 per cent of milk and 12 per cent of fresh vegetables. Despite this leading position (23 per cent of livestock deliveries), Brittany ranks only third when it comes to the value added of farm deliveries and gross farm income, accounting for approximately 8 per cent of the French total. Agriculture in Brittany is factor-intensive, particularly for feed and labour.

Between 1984 and 1994 poultry farming increased sharply, apart from egg output, whilst milk deliveries declined. The growth in milk production was abruptly curtailed by the introduction of the quota scheme. Since 1983, over half of all farmers have abandoned milk production. It is mainly elderly farmers with small farms who have ceased farming, encouraged to do so by a variety of accommodating measures. Over this period the dairy herd in Brittany declined by about 500 000, levelling off at 866 000 in 1994. This change occurred within a context of improved yield. The Prim'Holstein has emerged as the main dairy breed, making up 80 per cent of the dairy cow herd, and milk yield per cow has greatly improved, increasing from 4 400 litres in 1984 to 5 132 litres in 1994. Dairy cattle still account for 85 per cent of the total herd in Brittany.

Pigmeat production in Brittany is mainly concentrated in two departments, Côtes d'Armor and Finistère. Pig numbers in the region have increased sharply in the past ten years. Poultry farming continues to develop, but after a decade of high growth it is now faced with GATT restrictions on export subsidies. This sector, which produces not only table chicken but also large quantities of turkey and guinea fowl, is highly integrated with co-operatives and the compound feed manufacturers. Rabbit farming, which is just as important, is experiencing some difficulties, and production is falling as a result of the incentives offered to some farmers to cease farming.

Whilst vegetable production in Brittany is overshadowed by the predominance of livestock farming, it is nonetheless an important sector in the region's economy. In 1994, Brittany had 85 000 hectares to vegetables, not including potatoes; that represents 5 per cent of its farmland and a total yield of 1 million tonnes, roughly a third of which is exported. Early and seasonal field vegetables, mainly destined for the fresh vegetable market, are concentrated on the north coast. Market gardening, which

Table 1. **General presentation of Burgundy and Brittany**

	Burgundy	Brittany	France
General data			
Area ('000 hectares)	3 158	2 751	544 919
Farmland, 1995 ('000 hectares)	1 775	1 791	300 750
Estimate of population at 1 January 1996 ('000)	1 613	2 855	58 265
Population density, 1996 (inhabitants/km^2)	51	105	107
Percentage change 1980-1990	1.4	4.6	5.3
Labour force participation rate (%)	53	52	55
Unemployment rate at 31 December 1995 (%)	11.0	10.9	11.6
Rural population, 1990 (%)	42.6	42.7	26.0
Employment, 1994 ('000)	598	1 048	22 029
of which: Agriculture	7%	10%	5%
Industry	22%	18%	20%
of which: Agro-food employees	3%	6%	n.a.
Building and public works	7%	6%	7%
Services	64%	65%	69%
Value added, 1992 (FF millions)			
% of regional total	163 775	271 527	6 754 182
of which: Agriculture	5.4	7.6	2.9
Agro-food	2.8	5.9	2.8
Industry less agro-food	23.1	13.7	21.2
Building	5.5	5.4	5.3
Services	63.2	67.4	67.7
Total	100	100	100
% of national total:			
of which: Agriculture	4.4	10.3	100
Agro-food	2.4	8.5	100
Industry less agro-food	2.6	2.6	100
Building	2.5	4.1	100
Services	2.3	4.0	100
Income and GDP			
Average net income, 1992 (tax data, FF '000)	77.9	77.8	77.8
Per capita GDP, 1991 (FF '000)	103.2	94.5	118.3
Per capita GDP, 1990 (EUR = 100)	97	90	109
Contribution to national, 1992 (%)	2.4	4.0	100
Exports, 1994 (FF millions)			
Primary sector	5 073	2 964	71 748
Agro-food	3 588	12 804	128 957
Total exports	33 613	42 579	1 294 275
% of national total: Primary sector	7.1	4.1	100
Agro-food	2.8	9.9	100
Total exports	2.6	3.3	100
Imports, 1994 (FF millions)			
Primary sector	486	3 337	53 763
Agro-food	1 540	6 303	101 894
Total imports	20 517	25 859	1 271 434
% of national total: Primary sector	0.9	6.2	100
Agro-food	1.5	6.2	100
Total imports	1.6	2.0	100

n.a.: not available.
Source: INSEE, *Tableaux de l'économie bretonne, 1995.* AGRESTE, *Les tableaux de trajectoire – Bretagne 1996,* octobre 1996 et SCEES, Bourgogne, Dijon.

was originally clustered around towns, is no longer just a local activity and has become the preserve of specialised forced crop farms organised around marketing structures (Plougastel-Daoulas, Saint-Pol-de-Léon, Paimpol and Rennes). This form of off-soil growing under glass requires heavy investment and has been developed with government support. It currently constitutes a considerable share of vegetable cultivation, with tomatoes to the fore. Market gardening is diversifying, with the development of baby vegetables and a move towards organic vegetable production.

Pigmeat, poultry and vegetable farming have developed as a result of sound market organisation and technical support. Sale by the clock systems were, for instance, introduced back in the 1970s to market and fix the prices of the main vegetables and pigmeat. Most pigmeat farmers in Brittany belong to producer groups and these are responsible for virtually all production. There are 22 such groups in Brittany, some very large. Whilst there is no vertical co-ordination in the strict sense of the term, these groups have developed durable partnerships (contracts) with slaughterers, even though the slaughterers tend to have their own competitiveness-enhancing strategy. Virtually all vegetable production is structured on producer groups. They have organised producers and invested in packing plants and also in processing plants, which individual investors are often reluctant to fund.

Brittany contains approximately 9 per cent of all the farms in France, more or less evenly spread between the four departments. Brittany has about 6 per cent of French farmland, and less than 0.1 per cent of the areas classified by the EU as disadvantaged areas. Since the last agricultural census in 1988, one third of Brittany's farms have disappeared, leaving about 62 000 in 1995 (Table 2). The rate of disappearance of farms in Brittany is higher than the French average. Despite a steady increase over the past few years, the average area of farms in the four Breton departments (28 hectares in 1995) is far lower than the French average. The number of farms under 20 hectares declined sharply between 1988 and 1993, whilst the number over 50 hectares more than doubled in the same period. But small farms (under 20 hectares) still accounted for 47 per cent of farms in Brittany in 1993 (Annex 1: Table A2). The majority of farm labour is family labour (over 90 per cent) and only 5 per cent of farms have permanent employees.

3.1.2. Burgundy

Farm production in Burgundy (FF 12-13 million in 1994 and 1995) is centred on cereals, beef cattle and wine (Annex 1: Table A1). In 1994, crops formed 60 per cent of regional deliveries. Fodder and grazing accounted for half of farmland, cereals 28 per cent, oilseeds 10 per cent and fallowing 7 per cent. The statistics for Burgundy simply reflect the region's geographical specialisation between, on the one hand, Côte-d'Or and Yonne which specialise heavily in crops (78 and 72 per cent of deliveries respectively) and, on the other hand, Nièvre and Saône-et-Loire where livestock production accounts for 60 per cent of total deliveries.

The main cereal crop is wheat, covering 58 per cent of the grain-growing area and chiefly grown in Côte-d'Or and Yonne. Barley accounts for 26 per cent of farmland to cereals, and is chiefly produced in the same two departments. Finally, over half of the grain maize crop comes from Saône-et-Loire. The other main crops grown in the region include oilseeds (sunflower and rape), industrial beet and potatoes, all in Yonne and Côte-d'Or. Most of the wine produced in Burgundy is VAOC wine. Half is produced in Saône-et-Loire and 29 per cent in Côte-d'Or. In the latter, two-thirds of wines are

Table 2. **Overview of the agricultural sector in Burgundy and Brittany, 1995**

	Burgundy	Brittany	France
Number of farms	27 615	62 005	795 000
Average farm hectarage	63	29	38
Number of family (AWU) (1994)	34 850	86 095	879 583
Final value of deliveries (FF '000)	12 534	38 700	285 416
of which: Livestock production (%)	38	87	50
Plant production (%)	62	13	50
Farm value added (FF '000)	7 105	12 633	138 694
Gross operating income per farm in FF	267 256	143 585	167 248
Index France = 100	160	86	100

Source: AGRESTE: *Les tableaux de trajectoire – Bretagne 1996,* octobre 1996. AGRESTE, *La statistique agricole – Bourgogne,* Dijon, 1996.

red VAOCs whereas white VAOCs predominate to a large extent in Nièvre and Yonne (over 80 per cent) and to a lesser extent in Saône-et-Loire (52 per cent, which is the regional average).

Livestock production in Burgundy is dominated by beef cattle. Dairy cattle make up only 13 per cent of the region's total cow herd. Extensive beef production predominates, accounting for nearly half of meat production in the region. Saône-et-Loire is the main beef-producing department, with half the region's total headage. Pig and poultry farming increased between 1984 and 1994 and are mainly centred in Saône-et-Loire and Yonne. Pigmeat and poultrymeat each account for around 20 per cent of Burgundy's meat production. Following the introduction of quotas in 1984, milk deliveries in Burgundy fell heavily until 1988, then more slowly until 1994, whilst the yield per cow increased by more than 50 per cent in the same period to 5 900 litres a year.

The disparities in structure and production between departments is reflected in gross farm income figures, these varying from around FF 180 000 for farms in Nièvre and Saône-et-Loire to about FF 350 000 for farms in Côte-d'Or and Yonne. The regional average is about FF 267 000 (Table 2).

Burgundy has the third largest area (1.2 million hectares) of disadvantaged areas in France. However, it ranks far lower in terms of the number of farms that this affects. The area officially classified as actual mountainous area is far less extensive. The average size of Burgundy farms is far greater than the French average (60 hectares compared with 38 hectares). The average size exceeds 70 hectares in Côte-d'Or, Yonne and Nièvre whilst Saône-et-Loire, with 42 hectares, brings down the regional average. In 1993, although farms under 20 hectares had declined markedly since the last agricultural census in 1988, they still accounted for 40 per cent of agricultural holdings in Burgundy (Annex 1: Table A2).

3.2. Downstream industries

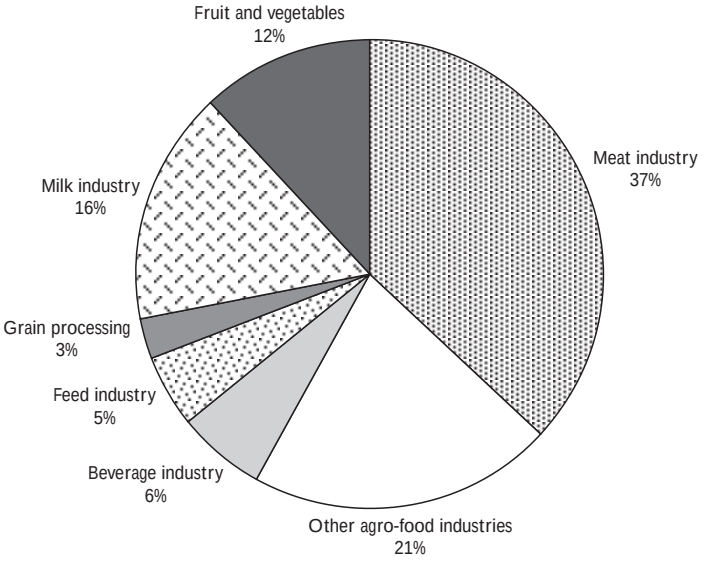
The intensification of agriculture in Brittany has been accompanied by the development of many new infrastructures or businesses closely related to farming. There has been considerable expansion in suppliers, dealers, processors, education and research establishments, trade organisations and inspection and extension services. Brittany is the leading French region in agricultural processing industries, representing 14 per cent of French agro-food firms' turnover. In Burgundy, the agro-food industry accounts for 12 per cent of employment and is the fourth industrial sector in the region. But despite its strong culinary tradition Burgundy ranks only 16th among French regions in the agricultural and food industries. Turnover was FF 17 million in 1993, which puts it far behind Ile-de-France, Brittany and Pays de la Loire.

Value added in the agro-food industries in Burgundy is close to the French average. Alongside the large meat and dairy sectors, which have low value added, Burgundy has seen the growth of industries with higher value added such as fruit and vegetable canning, alcoholic and non-alcoholic beverages and others including the manufacture of condiments, vinegar and black currant liqueur. In contrast, value added in the agro-food industries in Brittany is lower than the French average. This reflects the traditional dominance of first-stage processing products in agro-food production in Brittany.

In both regions the agro-food industries are dominated by meat and dairy processing, in terms of both employment (Figures 1 and 2) and gross sales (Table 3). In Brittany, these two sectors alone generate 71 per cent of all agro-food gross sales, and 70 per cent of agro-food employment. A similar, albeit less marked, situation is found in Burgundy, where meat and dairy processing firms represent 52 per cent of total agro-food gross sales and 53 per cent of employment. Despite the dominance of meat and dairy processing activities, both regions also produce other agro-food items. Brittany is well represented in vegetable canning, fish canning and feed production. Whilst cheese output is rising steadily, Brittany still has a particularly large share of France's dairy output in items such as butter and skim milk powder where value added is low. In Burgundy, the other agro-food sectors are quite diverse, including beverages, canning and milling.

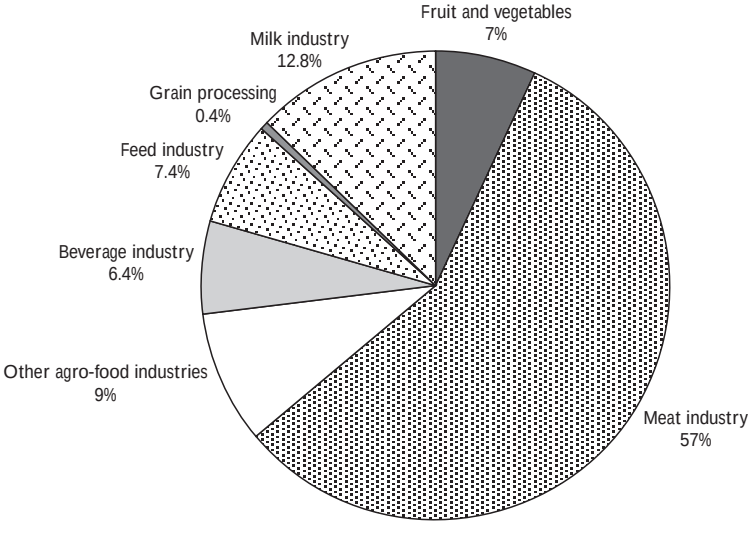
In 1994 there were 417 firms with 10 or more employees in the agro-food industry in Brittany, an increase of 13 per cent since 1988. Over the same period, permanent employees increased by 20 per cent, to a total of around 48 000 in 1994. Firms in Brittany are larger than the French average. In Burgundy there were 141 firms with 10 or more employees in 1994, employing around 11 000 people.

◆ Graph 1. ***Burgundy: Agro-food employment by sector, 1993***



Source : AGRESTE, *La statistique agricole*, Bourgogne, Dijon.

◆ Graph 2. ***Brittany: Agro-food employment by sector, 1993***



Source: AGRESTE, *La statistique agricole*, Bretagne.

Table 3. **Gross sales and value added of agro-food industries, 1993**

	Gross sales				Value added as a % of gross sales		
	Burgundy		Brittany		Burgundy	Brittany	France
	FF Mn	% of national	FF Mn	% of national	%	%	%
Meat industry	5 699	3.7	42 649	27.6	14.8	13.7	14.0
Dairy industry	3 243	2.4	18 588	14	13.4	8.9	14.0
Fish industry	132	1.2	2 451	22	34.7	22.8	18.9
Fruit and vegetable industry	2 177	13.2	3 693	22.5	34.7	18.4	n.a.
Feedsstuffs	1 413	2.6	14 553	27.3	10.4	8.1	13.6
Milling	764	6.0	365	3.0	16.5	17.8	16.1
Beverages	1 232	3.4	129	0.9	21.0	36.0	27.3
Other food industries	2 791	1.6	3 291	1.9	22.5	26.3	26.0
All sectors	17 451	2.7	85 718	13.3	19	12.7	19.0

Source: INSEE, *Enquête annuelle d'entreprise 1993.*

Although the major restructuring of the agro-food sector in the last twenty years – particularly in the dairy and meat industries – has led to a growing concentration of agro-food groups, small firms continue to be a feature. The job losses brought about by restructuring have so far been offset, particularly by large Burgundy firms which performed very well during this period, but the picture now appears to be changing.

The agro-food industries and agricultural services have an essential place in the industrial fabric of Brittany. Agro-food businesses, particularly those related to livestock farming generating low value added, have taken advantage of technological change and the development of transport systems and have moved closer to the main farming areas in order to reduce production costs. Firms have also relocated to rural communes close to main trunk roads for easy access to consumer markets. These industries are instrumental in the diversification of the rural environment and in part offset the decline in the agricultural population. A majority of plants are located in rural communes or urban areas with less than 10 000 inhabitants. They employ 64 per cent of the entire agro-food work force in Brittany (AGRESTE, 1995e), which helps to maintain a level of rural population in Brittany that is high compared with the rest of France.

3.3. Other primary sector or related activities

Among the other primary sector activities, sea fishing and shellfish farming is still a major part of Brittany's economy. It employed 9 700 sea fishermen in 1995, 32 per cent of the industry total in France. Over half of France's sea fishing activity is based in Brittany. However, because of over-fishing and fierce competition from other EU countries, Brittany is experiencing a major structural crisis here, reflected in a large reduction in its fishing fleet (down 36 per cent between 1 January 1989 and 1 January 1994, to 2 004 vessels).

Burgundy has extensive woodlands, covering approximately 30 per cent of its area;[6] 82 per cent are deciduous trees, and of these 79 per cent are oaks. Burgundy in fact has more oaks than any other region. 1 892 000 m^3 in of wood was cut in 1993 (less than 3 per cent of French production), over half of which was lumber, a little under a third industrial timber and the rest firewood. Brittany is not densely wooded (10 per cent of the region's area) although trees abound in farm banks and hedgerows. Forestry production is chiefly centred on softwood trees.

IV. IMPLEMENTATION OF AGRICULTURAL POLICIES IN BURGUNDY AND BRITTANY

Burgundy benefits from direct payments and structural initiatives under the CAP in addition to funds under the EU's rural development policy. The breakdown of aid for arable areas and livestock

farming reflects the specialisation of the region's departments: field crops in Yonne and Côte-d'Or, extensive livestock farming in Nièvre and Saône-et-Loire. Among the measures aimed at adjusting production structures, aid for ceasing dairy farming and for early retirement has been more widely taken up than the special aid for young farmers or loans for capital investment, confirming the picture of a region undergoing rapid land restructuring. Burgundy also benefits extensively from compensation allowances for natural disadvantages under Objective 5*a*. Finally, measures under EU Objective 5*b* are also important for Burgundy's agricultural sector, in that almost half the region's land area is made up of fragile rural zones, and almost half of the funds allocated under this heading for the period 1991-1993 were for agriculture and rural infrastructure. In Burgundy, these measures were implemented through a rural development programme encompassing a number of physical development initiatives. What was new about this programme for agriculture was the introduction of development projects targeted at specific geographical areas; CLARE contracts (*Contrats locaux d'adaptation et de restructuration des exploitations agricoles* – local farm adjustment and restructuring contracts).

In Brittany, milk and beef – which account for 26 and 16 per cent of total turnover, respectively – are the only major agricultural products that are highly subsidised by the common agricultural policy. However, the number of farms and farmers involved is very high. Brittany, where the number of young farmers setting up is higher than the national average, benefits extensively from the special aid for young farmers. In addition, the restructuring of livestock farming, particularly dairy farming, has contributed to the high take-up of aid for farm improvement plans, low-interest loans and aid for withdrawing from dairy farming. Brittany does not receive aid under special programmes for mountainous and other disadvantaged areas, but it has received more aid under Objective 2 and 5b programmes than the other regions of France between 1988 and 1993. Agro-environmental measures are particularly important for the region; over one-third of its *cantons* have a structural surplus of nitrogen.

France's Agriculture Modernisation Act, passed in January 1995, provides French farming with the framework it needs to achieve the two targets it has been set: to become efficient and to maintain the countryside (BIMA, 1995). Under this act, a number of measures[7] were brought in to encourage young farmers to set up, reduce farmers' contributions, modernise the status of farm enterprises, strengthen instruments for co-ordinating agricultural policy, and improve social insurance cover. These measures should help farming in Burgundy and Brittany just as in other regions of France.

4.1. Direct payments under the CAP

In 1994, payments made to farmers in Burgundy and Brittany under the arable area payments scheme totalled FF 1 829 and FF 1 427 million, respectively (about 11.4 per cent of total payments for France). Three-quarters of all applications from Brittany and just under half of those from Burgundy were made under the simplified scheme for ''small-scale producers'', who are exempt from set-aside requirements. In 1994 each small-scale producer received an average of FF 19 000 in Brittany and FF 13 000 in Burgundy (the national average was FF 14 000). Other farmers received an average of FF 68 000 in Brittany and FF 188 000 in Burgundy (FF 129 000 nationally). It should be noted that both regions received payments for around 850 000 hectares (Table 4).

In 1994, Brittany received a total of FF 255 million in Community aid for livestock farming under the CAP, 3.6 per cent of the total for France. The total was so low because of the relatively limited number of extensive cattle and sheep farms in Brittany. Of this total, 37 per cent was paid in suckler cow special premiums, 59 per cent in beef special premiums for male cattle and 4 per cent in sheep annual premiums. The amount paid out under the suckler cow special premium scheme has quadrupled in five years while the number of cows for which it is paid has almost doubled. Some 6 800 applications were received in 1994. Each eligible farm received the premium for an average of 13.7 cows. Fifty-seven per cent of the 1994 applicants also received the additional ''extensification'' payment. The number of animals for which beef special premiums were claimed remained constant but the number of qualifying applicants in 1994 (17 700 out of a total of 23 000) was 8 per cent higher than in 1993. Higher unit premiums also explain the higher totals. Sheep annual premium scheme payments were received by

Table 4. **CAP direct payments received by Burgundy and Brittany, 1994**

	Burgundy	Percentage of total	Brittany	Percentage of total	France
Arable areas payments					
Eligible claims	16 839	3.9	45 170	10.5	429 671
With set-aside (%)	55	n.c.	24	n.c.	45
Without set-aside (%)	45	n.c.	76	n.c.	55
Area eligible ('000 ha)	857	6.5	850	6.4	13 219
With set-aside (%)	9.2	n.c.	9.1	n.c.	8.30
Payments allocated (FF million)	1 829	6.4	1 427	5.01	28 476
Average payment (FF)	109 000	n.c.	31 595	n.c.	66 000
With set-aside (%)	188 000	n.c.	68 076	n.c.	129 000
Without set-aside (%)	13 000	n.c.	19 173	n.c.	14 000
Livestock allowances					
Total payments (FF '000)	686 768	9.8	254.794	3.6	7 007 700
Suckler Cow Special Premium					
No. of applications	12 018	n.c.	6 768	n.c.	n.a.
No. of animals	423 626	n.c.	92 888	n.c.	n.a.
Amount paid (FF '000)	492 778	12.1	94 233	2.3	4 036 100
With additional extensification payment (%)	97	n.c.	13.5	n.c.	n.a.
Beef special premium					
No. of applications	9 374	n.c.	23 092	n.c.	n.a.
No. of animals	190 257	n.c.	213 803	n.c.	n.a.
Amount paid (FF '000)	157 081	10.2	150 290	9.8	1 539 900
With additional extensification payment (%)	96	n.c.	10.5	n.c.	n.a.
Sheep premium					
No. of applications	4 305	n.c.	1 377	n.c.	n.a.
No. of animals	264 263	n.c.	75 096	n.c.	n.a.
Amount paid (FF '000)	36 910	2.6	10 271	0.7	1 431 700

n.a.: not available; n.c.: not calculated.
Source: AGRESTE, *Les tableaux de trajectoire – Bretagne 1996,* octobre 1996 et SCEES, Bourgogne, Dijon.

just under 1 400 farmers, for around 55 animals each. A total of FF 10.2 million was allocated under the scheme, some 22 per cent less than in 1994 (Table 4).

In 1994, Community aid payments to Burgundy under livestock schemes totalled FF 687 million (Table 4). The breakdown was as follows: 72 per cent in suckler cow special premiums, 23 per cent in beef special premiums and 5 per cent in sheep premiums. There were 12 000 applications in all for the suckler cow premium in 1994, most from Nièvre and Saône-et-Loire. Each eligible farm received the premium for an average of 35 cows. The additional extensification payment was also paid for practically all of the cows on which the premium was paid. The same situation pertained for the beef special premium. Over half of the 9 000 applicants for the premium in 1994 were from Saône-et-Loire. About 4 300 farmers received sheep annual premiums, each for around 61 animals. An additional extensification payment was made for over 90 per cent of the livestock eligible for the premiums in all of the departments in the region except Yonne.

4.2. Agro-structural measures: Objective 5*a* and accompanying measures

Although installation aid to young farmers is at its lowest level for 15 years in Brittany, it is still higher than the average for France. In fact, Brittany accounts for 13 per cent of all grants to young farmers in France though it has just 9 per cent of French farms (Table 5). Furthermore, 1994 saw a slight increase in assisted start-ups by young farmers. The average size of new holdings in the same year was 28 hectares, compared with 45 hectares in the rest of France and an average farm size of 29 hectares in Brittany itself. Dairy farms accounted for half of these start-ups. Young farmers are increasingly well qualified. In 1994, 45 per cent held a *Brevet de technicien agricole* or higher qualification. Average installation costs were FF 987 000. Fifty-eight per cent of the total loans granted were young farmers' loans,

which cover 77 per cent of total start-up finance. Highly qualified as young Breton farmers may be, we may wonder whether so many start-ups on small holdings can all be viable. In 1994 Burgundy accounted for only 4.8 per cent of grants to young farmers in France (Table 5). Since the introduction of the scheme, despite improvements made to it, the number of applications by young farmers has been declining: 330 first instalments were paid out in 1994 as opposed to 587 in 1990. This may be symptomatic of young people's disaffection with farming in the region or of problems with setting up.

One of central government's key instruments for promoting and giving direction to farm improvement and modernisation is the *PAM* (*Plan d'amélioration matérielle*) or farm improvement plan. Since its inception, almost 8 300 plans have been approved in Burgundy and 9 000 in Brittany (over 90 000 in the whole of France). In both the case study regions the area covered by the plans is greater than the national average. In Brittany, 72 per cent of the farms concerned are dairy farms. Average expenditure under these plans totalled FF 820 000 in 1994: 12 per cent in grants and 65 per cent in special modernisation loans. A large portion of this spending was for improvements to livestock buildings, particularly to bring them up to environmental standards. These measures are particularly important in view of the environmental problems that dairy farming in Brittany poses. In Burgundy, total spending per plan was of the same order, totalling FF 828 000 in 1994: 16 per cent in grants and 62 per cent in special modernisation loans.

Half of France's total capital investment in agriculture is financed by interest concession loans. With FF 1.6 billion of such loans in 1995, Brittany accounted for 11 per cent of the national total (Table 5), while Burgundy accounted for only 5 per cent. In both regions the bulk of these loans has financed capital investment, mainly by young farmers (48 per cent for young farmers in Brittany).

Table 5. **Policies to improve production structures in Brittany and Burgundy**

	Burgundy	Percentage of total	Brittany	Percentage of total	Total for France
Grants for young farmers					
Number of grants (1st instalment)	348	4.8	990	13.2	7 245
Average farm size (ha)	n.a.	n.c.	28.2	66.4	45.4
Payments in 1994					
1st instalment (FF '000)	21 724	5.0		10.0	441 849
2nd instalment (FF '000)	15 019	4.7	23 064	8.2	321 996
Farm improvement plans (PAM)					
Plans approved	529	7.3	752	9.7	7 266
Average characteristics					
Initial size (ha)	117.4	n.c.	45.5	n.c.	74.3
Final size (ha)	131.0	n.c.	50.5	n.c.	83.6
Initial income (FF '000)	135	n.c.	144	n.c.	137
Final income (FF '000)	187	n.c.	186	n.c.	194
Total capital expenditure (FF '000)	828	n.c.	820	n.c.	832
Grants (FF '000)	129	n.c.	11	n.c.	127
Special modernisation loans (FF '000)	517	n.c.	526	n.c.	530
Low-interest loans for farming[1]					
Number	6 291	5.1	11 939	10.8	123 100
FF million	745	0.0	158 101	11	14 590 666
Withdawal from dairy farming					
Applications approved	2 048	13.7	26 548	n.c.	15 000
Production quotas available ('000 litres)	n.a.	n.c.	1 226 205	n.c.	n.a.
Early retirement scheme					
Applications approved	2 030	12.2	4 350	n.c.	38 488
Amounts paid out (FF '000)	107 492	n.c.	253 957	n.c.	n.a.

n.a.: not available; n.c.: not calculated.

1. Inclusive of special modernisation loans, medium-term special loans for young farmers and others, medium term special loans for agricultural machinery co-operatives (CUMA), special livestock loans, loans for special crops, disaster loans, loans to consolidate low-interest and ordinary loans and extensions on low-interest loans.

Source: SCEES, "Bourgogne, Dijon", and AGRESTE, *Les tableaux de trajectoire – Bretagne 1996,* October 1996.

Since the introduction of milk quotas, over FF 2.2 billion in government assistance has been allocated for the restructuring of dairy production in Brittany. More than 27 600 farmers (42 per cent of the 1983 total), producing 12.2 million hectolitres (22 per cent of 1983 reference output), applied to withdraw from dairy farming. Their quotas have been transferred to priority groups, including young farmers. This programme has facilitated the adjustment of Brittany's dairy sector. Although no figures are available for the total aid received by Burgundy for dairy sector restructuring since the introduction of milk quotas, we do know that 14 per cent of all applications for aid to cease dairy farming approved in France in 1994 were from Burgundy. This would indicate a relatively high take-up of the scheme.

The 1992-94 early retirement scheme for farmers was highly successful in both regions. In Brittany, 5 181 applications were approved: 1 516 from farmers in Côtes d'Armor and 1 325 from farmers in Finistère, bringing total payments received under the scheme to around FF 402 million. The early retirement scheme was widely taken up in Burgundy (particularly in Saône-et-Loire), which accounted for 12 per cent of all the applications approved in France. A survey of Brittany showed that 80 per cent of the farmland released under the scheme was used to enlarge other farms. The Agriculture Modernisation Act extended the scheme to 1997 and amended it to encourage young farmers to set up on land that became available under the scheme.

4.3. Rural development measures: Objective 5*b*

Since the reform of the structural funds in 1988, the EU has put in place a specific rural development policy (the regional measures under Objective 1 do not concern Burgundy and Brittany). However, structural measures for the development of agriculture and the agro-food sectors under Objective 5*b* concern them both.

Between 1989 and 1993 Brittany received a total of FF 769 million in Community aid, more than any other region of France. Over the same period, Burgundy received FF 500 million in Community aid. Under the 1994-1999 programme Brittany is to receive a total of FF 2.4 billion and Burgundy FF 1.6 billion, under Objective 5*b*. Community aid is additional to aid from the government and from regional and local authorities (European Commission, 1996).

In France, Objective 5*b* measures were implemented through rural area development programmes (*PDZR, Programmes de développement des zones rurales*). These are operated by the regional authorities and financed by contributions from the departments, the regions, central government and the EU. In small regions, rural development initiatives may be implemented within the framework of France's PACT programmes (*Programmes d'aménagement concertés du territoire*). These are co-ordinated development planning programmes incorporated in planning contracts (*contrats de plan*) between central government and the regions. In the period 1988-1993, the priority guidelines for Community action in partnership with France (Commission of the European Communities, 1990, p. 137) were:

- the development and diversification of agricultural and forestry production;
- the maintenance, creation and development of industry and crafts;
- the development of tourism;
- the protection and enhancement of nature and the countryside;
- the reduction of the isolation of outlying islands (Brittany); and
- human resources.

4.3.1. Brittany

Over the period 1988-93, PDZR programmes were implemented in 36 *cantons* in Brittany. The programmes covered all four departments – central Brittany (Argoat), Redon and three islands – a population of 306 000 and a land area of 702 000 hectares, *i.e.* 5.1 per cent of the total population covered by France's Objective 5*b* programmes, and 3.7 per cent of the land area. Aspects of the programme relating to agricultural structures included land consolidation, water engineering, construction and farm modernisation. In all, 3 800 farms received payments under these programmes. Payments

were also given for modernising and expanding traditional rural industries: to sawmills, abattoirs, dairy plants, meat and milk industries qualifying for special assistance under the European Agricultural Guidance and Guarantee Fund (EAGGF). Countryside conservation and environmental improvements also received funding under these programmes. The region's fisheries sector has been receiving payments for restructuring and other initiatives under the "Blue Europe" programme since 1983; principally, payments for leaving the profession, retraining, fleet modernisation and for setting up or developing land-based facilities.

Under the 1994-99 Objective 5*b* programme, the region's eligible areas will also include coastal areas. The extension of the programme will more than double the percentage of the Breton population concerned (32 per cent) and will bring European funding to a total of FF 1.2 billion. The projects will range from employment incentive schemes to land use planning, redevelopment, and support for the fishing industry. Over FF 330 million EAGGF funding will go towards gearing farming and forestry to world markets. The main aims of measures implemented to this end will be to gear production towards high value added products (genetic and health improvement of breeds, support for quality procedures), secure greater diversification in the area (organic farming, agro-tourism), and make product processing operations more responsive to market demands (studies and trials in the fruit and vegetable sector, quality approaches in environmental horticulture). These initiatives are aimed at equipping Brittany's agricultural sector to meet the challenges of the future.

Between 1988 and 1993, 1 930 farmers were able to take advantage of training and employment aid available under Objectives 3 and 4 of European development programmes for courses in diversification, management and the environment. Under Community action programmes in the same period, Brittany's agro-food sector benefited from the *Telesales negotiation* project, which is aimed at developing the telephone marketing skills of local SMEs in the agro-food sector, and the *NOW* initiative, which provides support for occupational training for women farmers. From 1994 to 1999, the *LEADER* project will provide financial assistance for schemes that are innovative, demonstrable and transferable, for example, a quality certification scheme for agro-tourism.

4.3.2. Burgundy

Some of the measures provided for in Burgundy's PDZR relate to the agriculture and forestry sectors. Between the two sectors, over 33 600 hectares of land were improved and around 750 livestock buildings were built or fitted out to accommodate 6 300 head of cattle over the period 1988 to 1993. These measures concerned 2 131 farms directly, one in five farms in the region. Some 3 600 farms were consolidated and watercourse improvement works were carried out. These funds also paid for the planting of 3 150 hectares of woodland and the construction of 400 kilometres of forestry paths. They also financed rural infrastructure (water supply) in qualifying areas between 1991 and 1993.

Burgundy's 1989-93 PDZR covered 65 rural *cantons*, divided into five small regions, with a population of 351 000, *i.e.* the equivalent of 22 per cent of the total population of Burgundy and 51 per cent of its rural population. These fragile rural areas cover 47 per cent of the region's land area. The population density is low (23 inhabitants/km^2) and declining sharply. The aim of the programme was to reduce regional disparities by maintaining and developing activities and improving standards of living in order to prevent the depopulation of such areas (Daubard and Daucé, 1995).

The programme is based on a sectoral approach, with separate sub-programmes for each sector.[8] Sub-programme No. 1, for the agriculture and forestry sector, concentrates on three fronts: improving rural infrastructure, adapting and restructuring farms, and developing forestry assets. Its aims are: *i)* to improve the efficiency of the production system; *ii)* to adapt production and structures; *iii)* to improve the environment and living conditions; and *iv)* to improve farm management capabilities. It is financed by the EAGGF and accounts for 46 per cent of the total funding allocated to the PDZR. The tourism sub-programme (sub-programme No. 3) also includes measures that relate directly to farm and nature tourism. These aim at promoting tourism activities by farmers, including the development of farmhouse accommodation and reception on farms.

The measures aimed at improving rural infrastructure include land consolidation and related projects, such as irrigation, drainage, general farm water engineering and minor water engineering works. A second category offers direct grants to groups of farmers, distributed in Burgundy mainly through *CLARE* contracts and *OGAF* operations (*Opérations groupées d'aménagement foncier* – joint land development operations) (Box 1).

CLARE subsidies (40 per cent funded by the EAGGF, 60 per cent funded by central government and the regional authority) amount to FF 43 million of total allocations of FF 100 million under measure 1.2. Two types of CLARE have been set up in Burgundy.

1. There are 12 CLAREs targeted at geographical areas, in three departments: Nièvre, Côte-d'Or and Yonne. They generally cover two to four *cantons* and rely on a local dynamic to identify objectives, such as improving succession terms, restructuring prior to transfer/take-over, improving environmental aspects (pollution, countryside) or the farmer's living and working conditions, and adapting farms to the economic environment through diversification or changes in the production mix.

2. There are five sector-oriented CLAREs, all in Saône-et-Loire. As with the geographically targeted schemes, the sector-based schemes are community schemes, but with a different focus: they aim to improve the technical and economic organisation of a particular sector (*e.g.* Charolais beef cattle).

Since OGAF operations have been incorporated into Burgundy's PDZR, they are eligible for funding from the EU in addition to their own budgets, which are administered by the *Centre national d'aménagement des structures des exploitations agricoles* (CNASEA). Total funds of FF 19.4 million were allocated to a series of two-year schemes over the period 1988-1995. Most of the funds allocated to OGAF operations under the PDZR went towards making farm buildings more functional, restructuring farms for succession and improving farm perimeters in the light of environmental concerns (Girardot, 1994).

For the period 1994-99, the main aim of the Objective 5*b* programme will be to combat rural decline in sparsely populated and under-industrialised disadvantaged areas. The programme will assist roughly 40 per cent of the population (*i.e.* 180 000 people). In the agricultural sector it should help to maintain 5 000 jobs. To this end, several initiatives are planned including measures to improve rural infrastructure, restructure some 500 farms, step up production quality and diversification, improve livestock farming conditions (400 livestock buildings), consolidate farms, train and set up young farmers and develop 21 000 hectares of woodland (European Commission, 1996).

Box 1. **Some instruments encouraging structural adjustment and rural development in France's regions**

France's regional and central government authorities use a number of instruments to set up Community and/or French structural programmes for agriculture and/or rural development. Two of them, CLARE contracts and OGAF operations are described below.

a) The *CLARE* contracts utilised in Burgundy are a new rural development tool aimed at promoting farming systems that will improve rural land management and ensure sustainability in rural areas. Specifically, the targets set under the contracts are to improve farm succession, develop diversified micro-industries, and adapt existing industries to new production and marketing conditions. These contracts are also expected to increase farmers' incomes, make farms less vulnerable to economic cycles and revitalise the production sector. CLARE contracts cover operations set up in specific geographical areas that are particularly at risk.

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Assistance allocated under CLARE contracts is intended mainly as community aid for the following types of initiative:

- general services: for area and farm assessment technical/economic analyses, and for running the CLARE programme;
- direct subsidies: for communities or individuals, farmers or (less frequently) processing firms, to finance improvements to land or buildings, capital investment in machinery and equipment, operations to improve and diversify local production.

b) OGAF schemes provide assistance in a specific geographical area (generally 1 or 2 *cantons*) over a limited period of time (3 to 5 years) for a variety of operations aimed at improving efficiency:

- improving land structure (consolidation, watering points, farm perimeters, etc.);
- farm organisation (modernising existing farms); and
- adapting farms to new production conditions or to new common agricultural policy developments (Girardot, 1994).

Like the CLARE contracts, the OGAF schemes are designed to improve living conditions in rural areas. Instituted in 1970, they are still directed at priority areas of the country. Although they mainly concern land improvements, they also cover operations with an economic purpose, such as farm modernisation, diversification of farm business (rural tourism, extensification, afforestation, etc.), new entrants and environmental protection.

4.4. Agri-environmental measures

Two sets of agri-environmental measures apply to agriculture in France. The first are national measures, consisting essentially of a programme to control pollution from agricultural sources (PMPOA – *Programme de maîtrise des pollutions d'origine agricole)* in order to meet the general interest while preserving a competitive farming sector. The programme came into effect on 1 January 1994, and will run for five years. The second set concerns the transposition into French law of Council Regulation (EEC) No. 2078/92 of 30 June 1992 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside. Measures here include a premium for the preservation of extensive stockbreeding, sustainable development plans, and regional agri-environmental programmes.

The control of pollution from livestock units is particularly relevant to Brittany. Financial assistance under the planning contract between the central government and the regional authorities totalled FF 141 million from central government and FF 50 million from the region. Each department is to provide a further FF 35 million each. By 31 December 1994, 2 603 applications had been made (Table 6). As deadlines for pollution targets come nearer, further applications have been received. 71 out of Brittany's 197 *cantons* are rated as having a structural surplus of nitrogenous livestock waste (170 kg per hectare of farmland available for slurry spreading per year). Among the Community measures, the impact of the grassland premium is small. In 1994 there were 1 048 applications in Brittany, as against over 7 000 in Aveyron and Cantal, the departments with the largest numbers of applicants. Payments totalled FF 7 million (FF 1 218 million for France as a whole). Following preliminary surveys, four sites were selected in Brittany for the sustainable development plans, and the first contractual arrangements were finalised in 1996. The regional environment programme was launched in 1994. It includes water protection schemes such as converting arable land into extensive grassland, long-term set-aside, and reducing the volume of inputs. It also extends to reducing cattle or sheep stocking density by increasing farmland or pasture, converting to organic farming, reducing the proportion of maize in feed, protecting threatened local breeds, managing wildlife, etc. Hedgerow planting is on the increase.

For Burgundy, the only information available at present concerns the grassland premium. The region was not among the largest applicants in 1994, but came well ahead of Brittany. Two departments, Saône-et-Loire and Nièvre, made considerable numbers of applications. The areas covered represent

Table 6. **Agri-environmental measures in Brittany and Burgundy, 1994**

	Burgundy	Brittany
Agricultural pollution control programme (PMPOA)		
Requests for analysis to 31 December 1993	n.a.	3 741
Cantons with a structural surplus[1]	n.a.	71
Extensive strockbreeding premium (grassland premium)		
Number of applications	7 956	1 048
Area covered (ha)	516 957	26 365
Payments (FF '000)	119 400	6 591
Hedgerow protection		
Hedges planted with government assistance (length in km)	n.a.	473

1. Over 170 kg of nitrogenous waste per hectare of farmland available for slurry spreading per year.
Source: SCEES, Bourgogne, Dijon and AGRESTE, *Les tableaux de trajectoire – Bretagne 1996,* October 1996.

around 30 per cent of Burgundy's farmland (50 per cent in Saône-et-Loire and 40 per cent in Nièvre). In 1994 payments totalled FF 119.4 million (compared with FF 6.6 million in Brittany and a total of FF 1 218 million for France as a whole) (Table 6).

V. CRITICAL ASSESSMENT OF THE ROLE OF AGRICULTURAL POLICY IN RURAL DEVELOPMENT IN BURGUNDY AND BRITTANY

Government support for farming is a long-standing tradition in France, going back to the late 19th century. Superseded since the 1960s by the CAP, it has consistently provided a high level of support, for some sectors in particular (cereals, milk, beef and sheepmeat). The French countryside would probably look quite different if these high price levels had not been guaranteed (Von Urff *et al.*, p. 337). The policy has helped to keep farmland in use, even where conditions are less favourable, to contain the fall in the farm labour force, to support employment and value added in pre-farm and post-farm sectors, and has probably strengthened the economy of rural areas. This fairly positive view of the influence of French and European farm policy has to be qualified, however; what is really needed is a comprehensive appraisal of the policy's positive and negative impact on rural areas and on society as a whole. At all events, the influence of policy has been altered, and made more visible, by the CAP reforms of May 1992, and is in fact quite different from region to region, depending on structural and production characteristics.

The critical assessment of the role of agricultural policy in rural development in the two pilot regions will be conducted, as earlier, by reviewing the various types of policy and looking in particular at the points that seem of greatest importance to each region. For direct assistance under the reformed CAP, attention will be paid to field crops and extensive cattle raising for Burgundy. Milk production will be the main focus for this type of aid in Brittany. The impact on other activities and the rural economy in both regions will be highlighted. The effect of the structural measures accompanying the reform will then be assessed and situated in the broader context of EU structural farm policy. In the assessment of the agro-environmental measures applied in the two regions, the impact of the agricultural pollution control programme in Brittany will receive detailed attention, in view of its significance for regional development. The impact of the integrated Objective 5*b* programmes will also be assessed. Finally, a presentation of the relative weight of individual policies in financial terms will help to rank their potential influence. The presentation will open with an examination of synergies and contradictions that may occur with the implementation of policies designed to achieve different objectives.

5.1. Direct payments under the CAP and CAP reform measures

Burgundy is substantially affected by these subsidies for crops and beef which, with viticulture, dominate its farm sector. Crops and beef receive strong support under the CAP, while the VAOC wine,

subject to strict producer regulations, fetches high market prices. The influence of the CAP and the reforms will be discussed principally in terms of crops and beef, which in fact concern virtually all farmland in Burgundy. Viticulture is of clear interest as an illustration of a profitable crop that receives no financial support from government.

Cereals and field crops are grown on large farms in Burgundy. CAP reform, linking support to areas under cultivation, have continued to encourage the preservation and indeed extension of these farms, guaranteeing a stream of revenue in proportion to eligible farmland.

The impact on the upstream and downstream sectors has not been uniform, of course: purchases of chemical fertilisers and plant health products down, because of lower production and less emphasis on yield, but purchases of equipment up as a result of higher incomes, after a period of flat investment. Output itself has been affected by compulsory set-aside (5-10 per cent fall in output volumes, in the early years at least), resulting in gross sales of the sector.

The most marked consequences of the new CAP are in fact apparent in land use. The higher value of land inherent in hectare-based compensatory payments compared to price support linked to production levels means that areas to cereals and field crops have been held steady, and possibly extended, and has scotched the abandonment of some land as a result of over-extensification. In other words, the land is being maintained under all these systems. But farm concentration accentuates the downward population trend in much of the region's rural areas. More specifically, there is a clear separation between farming's role in occupying land and the farmers' role as economic and social agents there.

Extensive raising of beef cattle, widely established in Burgundy, is also strongly supported by the CAP, though periodically experiencing severe market difficulties. It plays an essential role in land use and conservation. Recent developments may somewhat jeopardise this function inasmuch as farms are becoming larger, with the same work force, in a system where labour productivity is stable. As farms' area exceeds their productive capacity, the danger that peripheral or less productive land will not be kept in use is already reflected in the increasing and gradual appearance of fallow land.

Given its highly extensive form, cattle raising gives no very significant impetus to economic activity in the rural areas where it takes place (except via the meat trade). As with field crops, the question is to find alternative activities that could counteract the regressive nature of agricultural activity and offset the adverse demographic trends (falling population, very low density) that have been at work for many years.

The CAP has been instrumental in concentrating production and developing regional specialisation. In Burgundy this has been particularly clear in milk production, where the number of suppliers fell from 11 500 to 2 500 between the early 1980s and 1992-94, a drop of some 80 per cent (against 63 per cent for France as a whole). Inasmuch as milk production is generally more labour-intensive (in terms of the agricultural work force per hectare of farmland) and is normally associated to a local processing plant, this trend may, from a regional standpoint, penalise activity in some rural areas where milk was formerly produced.

With largely extensive agricultural production (cereals and other field crops and beef), the agro-food industry in Burgundy is not substantial. By and large it gives only modest impetus to the regional economy, and the rural economy in particular. Depending on the sector, businesses are also subject to fluctuations in household consumption, and in production, and the impact of farm policy measures. This is so in the meat industry, with crises in output levels and a recent sharp decline in beef consumption; gross sales are falling. Similarly, the milling and feed sector has not really made much headway in spite of the lower commodity prices scheduled under the CAP reforms. Paradoxically, while local milk production is down, the dairy industry has increased its work force and output by developing products that meet household demand.

The structure of final agricultural production in Brittany indicates the potential scope of the effects of CAP schemes and support. Livestock production predominates: milk, beef, pigmeat and poultry share the bulk of value added, with the balance coming from intensive field vegetables.

Milk production is most affected by the compensatory payments to price reduction. These are available for land to fodder maize, which stockbreeders can include in the field crop area eligible for

payment. They apply to intensive farming. These payments are likely to have a structural effect because of the amounts involved, which are proportional to farm size. In addition, the guarantee that milk quotas offer may well lead farmers to re-invest the income in further land-related quotas, and hence extend their farms. The effect of such payments is to heighten dairy specialisation, and promote concentration of farms: they do not encourage extensification. It is highly likely that these direct payments will be capitalised in land values. The payments and milk quotas are likely to make it more difficult to enter the dairy sector, and hence discourage start-ups by young farmers within a few years. Aside from this, the fodder maize premiums provide no incentive to try to diversify farming or differentiate products, unless post-farm industries exert strong pressure through the producer price for milk.

Premiums for suckler cows and male cattle have no strong influence, given the high headage rates in Brittany. Few farms qualify for the additional ''extensification'' premium for stocking under 1.4 LU per hectare. Although the lower intervention price for beef was keenly felt in specialist rearing units, which are probably doomed in Brittany, it had less impact on mixed farms, the largest category, where meat is a by-product.

For off-soil rearing of pigs and poultry, and egg production, the lower cost of feed has stimulated output by the most efficient farmers. But the quantitative and budgetary restrictions flowing from trade agreements will depress volume. In all, the effect on this sector is unclear, but is likely to encourage restructuring and the concentration of units. Vegetables are unlikely to be directly affected by the measures discussed above, unless the adverse price trend for field crops, together with the funding available from direct payments, encourages farmers in other regions, with low-cost farmland and efficient equipment, to move into this activity.

The impact on the processing sector varies. With dairy products there is likely to be a move to rationalise milk collection circuits, to reorganise and reallocate production areas among firms, and probably to concentrate. Basic products will be more affected than fresh and niche items. Firms' own strategies, driven by large distribution chains, may have an important role here. The structural development of pigmeat processing seems unclear, given the above factors. Slaughterhouses may be affected by the fall in cattle production, but not necessarily since they largely handle animals from other regions.

The economy in the rural areas of Brittany is likely to be affected in terms of direct employment in the dairy sector. In the absence of attempts to differentiate products, and we have just seen that there is little incentive for that, the trend is likely to be one of adjusting to flat or slightly lower volumes of milk, which with advances in technical efficiency will mean fewer jobs in the sector and, indirectly, in other industrial and service activities. The rise in land values as they embody the premiums and quotas related to factors of production will discourage alternative land use capable of creating jobs.

5.2. Structural measures

Agricultural policy based on price support (old CAP) or compensation for closer alignment on world market prices (new CAP) forms the most significant part, in financial terms, of official intervention. Combined in some cases with structural measures, it is also the part which, over the longer term, has the most profound effect on the development of agricultural production structures and systems, and hence on the position of agriculture and the agro-food industry in rural areas. At the same time, explicit structural measures continue to be of some significance, simply for instance as the practical expression of the explicit guidelines which the EU sets for the development of its farm sector. From this standpoint, structural measures, which have built up in strata over time, depending on the CAP context and constraints, merit separate discussion, according to the objectives that they serve, which are different and possibly even contradictory.

The structural measures to accompany the CAP and its reform (grants for ceasing dairy farming, incentives to take early retirement from age 55) have promoted developments that are considered desirable in terms of the structural adjustment of farms to meet the new requirements of competitiveness in the sector. We have seen the considerable fall in the number of dairy farms in Burgundy; since 1992 early retirement has assisted a similar trend in the smallest and least modern farms, run by older farmers. This proved relatively successful in Burgundy, notably in the field crop areas, and as in

most parts of France the high rate of early retirement has led much more to farm enlargement rather than to start-ups by young farmers, at least during the scheme's initial period (1992-94).

These measures have also contributed substantially to structural change in Brittany, particularly in milk production. Grants for ceasing dairy farming have resulted in significant restructuring of production, with a reduction in the number of dairy farms, and in the number of farmers involved, but probably no concentration of farmland, which has gone to young farmers. This sharp restructuring of milk production in Brittany drew on the usual intensive procedures (involving concentrate and fodder maize). Practices do not appear to have changed greatly, as seems confirmed by the fact that the measures in regional agro-environmental programmes intended to help them change have so far proved rather unsuccessful. There has been little take-up of grants for reducing inputs, converting to organic farming and reducing livestock density (though the programmes were launched only in 1995). Pre-retirement policy has proved very successful in Brittany and speeded up a process that would have occurred in any case, though more gradually and at a later date. The measure, originally a social one, has had a significant structural impact by relaxing land constraints facing expanding farms, which were thus able, given the link between area and milk quotas, to increase their production potential considerably.

Structural measures aimed more specifically at modernising farms (farm improvement plans, and grants to young farmers) are targeted ones, and access is relatively restricted. They have had some impact in Burgundy. From this standpoint they help maintain and develop a group of efficient farmers with the capability to keep the region's agriculture competitive. At the rate of 300-400 grants to young farmers every year, the mature scheme will have established 10 000-12 000 modern farms in the area, with an average of 150-200 hectares (excluding vineyards and secondary-activity holdings). This certainly provides a solid foundation for the economic vitality of farming: much less so for the vitality of rural areas, though there are some exceptions. These measures have also had a significant impact in Brittany, given the relatively high rate of start-ups there and the dynamic approach among farmers generally, who are keen to take up all modernisation grants. While the grants to young farmers help renew the production fabric, the renewal concerns farms comparable in size to the regional average. This indicator does not really tell us much about the economic dimension of start-ups, and hence their viability. However, as 50 per cent of start-ups with the young farmers grant are in the dairy sector, it can be assumed that they have sufficient quota for minimum viability while the overall production regime remains unchanged. What would be the case if milk quotas were reduced? The farm improvement plans are for much larger economic entities, mostly involved in dairy farming. Low-interest loans back up the funding for start-up and modernisation. They fund three-quarters of start-up, which should as a rule raise no financial problems with dairy farms. Such high indebtedness no doubt presents a greater risk with pig farms.

Overall, these measures mean the shift of a fraction of labour away from agriculture and lead to greater concentration of milk production by the use of monetary transfers and the income generated by quotas. Farmland is not being transferred to alternative uses, and the capital employed in Breton agriculture is probably not being reduced, if quotas are counted as working capital. The effect on the upstream and downstream sectors is not clear, since the volumes of milk for processing are limited. In the absence of a clear shift in the agro-food industry towards product differentiation and hence possible demand for milk meeting new criteria (more ''environmental'' forms of production, different composition), value added in the dairy industry will remain low. The chief effect of the structural measures on the economy of rural areas in Brittany will no doubt lie in the injection of income from grants to cease dairy farming and early retirement payments. This money is probably used in the area where it is paid, and hence helps to support demand for the goods and services that the retired need.

5.3. Agri-environmental measures

Burgundy, where agriculture is relatively extensive, does not appear to suffer the environmental drawbacks linked to industrialised stockbreeding. General agro-environmental measures are confined almost exclusively to the grassland premium or extensification premium, which farmers in many cases do not regard as a strictly environmental measure. The effects on the dynamics of land use and on the

environment show that the risks of agricultural withdrawal, though present in some localities, are not really significant as yet. The release of land is offset to a large extent by strong demand, stemming from the need to expand. Farmers have only recently been brought into the environmental debate, and few feel that these issues genuinely concern them. The measures most widely known are those having to do with the modification of livestock sheds to respect environmental norms. But local programmes to protect the environment and enhance the natural and man-made countryside can be quite effective in persuading farmers to incorporate environmental concerns in their attitudes and practices.

Environmental issues are far more significant in Brittany, as reflected in the targets of the PMPOA scheme. This national scheme, related to European rules on agricultural pollution (the nitrate directive), is of particular importance in Brittany. The density of intensive stockbreeding units, in particular pig farms, means that the entire region has been classified as a vulnerable area in terms of water quality. Taking the regulation 170 kg of nitrogenous livestock waste per hectare, 71 *cantons* in Brittany have a "structural surplus" of nitrogen, and so PMPOA comes into play. The structural consequences, for pig farms, are that expansion is halted, whereas production capacity had been increasing by 4 to 5 per cent a year in the past. The French Environment Ministry also opposes start-ups by young farmers in *cantons* with structural surpluses, a decision that farmers are vigorously contesting. Compliance measures have started with the most heavily polluting units, which are also the largest ones. The outcome is modernisation, through the elimination of technical inefficiencies. Given the scale effects which the plan entails, the end result could be a concentration of production and the disappearance of small producers.

Countering pollution has focused primarily on pig breeding and nitrates, but the adverse effects of intensive farming extend to other elements found in crop treatments or the waste from cattle and poultry units, about which thinking is far less advanced. Yet the future of farming in Brittany is likely to be affected just as much by these pollutants as by nitrogenous waste.

The PMPOA plan is designed to improve the quality of water used outside farming. In the agro-food sector it will mean less capital spending on pollution control, and so improve the position of agro-food firms. Better water quality should also allow agro-food businesses in Brittany to upgrade the public perception of local products, bringing to the fore a "quality" image that they perhaps lack today. In the pre-farm sector (fertilisers, crop treatment), the lower demand for inputs is likely to reduce activity somewhat, but the feed industry, strongly represented in Brittany, may be stimulated by lower cereal prices. Setting anti-pollution equipment in place on farms will mean more business for construction and electrical equipment firms.

Controlling agricultural pollution should have very significant effects on the economy of the areas concerned, and the economy of Brittany as a whole. First, anti-pollution expenditure on farms, and compliance with environmental rules, will ultimately reduce the cost of treating water for non-industrial use, for domestic or community purposes. In addition, it should resolve the smouldering conflict between agriculture and other productive activity, hampered by river pollution (shellfish breeding, for example), and between farmers and the rest of society: freshwater fishing, rural and coastal tourism, main homes and secondary residences. Pollution control will thus enhance local resources and achieve more harmonious utilisation of the area.

5.4. Rural development policy

Specific measures under EU rural development programmes (Objective 5*b*) do not concern the farm sector alone. In the areas which qualify, they cover a range of sectors, either directly or via the modernisation and consolidation of facilities and public services. Experience shows that these programmes, set up by the regions, remain multi-sectoral rather than genuinely local and integrated. Each sector takes up public funding to suit its own requirements, and endeavours to secure its own development, often by itself.

Agriculture and farmers, in common with forestry, the agro-food and timber industries and a number of other sectors, thus receive specific grants as a boost for operations or investments which are regional priorities and in principle comply with EU regulations. The amounts are not insignificant in

financial terms, but the outcome too often is a sprinkling of assistance with limited effect. Official intervention produces structural effects only with a few clearly identified innovative schemes (diversification of production, support for new lines of business, environmental protection and enhancement, farmers' associations, etc.).

The success of Objective 5*b* structural policies cannot be measured simply against what has been done in agriculture. Some aspects of farming's potential may be consolidated, but a fresh impetus to development in rural areas is much more likely to come from grants for tourism, SMEs, retailing and crafts, village renovation, agri-environmental schemes, the adjustment of networks and infrastructure, and training.

5.5. Relative significance of measures: synergies and contradictions

Agricultural policy, piloted chiefly by the EU authorities and extended by schemes run by central government and local authorities, is multi-faceted and has numerous objectives. Looking at direct assistance only, the rough estimates below for Burgundy and Brittany illustrate the relative weight of each category of measures. Table 7 shows a degree of similarity in the structure of assistance, over and above the particular features of each region discussed earlier. Compensatory payments for the removal or reduction of price support for crops and beef, as well as set-aside, represent a considerable proportion, of the same order of size in both Burgundy and Brittany. The summary presentation in the table does not show that arable payments in Brittany largely concern fodder maize which goes to feed cattle, in particular dairy cattle. A further part of support comes via prices and other marketing measures. In Brittany, the producer subsidy equivalent calculated for dairy quotas would further increase the proportion of indirect assistance. In any case, structural measures (excluding modernisation), compensation for disadvantages, agri-environmental schemes and measures under the Objective 5*b* programme represent only a small portion of overall assistance: around 10 per cent in each region.

These different categories of assistance cannot all be placed on the same footing. Some are winding down a long tradition of high price support which cannot be abruptly terminated without also terminating the livelihood of a good number of farmers; others meet particular objectives set in the past. The question today is whether the various forms of incentives may not *i*) have a strong financial imbalance, and hence bias the behaviour of farmers, *ii*) send contradictory signals to farmers and hence reduce their individual efficiency, and more broadly *iii*) bring the specific aims of enhancing the productive capacity and competitiveness of farming into conflict with the concern to maintain and develop economic activities in rural areas.

There are numerous synergies and contradictions, actual or potential, between the various facets of the common agricultural policy. Some are quite apparent, and others are more discrete, in particular in the case of inconsistencies between farm sector policy and local rural development policy. For example, the direct measures (grants and loans for capital investment) and indirect ones (price support)

Table 7. **Comparison of assistance: Burgundy and Brittany**

	Burgundy (1993-94)		Brittany (1995)	
	FF millions	%	FF millions	%
Arable land	1 829	62	1 736	70
Livestock production	687	23	313	13
Modernisation	120	4	197	8
Structural measures	43	1	49	2
Natural disadvantages	94	3	–	–
Agri-environmental measures	99	3	73	3
Schemes under the rural development (5*b*)	55	2	112	5
Total	2 927	100	2 480	100

Source: Brittany, *Les tableaux de trajectoire – Bretagne 1996;* Burgundy, *Statistique agricole.*

designed to modernise farms are not necessarily compatible with those designed to cap or cut the quantities produced (which leads on to set-aside, whose effects on the environment are ambivalent). On another plane, more directly to do with local demographic balance, the *de facto* competition between assisting new entrants and assisting farm enlargement often produces disparities between policy statements and practice on the ground, especially as the relative rise in land prices and the practical management of production rights and quotas are little help to young farmers.

More subtly, there may be doubts about the impact of the CAP and the reforms on actual production systems. This is the case with field crops, currently receiving substantial support and likely to expand to the detriment of mixed farming, which may be more diversified but produces less income for the same quantity of labour. That applies to dairy farming in Brittany, encouraged by the fodder maize premium. Efforts to diversify activity and production are liable to be compromised if mass production is appreciably more profitable in economic terms. Local potential and features of particular areas may well be crushed where their advantages are not starkly manifest. On environmental protection, too, the policies are sending contradictory signals. That is particularly obvious in Brittany where, as we have seen, intensive dairy farming is in fact encouraged, although its role in discrete pollution is now beginning to be recognised. The resources committed to promote more environment-friendly methods are still very modest, and exert limited attraction. The same applies in vegetable growing. The movement to reduce pollution from pig farming seems well under way, but still meets resistance from farmers. In Burgundy, pressures to plough up grassland under the new CAP is a threat to some areas sensitive to polluting inputs.

There is no natural consistency between farm sector policy and rural development policy. The logical trend in the farm sector is for a decline in employment, and possibly even a reduction in the area of land farmed, which is likely to bring about, as in the past, a fall both in the rural population and in activity in these areas. The very existence of farm policy has made the decline of agriculture slower than it would otherwise have been; even so, today *de facto* pressure to expand farms is extending this long-term trend. The trend, moreover, is exacerbated when farming is already intensive, as in regions such as Brittany.

So can rural development policies really base themselves on farming and agricultural policy? They probably can, but in limited fashion:

i) as the chief agent in maintaining land and countryside, farming remains essential. Its continuation as an economic sector is thus essential from this standpoint. If agriculture were to disappear, the outcome would be partly managed reafforestation, detrimental overgrowth and loss of amenity connected with farmed land;

ii) as a driving force for economic and social life in its area, agriculture has a relatively small base, both via production, not closely tied to other local activities, and via agricultural income, which normally provides only a small proportion of local consumption potential. Naturally, that finding is qualified by the circumstances of individual regions. In Brittany, for instance, the agro-food complex still generates a significant number of jobs. It contributes a substantial proportion of economic activity in rural areas. In Burgundy, however, as is typical with large cereal or cattle farms, the agricultural sector can no longer be relied on to give impetus to the local economy. Agricultural employment in the region now represents no more than 20 per cent of employment in rural communes;

iii) at the same time, other forms of agriculture which typify and enhance its products and market them in clearly identified ways, and possibly integrate them into the local economic fabric, may play a part in revitalising rural areas. In such cases efficient government assistance will not be broadly based, but tailored and targeted for application at regional and local level.

5.6. Comparative overview and further discussion of the impact of agriculture and agricultural policy on rural development

Although the full range of French farming is not covered in the two case study regions, Brittany and Burgundy do illustrate the main impacts of the policies examined above on the farm and agro-food

sector and on the economy of rural areas. Brittany is more representative of agriculture with a relatively high labour/land ratio, and substantial development of intensive stockbreeding, both field and off-soil; Burgundy is more representative of much more extensive agriculture, focusing on crops or beef cattle depending on natural conditions.

The effects of the CAP since its inception some 30 or 40 years ago need not be reviewed here. We may focus more on the impact of the CAP reforms, launched with the introduction of milk quotas in 1984 and extended with the new arrangements for cereals, oilseed and meat production from 1992 onwards. Assessing the new measures in relation to the actual circumstances of agriculture, a very general observation is that they push forward, perhaps at a faster pace, the structural changes under way since the chief phase of farm modernisation in France in the 1960s:

i) continuing expansion of farms, both in size and economic weight, via the continuing capacity of the larger production units to accumulate and via government incentives to older farmers to take early retirement. The CAP and the reform process, in each region, are leading in particular to:

- rapid extension of crop farms, taking up newly available land;
- further intensification and concentration in farms engaged in intensive stockbreeding;
- maintenance or expansion of units engaged in extensive farming;

ii) more marked regional or infra-regional specialisation, with the most diversified or most dispersed systems generally proving less ''competitive'' in taking up direct assistance or production rights and quotas, or simply as in the past having less external economies of proximity than well organised regional production systems;

iii) continuing fall in the agricultural work force, through the continuing substantial productivity gains over the recent period; as a result, the decline in the demographic and social importance of agriculture in rural areas has not been slowed.

Paradoxically, structural assistance seeks in some cases to accentuate these movements (early retirement schemes, for example, or grants and loans for capital investment), and in others to counter them (assistance to young farmers, in part; compensatory allowances for natural disadvantages, ceilings on some direct payments). It is clear that the objectives of farm policy are less transparent and understandable as a result, that such measures are likely to be of rather dubious effectiveness, and that attempts to reverse or at least inhibit long-term trends are in fact relatively inoperative compared with the incentives which direct support offers. Non-specific support measures which have sometimes been introduced to check developments deemed undesirable, such as increasing production or increased use of inputs, are ineffective and productive capacity is still ready to take up the slack when the rules are relaxed. Only measures which are really constraining, such as those under the PMPOA plan, are capable of stopping undesirable structural developments.

The impact on the upstream and downstream sectors is quite hard to assess overall, positive in some cases and adverse elsewhere. For instance, the processing sector is now paying less for its inputs, but as production has held steady or fallen, the volumes available are being reduced, exerting strong pressures on employment. Generally speaking, and more so as the product approaches the consumer, we can see that the industrial dynamics of the sector, and its adjustment to wholesaling and retailing requirements and to the tastes and needs of consumers, determine the future configuration of firms far more than agricultural production itself.

Supplies to agriculture are being hit directly by the fall in input use (chemical fertilisers, plant health products) on crop farms where yields have been checked; in the livestock sector, on the other hand, the cattle-feed industry in fact seems stimulated by current trends, in particular lively demand for white meat. The farm equipment sector is feeling the repercussions of new rules and standards and benefiting from higher revenues under the CAP reforms. Retail suppliers and services, closer to rural areas than the agricultural supply industries themselves, are most likely to be affected by current developments.

What conclusions can now be drawn from observations in the two case study regions for the future development of rural areas?

i) In economic terms, the overall volume of farm output has held more or less steady and so, with a few exceptions, have gross sales in downstream activities. But with productivity gains continuing, employment is still on a downtrend, compelling rural areas to rely less and less on agriculture in their development strategy, or at least on the specialised mass production farming which the CAP in fact fosters. At the same time, in favourable economic conditions, farmers' incomes (from sales and direct support) have substantially increased since the CAP reforms. Adding in early retirement payments to ex-farmers, the disposable income of farming households has received a substantial boost which should benefit rural areas, where these households spend their money.

ii) In terms of natural amenities, a potential strength for rural areas in attracting residents, visitors and tourists, the current trend in agriculture under the new CAP is extremely ambivalent, in both adverse and positive externalities alike. With some exceptions, land hunger means that farming areas are still maintained. But the trend towards single cropping is not necessarily a plus for the preservation of countryside diversity, valued by users. There is genuine pressure to reduce inputs, but it is still modest and it is by no means certain that genuine dis-intensification has started (the process is rather one of enhancing the efficiency of the same basic model). In addition, changes in cultivation systems and land use are moving rather towards expansion of areas needing high volumes of inputs (ploughing up grasslands).

Rural development policy is, as matters stand, very limited in comparison with the volume of funding involved in direct agricultural payments, although assistance under EU programmes does not represent all government assistance at regional and local level. Its specific impact, notably on agriculture, is bound to be modest, especially since some rural development policy simply accommodates the trends set off by the new CAP. At the same time it includes novel and innovative initiatives, in particular the measures designed to enhance local production or to integrate agricultural activity more fully in economic exchanges within the area concerned.

VI. CONCLUSION: FUTURE CHALLENGES

This case study intentionally focuses on the economic development of rural areas as such, *i.e.* on analysing those factors and mechanisms that can ensure population growth, more jobs and higher incomes and improve the general welfare in areas (of limited size) that, typically, are sparsely populated. Specifically, it asks what agriculture may be able to contribute to development policy; what part it might be able to play; and, lastly, what type of government policy appears most advisable (compared with existing agricultural and rural policies).

While wide diversity is a familiar characteristic of rural areas, it is as well to remember that the development issue can take different forms in different areas and so can methods of intervention. From this standpoint, an area's location in relation to urban centres of consumption and employment, and the type of production factors it has to offer, are two differentiating criteria which, when used in combination, provide quite an enlightening indicator of development conditions and potential in different rural regions.

There is a great deal of uncertainty about the form that the CAP may take in the future, given the many internal and external pressures (budgetary constraints, resumption of international trade negotiations, enlargement of the EU to take in Central and Eastern Europe, etc.). Whatever the control mechanism ultimately adopted for agricultural markets and prices (an amended version of the present system retaining quantitative regulation, or alignment on international prices and totally decoupled income subsidies), the sectoral and market approach to agriculture will only perpetuate earlier structural trends. As we have seen, the 1992 CAP reforms have been unable to curb these trends, quite the reverse in some instances. In the context of rural development concerns, agriculture's position – already weak in economic terms – could suffer further from farm enlargement and productivity improvements

with the result that areas that are geographically and economically disadvantaged could see farming decline sharply or disappear altogether.

The question is whether, in spite of all this, agriculture can still be, if not a driving force, at least an active contributor to rural development. This is the challenge. Whether it can be met depends on agriculture's ability to make the most of its potential on three distinct levels.

i) The first is agriculture's production potential. Is it being utilised to the full, *i.e.* creating enough employment, generating enough income for the region either directly or through its agricultural and agro-food industries?

ii) The second relates more to agriculture's environmental potential, which could attract more people or more business to a region on a number of counts.

iii) Third, its potential to become an integral part of the region's economic network, *i.e.* to establish relations with other neighbouring sectors of activity and to respond to local concerns and needs. The issue here is whether agriculture can contribute to the competitiveness of a given rural area and spark off a chain reaction.

The best policies that we can put in place – having accepted that, left to itself, development does not necessarily result in the optimum spread of labour and activities either geographically or for society as a whole – would be policies that meet these requirements, for example by:

i) providing more support for diversifying production and for product differentiation and certification;

ii) special assistance for market services capitalising on the amenities that a rural area can offer;

iii) clarifying and explaining what farmers are expected to do to safeguard and protect the natural environment, and formally taking into account the part that agriculture plays in maintaining and developing positive externalities;

iv) developing a genuinely integrated regional development policy with incentives for all sectors of activity and all economic actors to work together in order to promote micro-regional synergies and positive local effects.

What we must now consider is to reinforce and to pursuit the complementarity between agricultural and rural policies that would leave the most appropriate territorial level (presumably the region) to identify specific action needed locally and to deliver the programmes that would best meet that need in an approach that integrates agricultural development with rural development. Such an approach should be consistent with national and European harmonisation policies that are designed to avoid disparities between rich and poor regions and to check distortions of competition. Subject to a fuller study of the ways in which such a mechanism would work, equity and efficiency would probably gain from it.

NOTES

1. Agriculture, forestry and fisheries.

2. French farms averaged 35.1 hectares in 1993, as against 16.4 hectares for Europe. In 1995 they averaged 38.5 hectares.

3. Population of communes with fewer than 2 000 inhabitants as a proportion of the total population.

4. Remote rural areas comprise rural communes outside an industrial or urban population area, in contrast to periurban rural areas.

5. Labour force as a proportion of the total population.

6. The figure for France as a whole is 25 per cent.

7. Measures to assist multi-activity relate to social security contributions, local authority employment, farm deficit accounting methods, simplification of VAT returns for farmers with other jobs as well, and greater scope for subletting rural buildings to tenants. Quality policy was reaffirmed as the key to new market outlets. Guidelines on striking a better balance between production and distribution have given a higher profile to joint trade organisations. The act reinforced the missions of France's economic guidance and co-ordinating Council for food and agriculture, the CSO (*Conseil supérieur d'orientation et de coordination de l'économie agricole et alimentaire),* and set up an agricultural guidance commission (*Commission départementale d'orientation de l'agriculture*) in every department to define priorities.The act also provided for land use planning and countryside maintenance measures. The rural area management fund was created under the Land Use Planning and Development Act. It was allocated FF 500 million in 1995 to help finance the maintenance and rehabilitation of the countryside, mainly by farmers or farmers' associations. The purpose of country landowners' associations is to ensure that agricultural and forestry land is under the management of a single body. Pasture-land owners' associations are exempt from taxes on unbuilt land for 10 years. This method of organisation is particularly suitable for the management of agricultural land in decline. Lastly, land use planning procedures (particularly consolidation) will be improved. A number of other provisions are designed to encourage new occupants to take over the land released.

8. Burgundy's 1991-93 PDZR comprised four sub-programmes and a follow-up programme. The first and by far the most important sub-programme was aimed at developing and diversifying the agriculture and forestry sectors. It was allocated total funds of FF 391 million. The second sub-programme, financed by the European Regional Development Fund and aimed at developing industry, crafts and services, was allocated FF 135 million. The third sub-programme, aimed at developing and promoting the tourist industry in Burgundy, was allocated FF 241 million. The fourth sub-programme, with a total allocation of FF 94 million, was aimed at human resources.

Annex

ANNEX TABLES

Annex Table 1. **Deliveries of agricultural products to Burgundy and Brittany, 1994**

	Burgundy		Brittany		France
	FF million	National %	FF million	National %	
Plant deliveries					
Cereals	2 049.4	6.03	1 378.9	4.05	34 014.3
Potatoes and beets	279.6	2.39	341.6	2.92	11 708.6
Fresh fruit	645.9	3.42	2 288	12.12	18 877.9
Fruit	162.4	1.26	230.9	1.79	12 930.8
Wine	3 579.4	8.26	0	0	43 328.6
Flowers and nursery seedlings	243	2.70	417.6	4.64	8 991.9
Total	7 763.9	5.42	4 965.8	3.46	143 373
Animal deliveries					
Cattle	2 883.9	8.79	3 464.3	10.56	32 805.6
Veals	140.2	1.39	2 358.7	23.42	10 069.3
Sheep, goats, horses	201.5	4.73	68.3	1.60	4 263.5
Pigs	225.3	1.26	9 626.3	54.04	17 814.6
Poultry and eggs	528.3	2.23	7 079.8	29.83	23 736.0
Milk	939.9	1.87	9 562.2	19.03	50 235.8
Other animal deliveries	143.4	3.84	385.8	10.32	3 738.5
Total	5 062.5	3.55	32 545.4	22.81	142 663.3

Source: AGRESTE, *Les comptes départementaux et régionaux de l'agriculture de 1991 à 1994.*

Annex Table 2. **Distribution of farms in Burgundy and Brittany by size, 1988, 1993**

	less than 20 ha	from 20 to 50 ha	from 50 to 100 ha	100 ha and more	Total
Burgundy					
1993	11 872	4 341	7 379	6 252	29 844
1988	15 273	7 995	9 024	4 933	37 225
1993/1988 in %	–22.3	–45.7	–18.2	+26.7	–19.8
Brittany					
1993	32 040	26 471	9 066	735	68 312
1988	53 475	34 979	3 969	122	92 545
1993/1988 in %	–40	–24	+128	+502	–26
France					
1993	402 400	205 300	132 400	61 200	801 300
1988	546 090	288 055	128 261	43 714	1 006 120
1993/1988 in %	–26	–29	+3	+40	–20

Source: AGRESTE, *recensement agricole, 1988;* INSEE, *tableaux de l'économie bretonne, 1995.*

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CASE STUDY – GREECE: CRETE*

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EXECUTIVE SUMMARY

This study endeavours to analyse the extent to which agro-structural policies have succeeded in alleviating the main structural impediments which thwart the competitiveness of the agricultural sector and consequently its contribution to rural development of the island of Crete. More specifically, it attempts to address two issues: Have agro-structural policies had a discernible impact on farm structures, agricultural incomes and the rural population? What were farmers perceptions towards these policies?

Such analysis is timely given the increasing prominence that these policies have recently been accorded with the new implementation period 1994-99 for EU structural funds. The time horizon of the analysis is 1981 onwards, although in most cases data are only available until 1991. The island of Crete was considered to be representative of the country in terms of its: rural diversity; the importance of the agricultural sector in the island's economy and; the variety of agro-structural measures applied.

Crete is a large, primarily rural island, with a very diverse socio-economic structure, an extensive agricultural sector, typical of the Mediterranean region. Its economic structure is characterised by the particularly large importance of agriculture and tourism, and by the relative unimportance of industry. Crete is one of Greece's most mountainous regions, with a great variety of agricultural landscapes and rich cultural heritage. Some areas have witnessed rapid rates of development, whilst the level of development of other areas, particularly mountainous areas, is exceptionally low.

Given its importance for the Greek economy, successive governments have applied most of EU structural policies to the island since the country's accession to the EC in 1981. In addition to output-related agricultural support, a variety of agro-structural measures have been implemented attempting to improve the efficiency and increase competitiveness of the agricultural sector in Crete. These comprise measures aiming at the improvement of agricultural structures through investment projects, cessation of farming and farm consolidation, the improvement in farm skills, marketing and aid to mountainous areas. They also entailed measures to specific agricultural sectors such as restructuring of vineyards and citrus fruits.

The main conclusion drawn from this analysis is that agro-structural policies have not succeeded in alleviating structural impediments of the agricultural sector and revitalising the rural economy. Ageing of population, unequal development between remote and integrated areas, rural depopulation and inadequate rural infrastructure remain the main impediments. Late introduction of such measures, low efficiency of implementing institutions in rural areas and incompatible policy objectives are some of the main reasons explaining this failure. It is argued that agro-structural policies should place more emphasis on increasing the competitiveness of the dynamic parts of agriculture and agro-food industry with more competitive advantages.

I. INTRODUCTION

The agricultural sector continues to play an important role in the overall socio-economic fabric of the country. The sector's share in Greek GDP is six times higher than in the EU-12, and its contribution to employment and foreign exchange earnings are almost four times higher (Annex Table A.1). Greece's food processing industry also looms large in the Greek economy. It has seen spectacular growth since the early 1980s, in marked contrast with the rest of the economy, and is now the largest and most profitable sector of Greek manufacturing. The food and drink industry has increased its share in Greece's GDP from 17 per cent in 1980 to 27 per cent in 1994. Food exports, which are still led by fresh fruit and vegetables, are Greece's traditionally largest export earners.

The maintenance of an active agricultural population in rural areas is one of the dominant policy objectives in the country. In the face of high unemployment, the farm population continues to be considered the backbone of rural communities (Pezaros, 1995). Moreover, it is believed that given the

extensive nature of farming in Greece, its abandonment would have adverse environmental repercussions (OECD, 1997, pp. 95-112).

Greece enjoys climatic conditions that favour Mediterranean crops such as fruit and vegetables, cotton, tobacco, olives and vines, as well as extensive rearing of sheep and goats. However, agriculture is beset by a number of unfavourable natural and structural conditions: small and fragmented holdings, frequent and prolonged drought, a large proportion of disadvantaged areas, a relatively aged agricultural work-force and productivity which is still half that of the other sectors of the economy and much lower than the agricultural productivity of most of the EU countries (Table 1). The fragmentation of rural land is further accentuated by the existence of large island regions, which are poor in natural resources.

Only 30 per cent of the land is cultivated, with the bulk of the remainder being mountainous. Holdings are of an average size of 4.3 hectares (4.4 SGM) as against an EU-12 average of 15 hectares (11.4 SGM). Almost 75 per cent of the total farms are smaller than 5 hectares, 15 per cent are 5-10 hectares and only 9 per cent are over 10 hectares. Around 60 per cent of the agricultural area is in less favoured areas, as against an EU-12 average of 54 per cent, while under the EU structural funds the entire country is covered by Objective 1, that is, promoting the development and structural adjustment of the regions whose development is lagging behind. About 60 per cent of the active agricultural population are more than 55 years old and 30 per cent more than 65 years old. Agricultural GVA per holding and per unit of agricultural labour is equivalent to 52 per cent and 63 per cent of Community averages, respectively. Yet, the sector is not a poor one as the value added per hectare is one of the highest in the EU and average yields are quite high (Table 1; Carabatsou-Pachaki, 1996).

These structural impediments in Greek agriculture have long been recognised and successive policies have been implemented. Their aim is to increase the competitiveness of agriculture by increasing efficiency at the farm level through upgrading and modernising human and physical capital stock in the sector and promoting land consolidation. At the same time, these policies attempt to reduce regional inequalities within the agricultural sector. Since 1981, when Greece joined the EU, about three-quarters of EU transfers to Greece have been allocated to agriculture. Given the importance of the agricultural sector for the country in general, and for the rural economy in particular, in tandem with the structural features of the sector, this study attempts to shed some light on the role of agriculture and agricultural structural policies in the island of Crete.

Crete is an interesting case for analysing the role of agricultural structural policies. Firstly, it is a large, primarily rural island, with a very diverse socio-economic structure, an extensive agricultural sector, typical of the Mediterranean region, and a very rich cultural landscape. Given its peripheral situation, Crete, like other Greek islands, faces the problems which are typical to these areas such as remoteness from markets and high transport costs. Nevertheless, because of its size and location, Crete presents a somewhat different and more complex pattern of development than other islands. The development of tourism and agriculture have had a major impact on regional diversity. Thus, some areas have witnessed rapid rates of development, whilst the problems of the disadvantaged areas have been compounded. Crete is one of Greece's most mountainous regions, with a great variety of agricultural landscapes and rich cultural heritage. Its climate favours the cultivation of out-of-season crops throughout the year, making the region the principal supplier of horticultural products in the country. Climatic differences between the north and the south have contributed to the diversity of crops, with tropical vegetation thriving in the south whilst grapes and olives are grown in the plains of the interior and in the north. The plains also differ from the region's mountainous areas in respect to employment patterns and level of development. The mountainous areas are oriented more towards stock rearing, and the level of development is exceptionally low.

Secondly, because of its importance for the Greek economy, successive governments have applied most EU structural policies to the island.[1] In addition to output-related agricultural support, a variety of agro-structural measures have been implemented in Crete. These comprised measures aiming at the improvement of agricultural structures through investment projects, cessation of farming, farm consolidation, the improvement in farm skills, marketing and aid to mountainous areas. They also entailed measures to specific agricultural sectors such as restructuring of vineyards and citrus fruits.

The island of Crete, therefore, could be considered as representative of the country in terms of its:

– rural diversity;

– the importance of the agricultural sector in the island's economy and;

– the variety of agro-structural measures applied.

The study endeavours to present a preliminary analysis of the extent to which agro-structural policies have succeeded in alleviating the main structural impediments which thwart the competitiveness of the agricultural sector and consequently its contribution to rural development. More specifically, it attempts to address two issues:

– Have agro-structural policies had a discernible impact on farm structures, agricultural incomes and the rural population?

– What were farmers' perceptions towards these policies?

Such analysis is timely given the increasing prominence that these policies have recently been accorded with the new implementation period 1994-99 for EU structural funds (EC, 1996)**.**[2] The time horizon of the analysis is 1981-onwards, although in most cases data are only available until 1991. Part II of the document provides a brief discussion of the main socio-economic features of Crete; Part III is focused on the structural characteristics of the Cretan agriculture. The use and implementation of agro-structural policies are discussed in Part IV, while a preliminary assessment is attempted in Part V. Finally, some concluding remarks are presented in Part VI.

II. MAIN SOCIO-ECONOMIC FEATURES OF CRETE

2.1. Synopsis

◆ **GREECE –** ***Location of Crete***

Relative to national and EU-12 averages, the following general observations could be made concerning the socio-economic features of the island of Crete (Graph 1 and Annex Table A.1):

– Population growth rates higher.
– Population density lower.
– Age distribution pattern similar.
– Rural population higher than the national average.
– Capital and human infrastructure good.
– GDP per capita lower.
– Unemployment rates lower.
– Activity rates higher than the national average and equal to EU-12 average.
– Agriculture's and Service's sector relative importance higher.
– Industry's importance lower.

2.2. Population and economic structure

The island of Crete covers an area of 8 336 km^2, 6.3 per cent of the country's territory, it has a population of 540 000, 5.3 per cent of the national population, and population density lower than the national average. In 1991, 46 per cent of the population was considered to be rural, 42 per cent urban and 12 per cent semi-urban.[3] Despite the fact that Crete's per capita incomes and productivity rates are converging towards the national average, its per capita GDP is still lower than the national average and approximately 48 per cent of the EU-12 average.

It consists of four prefectures: Iraklion, Rethymno, Lassithi and Chania. In terms of socio-economic structures prevailing in each prefecture, Iraklion could be considered as a ''dynamic'' region, Chania and Lassithi as ''developing'' regions and Rethymno as a ''problematic'' region (Carabatsou-Pachaki, 1996, p. 178). There are important intra-regional differences with as much as half of population and GDP being concentrated in one prefecture, Iraklion.[4] About 43 per cent of the rural population of the island lives in Iraklion. The urban centres are all located along the northern coastal areas of Iraklion and Chania.

The region's economic structure is characterised by the particularly large importance of agriculture and tourism, and by the relative unimportance of industry. The contribution of the agricultural sector to Crete's total employment and regional product, albeit declining over time, still accounted for 37 per cent and 29 per cent in 1993, much higher than the national average. Climatic conditions encourage the practice of traditional agriculture as well as the development of new and dynamic crops. The shares of the secondary sector, on the other hand, which also continues to decline, were 15 per cent of employment and 16 per cent of GDP. The only important branch is that of food processing, which offers good prospects for development. Despite lack of modernisation, food processing is the largest and most profitable sector of Cretan manufacturing. Crete's exports of seasonal produce range from early cucumbers and tomatoes grown under plastic in southern Crete to olive oil and wine. Also organic olive oil is now being produced in small quantities by a few growers in Crete.

The tertiary sector has been the most dynamic; its share in regional products increased by 9 per cent between 1981 and 1991. About a half of the island's employment and GDP originated from the service sector. The spectacular growth in this sector is primarily due to tourism. The number of foreign visitors over the last 15 years has been increasing at the striking annual rate of 20 per cent, while for the country as a whole the rate was 6 per cent.[5] Hotel capacity, measured by number of beds, increased by 53 per cent between 1986 and 1991 as compared to 25 per cent for the whole country.

Thus, agro-food and tourism are not only the main income and employment sources but they could also constitute the most dynamic sectors for sustaining long-term economic development in the rural economy of the island. In contrast to the situation in many other Greek islands, in Crete, there are important complementarities between agro-food and tourism having wide-ranging knock-off effects upon the rural economy of the island. The expansion of tourism stimulates the growth of food process-

Table 1. **Main agricultural indicators, 1990**

		Crete	Greece	EU-12
Area	Agricultural area	38%	30%	57%
	Irrigated cultivated area	19%	28%	
Land use	Arable land in total AA	7%	55%	54%
	Permanent crops in total AA	45%	27%	8%
	Perman. pasture and meadows in total AA	48%	18%	37%
Land tenure	Owned farm land	86%	76%	61%
	Tenant	12%	22%	36%
	Shared	1%	1%	3%
Holdings	Holdings (1 000)	88	850	7 993
	Holdings in less favoured areas	68%	60%	54%
	Holdings in mountainous areas	55%	36%	27%
	Average AA (ha)	4.6	4.3	15.0
	Average SGM (ESU)	3.6	4.4	11.4
Farm labour	Total labour (AWU) (1 000s)	68	680	8 024
	Aver. AWU/holding	0.8	0.8	1.0
	Aver. AWU/100 ha	16.9	18.6	6.7
	Full time (%)	26%	28%	45%
	OGA holders (%)	27%	26%	31%
Age	< 35	11%	9%	8%
	35-< 45	16%	15%	16%
	45-< 55	21%	22%	22%
	55-< 65	25%	29%	29%
	65-over	27%	25%	25%
Production mix	Crop (1991)	78%	69%	38%
	Livestock (1991)	22%	31%	62%
Productivity	Final output/AWU	13 252	12 242	25 257
	GVA/AWU	8 763	10 551	14 298
	SMG/100 ha AA	79	103	80
	SMG/100 AWU	469	554	1 190
	GVA/AA ha		1 816	911
	Yields (1992) (100 kg/ha)	16	41	48
Policy setting	Agr. subsidies-taxes/GVA (1991)	12.5%	9.5%	

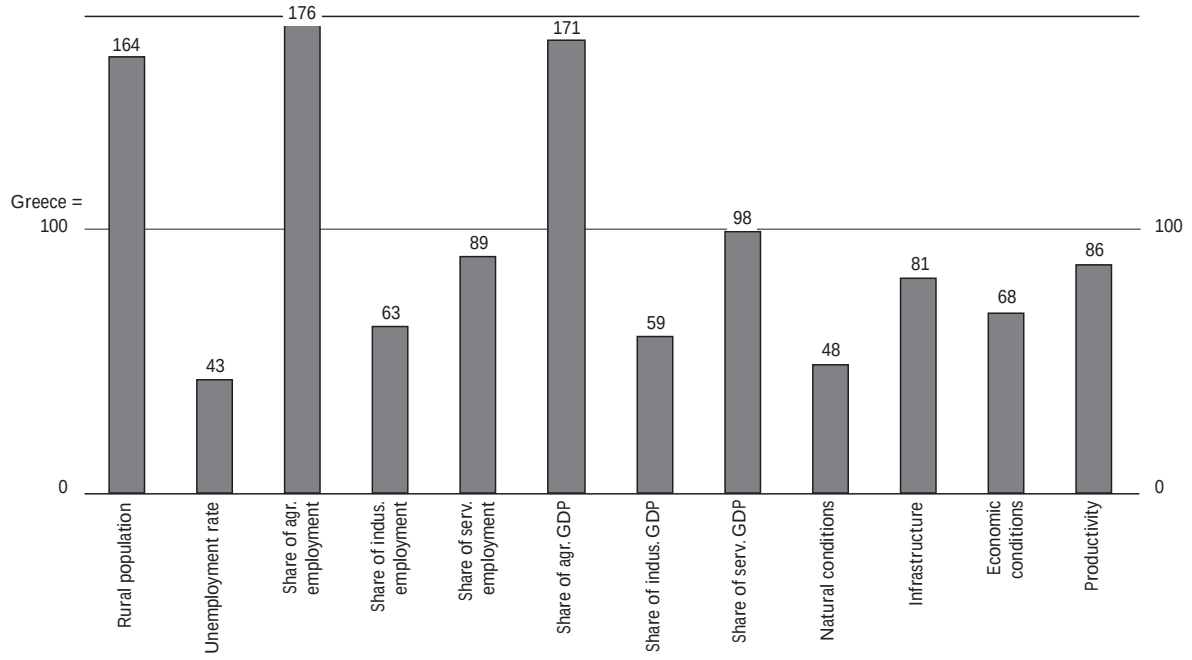
Source: EUROSTAT, FSS, 1989/90; Regions Statistical Yearbook, 1995; KEPE; Statistical Yearbook of Greece, 1991.

ing sectors and ultimately the growth of the whole regional economy. On the other side, agriculture and local economy renders substantial benefits from the joint expansion of food processing and tourism, placing both sectors as the most vital sectors for the rural economy of Crete.

A recent empirical study estimated the most dynamic sectors for stimulating economic growth in Crete using Input-Output analysis (Tzouvelekas and Mattas, 1995). It found that the food processing sectors, (defined in terms of canned preserved food, beverages, animal food, confectionery and dairy products), were the most vital sectors for the economy as they have had the greatest direct and indirect potential to increase the region's level of income, employment and output. More specifically, the Vegetable and Animal Oil sector, represented mainly by the olive-oil industry, has the largest growth potential to create economic activity in the island, followed by Canned Preserved Food, Beverages and Dairy Products sectors (Table 2). Tourism, represented mainly by Hotels and Catering, was also found to exhibit high output, income and employment effects on the economy of Crete, albeit smaller than the corresponding effects of the food-processing sector.

The aforementioned study also estimated the impacts among various sectors stemming from an increase in final demand (Table 3). It was found that a Drs 1 million expansion in the activities of the Tourist sector will bring substantial benefits in terms of output, employment and income to both

◆ Graph 1. ***Crete's socio-economic position relative to Greece***



Source: OECD Secretariat calculations based on various sources.

Table 2. **Employment, income and output effects (multipliers),**[1] **1990**

Sectors	Output	Income	Employment
Crops	1.03	1.05	1.02
Dairy products	1.45	1.67	2.02
Vegetable and animal oil	2.47	1.91	2.25
Canned food	1.88	1.52	2.50
Confectionery	1.51	1.30	1.43
Animal food	1.64	1.45	2.12
Beverages	1.66	1.97	2.05
Hotels and catering	1.53	1.64	1.89

1. Forty one-sectors were included in the analysis.
Source: Tzouvelekas and Mattas, 1995.

primary agriculture, being defined in the study only in terms of crops, and the Food Processing sector.[6] The greatest increase in the region's output, employment or income stemmed from the expansion of the Vegetable and Animal Oil sector, with the linkages being strongest with agricultural sectors. Moreover, almost a fifth of the total output change accrues to non-food sectors, therefore, these sectors have benefited greatly from the increase in final demand of the table and animal oil sector. The induced impacts due to tourism to other economic sectors are also important, albeit smaller than those of the vegetable and animal oil sector.

Given that agriculture and tourism are the two most important sources of income and employment in Crete and considering that a large quantity of agricultural produce is consumed by tourism enterprises, the linkages between these two sectors also have important repercussions on the rural environ-

Table 3. **Distribution of output, income and employment impacts, 1990**

	Total[1] Dr	Crops[2] %	Processed food[2] (%)	Tourism[2]	Other sectors[2] (%)
Agriculture					
Output	1 031 141	98.9	0.0	0.0	1.1
Income	44 195	96.6	0.1	0.0	3.3
Employment	1 038	99.9	0.0	0.0	0.1
Vegetable and animal oil					
Output	2 479 359	31.3	50.1	0.0	18.6
Income	248 807	13.2	64.1	0.0	22.7
Employment	1 920	40.8	54.3	0.0	4.8
Hotels and catering					
Output	1 534 925	9.2	10.5	65.2	15.2
Income	179 365	4.1	10.4	60.7	24.8
Employment	521	22.1	10.9	53.0	14.0

1. Figures indicate the total absolute output, income or employment growth assuming an increase in Dr 1 million in final demand of the corresponding sector.
2. Shares indicate how the total increase is allocated among the various sectors.

Source: Tzouvelekas and Mattas, 1995.

ment of the island. Promotion, for example, of organic food for tourism enterprises would not only ensure income for local farmers, but it could also have benign environmental effects. Grecotel, the largest hotel chain in Greece, in an effort to improve the supply of fresh, eco-friendly agricultural produce initiated a pilot project in 1995 in Rethymno for testing the response of various vegetables and fruits under organic methods of cultivation in accordance with the EC regulations. Approximately 800 tonnes of 60 different fresh fruits and vegetables are consumed annually in the four Grecotels in Rethymno. The aim of the company is that 40 varieties of fruits and vegetables or 10 per cent of the total quantity consumed be organic products by 1996. The guaranteed outlet as well as the technical support offered by the company are important motives for increasing participation of farmers. Thus, a parallel development of agriculture and tourism through co-operation which is benign to the environment could provide the basis for viable rural development (Grecotel, 1996).

Notwithstanding the aforementioned complementarities, there are also apparent competitive pressures with important consequences for the rural economy. The rapid growth of tourism witnessed in recent years, for instance, exerted strong pressure on the land market. Productive agricultural land is increasingly used for tourist development, particularly in plain and coastal rural areas.

III. STRUCTURAL FEATURES OF THE CRETAN AGRICULTURAL SECTOR

3.1. Land use

Crete has 316 million hectares of agricultural land or 8 per cent of the country's agricultural land (Table 1 and Annex Table A.2). Most of the agricultural land is cultivated with permanent crops. Annual crop cultivation in 1991 constituted 6 per cent of the cultivated land in Crete compare to 57 per cent in Greece. About half of the agricultural land is concentrated in the prefecture of Iraklion and the rest is evenly distributed among the other three prefectures. Crete, particularly the prefecture of Iraklion, has the largest land available per habitant. However, there is a great diversity among the four prefectures with respect to quality of land, with the most advantageous being Iraklion and the least Rethymno. Special climatic conditions, particularly in Lassithi, make possible the production of products off-season, thereby improving the competitive position of the whole island for such products. Iraklion is favoured with respect to the size of land, flatness of cultivated land and climate. Chania is favoured with respect to size and flatness of cultivated land and Lassithi for favourable climatic conditions and irrigation.

Table 4. **Distribution of farm holdings by size, 1990 (%)**

	Physical size						
	< 2 ha	2 < 5 ha	5 < 10 ha	10 < 20 ha	20 < 30 ha	30 < 50 ha	> 50 ha
Crete	51	30	11	4	1	1	1
Greece	45	31	15	7	1	1	0
EU-12	39	21	13	10	5	6	6
	Economic size						
	< 2 ESU	2 < 4 ESU	4 < 8 ESU	8 < 16 ESU	16 < 40 ESU	40 < 100 ESU	> 100 ESU
Crete	52	19	15	10	4	0	0
Greece	49	20	18	10	3	0	0
EU-12	42	16	14	11	11	6	1

Source: EUROSTAT, FSS 1989/90.

Nevertheless, Crete, in general, and certain prefectures in particular (*e.g.* Rethymno), are disadvantaged in relation to the rest of the country with respect to availability of plain agricultural land as about one-third of the agricultural land is mountainous and another third semi-mountainous. These shares of mountainous agricultural areas, which are higher than the corresponding national ones, have important repercussions for the adjustment of the sector. Farms in mountainous and semi-mountainous areas have less access to irrigation and they are also more distantly located from local markets than farms in plains areas.

A major structural impediment to productivity increase is the size and fragmentation of farm holdings. In 1990, there were 88 thousand farm holdings, 10 per cent of the national total, with most of them being in the less favoured or mountainous areas and having smaller size than the national or EU-12 averages (Table 1; Table 4). The average physical size of farms 4.6 ha and economic size 3.6 ESU as compared to 4.3 and 4.4 for the whole country. Farm holdings are about five times smaller than the EU-12 average in economic terms. Only 3 per cent of farms were of more than 20 hectares.

Even very small farms are often split up into several strips, the average holding is six parcels of 0.6 hectares, which may be widely separated from one another, making production inefficient and costly. In 1991, there were 8 parcels per farm holding as compared to 5 parcels per farm for Greece. Fragmentation, together with the existence of many and small farm holdings constitute the main factors hindering modernisation of the Cretan agricultural sector. Nevertheless, although there is a general recognition of the fact that the prevalence of small scale farming thwarts the modernisation of agricultural sector, extensive farming is regarded as crucial for the maintenance and enhancement of rural landscape (OECD, 1997, pp. 95-112).

3.2. Production structure

Farm holdings are dominated by farms specialised in permanent crops, particularly olive cultivation. About 70 per cent of farm holdings in Crete are specialised in permanent crops production against only 40 per cent for the country as a whole (Table 5). Farm holdings specialised in olive cultivation constitute a third of total holdings, while holdings specialised in vineyards, although they have declined over time, still account for 8 per cent of total holdings.[7] Farms specialised in various permanent crops such as crops under glass, accounted for almost a quarter of total farm holdings. Mixed cropping is also relatively important, accounting for about 12 per cent of total farm holdings.

Cretan livestock farms are more oriented towards sheep and goat products, albeit livestock production is peripheral. In 1990, only 10 farm holdings were specialised in cattle production against 4 440 in sheep and goats (EUROSTAT, FSS 1989/90). With the exception of mixed livestock farms and mixed farms, the average size of all other farm types in Crete is smaller than the corresponding national average.

Table 5. **Distribution of farm holdings by farm type, 1990 (%)**

	Field crops	Horticulture	Vineyards	Fruit and citrus fruit	Olives	Various permanent crops compiled	Cattle	Sheep, goats, other grazing livestock	Granivores	Mixed cropping	Mixed livestock	Mixed farms
Crete	0	4	8	4	33	24	0	5	0	12	2	6
Greece	26	2	3	8	23	9	1	7	0	11	3	7
EU-12	21	3	7	9	9	5	13	9	1	10	5	8

Source: EUROSTAT, FSS 1989/90.

In accordance with the composition of farm holdings, the production structure of the island is characterised by the predominance of crop production, which is even higher than that of Greece as a whole. Crete has a natural comparative advantage in olive cultivation both in terms of climate and soil, producing as much as 5 per cent of world output. Olive oil production is of great social and economic value as it offers employment to the local population which is of vital importance to the rural areas, particularly for the remote rural areas. Almost all farms have olive trees and many remote rural areas of the island rely solely on the cultivation of olive trees as there are no alternative possibilities for other cultivation. Further, olive growing offers a supplementary source of income as its production is compatible with part-time work and thus it can be combined with other seasonal activities such as agro-tourism or other tourist services. A decline in olive oil farming could lead to soil erosion, desertification and rural depopulation (OECD, 1997, pp. 95-112).

Moreover, olive oil production is related to a number of processing activities such as the mechanical picking of olives, olive mills and marketing. Picking of olives absorbs up to 50 per cent of the value of production, with the percentage varying between 25 per cent to 75 per cent, depending on the prevailing conditions in the regions. During the mid-80s, the production of picking-up machines by small firms was a growing area of activity in Crete (Donatos, Kanaris, Mergos and Hilas, 1989, p. 115). There is also a significant number of olive mills, about 20 per cent of the country's olive mills, which are spread over the production regions of the island. Such activities provide extra seasonal employment to the rural population of the island.

The climatic and soil conditions of the island are also conducive to viticulture for all three products, grapes, raisins and wine. Despite the problems of phylloxera in the 1980s and the Common Agricultural Policy (CAP) policy to reduce the area of vineyards, viticulture remains one of the most important production activities of Crete. Cretan wine production accounts for a significant share of the total Greek production. Raisins are still one of the most important exported products of Crete, where in the past was one of the main sources of foreign exchange for the Greek economy.[8] Viticulture is less amenable to part-time employment than cultivation of olive trees. The cultivation of vineyards in Crete, but also in other parts of Greece, is labour-intensive, demanding labour input throughout the year.

Citrus and fruit trees production is also very important for the Cretan economy, albeit 80 per cent of production is concentrated in Chania. Orange trees are the main citrus crop. Greenhouse products also play a very important role. Although, they occupy only 1 per cent of cultivated area, they account for about a quarter of agricultural GVA. Cucumbers and tomatoes are the main greenhouse products covering 70 per cent of the area. Both of these products are exported.

3.3. Farm labour

In Crete, as in the rest of the country, farms are small and family-run, with family labour accounting for almost all of farm labour. About three-quarters of farm family labour in Crete as employed in the owner's holdings. Almost half of the farm family labour is employed in the prefecture of Iraklion. Seasonal labour is also very important (Annex Table A.3).

Table 6. **Distribution of farm labour in AWU by farm type, 1990 (%)**

	Field crops	Horticulture	Vineyards	Fruit and citrus fruit	Olives	Other permanent crops	Cattle	Sheep, goats, other grazing livestock	Granivores	Mixed cropping	Mixed livestock	Mixed farms
Crete	0	7	9	3	19	28	0	9	0	14	3	8
Greece	25	3	3	7	14	10	1	11	1	13	4	9
EU-12	17	6	6	6	4	5	21	8	2	10	5	10

Source: EUROSTAT, FSS 1989/90.

Table 7. **Distribution of farm labour force by work-time of holder, 1990 (%)**

	0-50%	50-100%	100%	Holders with OGA (%)
Crete	61	23	15	27
Greece	60	24	16	26
EU-12	59	16	25	31

Note: OGA: Other gainful activity.
Source: EUROSTAT, FSS 1989/90.

Distribution of farm labour by age indicates that the pattern is similar to that of Greece and EU-12 (Table 1). Crete has a somewhat younger farm population as 27 per cent of farmers are less than 45 years old, against 24 per cent in Greece and the EU-12, but it also has more farm labour older than 65 years, 27 per cent, against 25 per cent for Greece and the EU-12.

Permanent crops, particularly olive production, are the predominant source of farm employment (Table 6). This pattern is somewhat different from that observed in Greece, where holdings specialised in field crops are the main sources of farm employment, and also different from that of EU-12, whereas holdings specialised in cattle absorbed most of the farm labour.

Distribution of farm labour by farm work-time of holder suggests that only 15 per cent of farm holders are employed on a full-time basis (Table 7). The majority of farm holders spend less than half of their time on the farm. These percentages, although they are similar to those observed in Greece, are quite different from those of the EU-12.

The low share of full-time employment would suggest that farm owners work only on a part-time basis on the farm and complement their farm income by off-farm employment. In Crete, 27 per cent of holders have other gainful activities, as compared to 26 per cent in Greece and 31 per cent in the EU-12. The lower share of other gainful activities of the farm holder in Crete compared to EU-12, in tandem with the higher percentages of part-time would tend to suggest the existence of "hidden unemployment" and/or an informal economy (*i.e.* unregistered gainful activities).

IV. USE AND IMPLEMENTATION OF AGRO-STRUCTURAL AND OTHER POLICIES

Agricultural, regional and rural policies are overwhelmingly dominated by EU measures. Following its accession to the EU in 1981, Greece adopted the already existing EU agro-structural policies, special regional measures were introduced such as the Integrated Mediterranean Programme (IMP) and structural regional programmes under Objective 1, which included substantial agro-structural measures.

Structural policy is financed by the guidance part of the European Agricultural Guidance and Guarantee Fund (EAGGF).[9] Its relative importance is rather low since the Guarantee section, that is, price support policy, has been receiving most of the funds (Tables 8.A and 8.B).

Table 8. **EAGGF guarantee payments (mill. ECU), 1985-89**

	A. EAGGF guarantee payments for selected products 1986-89									
	Cereals and rice	Sugar	Olive-oil	Oleag-inous	Fruit and vege-tables	Wine	Tobacco	Milk	Cattle (Meat)	Sheep and goat (Meat)
Crete	2.6	–	267.8	0.0	35.2	14.5	–	35.0	2.1	56.3
Greece	732	121	1 222	73	333	57	1 618	464	118	603

Note: Payments for individual products, distributed according to their regional production. With respect to subsidies paid to producers, EC payments to individual member States were further distributed regionally. In all other cases, the EC payments were distributed directly to EC regions.
Source: EUROSTAT, database Regio; EAGGF Financial Reports as reported in Parlement européen, 1991, Table A.9, p. 118.

	B. EAGGF guarantee payments, 1985-89								
	1985	1986	1987	1988	1989	1985-87	1985-89	1986-87	1986-89
Crete	86.6	99.3	108.0	94.8	126.0	16.3	514.7	32.1	428.1
Greece	1 531	1 689	1 520	1 642	1 935	4 926	8 317	4 057	6 786

Note: Payments for individual products, distributed according to their regional production. With respect to subsidies paid to producers, EC payments to individual member States were further distributed regionally. In all other cases, the EC payments were distributed directly to EC regions.
Source: EUROSTAT, database Regio; EAGGF Financial Reports as reported in Parlement européen, 1991, Table A.10, p. 121.

4.1. Farm investment

(Reg. 159/72; Reg. 797/85; Reg. 2328/91)

These measures have been relatively rapidly adopted by Greek farmers. Investment aid, which is the largest category of the European Agricultural Guidance Fund after compensatory allowances, averaged ECU 16.68 million over 1987-91 (EC, 1994, p. 31). Over time, the emphasis of investment aid measures has been shifted towards investment plans to enhance competitiveness, improve production conditions and diversify. By 1993, 47 401 plans for modernisation and improvement were approved, of which 24 per cent were in Crete.

Reg. 797/85 was very popular amongst the Cretan farmers and was mainly applied in the prefecture of Chania and Lassithi. Semi-mountainous zones predominated, while the regulation was barely used in mountainous areas. Overall, the average investment in Crete, although it increased over time, was lower

Table 9. **Distribution of grants through Reg. 797/85 to farmers in Crete**

Million Dr at 1987 prices

Sectors	1987	1988	1989
Livestock	145	296	335
Apiculture	19	43	54
Greenhouse flowers	42	77	58
Greenhouse vegetables	666	1 153	1 446
Irrigation projects	289	662	633
Land reclamation	146	288	247
Buildings	85	238	271
Tractors	139	207	227
Machinery	230	531	519
Tourism	4	36	64
Handicrafts	0	13	11
Other	499	1 102	802
Total	2 265	4 646	4 669

Source: Ministry of Agriculture, as reported in Kambas, 1993.

than the national average. Greenhouses, especially for vegetables, benefited most from Reg. 797/85 (Table 9). Also livestock and mechanisation received high proportions of support. Assistance provided to greenhouses, especially vegetables and livestock was relatively higher than the national average (Kambas, 1993).

4.2. Aid to young farmers

(Reg. 797/85, Articles 10 and 11 of Reg. 2328/91)

These measures, which include investment aids and setting-up premia, aim at bringing farms under the management of young adaptable farmers, by helping with installation expenses. The installation premia vary from about ECU 4 750 for farms using from 1 to 1.5 labour units to ECU 9 500 for farms using more labour. Credit is subsidised at a rate of 5 per cent. The account keeping subsidy is about ECU 1 000 per year. The training grant amounts to 75 per cent of the regular minimum wage rate for an unskilled worker.

Aid to young farmers has been well adopted in Greece, averaging ECU 0.60 million over 1987-91 (EC, 1994, p. 31). More than 2 800 young farmers received set-up aid and about 1 250 farmers were helped to modernise their holdings between 1986 and 1993. Of these, only 8 per cent were in Crete. The relatively low uptake in Crete could be attributable to the less favourable farm structures (Table 10). Moreover, an important part of labour is absorbed by remunerative activities in the tourist industry.

4.3. Mountain areas and other less-favoured areas (LFA)

***(Reg. 75/268; Reg. 2328/91*)**

The aim of these measures is to facilitate a continued agricultural presence and maintain the population in such areas. Specific aid measures for these areas are the most important of EAGGF Guidance section commitments for measures under Objective 5a for the EU. Assistance is mainly provided in the form of compensatory allowances. Farmers eligible for these allowances are main occupation farmers, with over 2 ha and under the age of 65 whose holdings is in an LFA, providing they undertake to remain in farming for at least five years. The amount of compensatory allowance depends on animal numbers, with the Community contributing 25 per cent of expenditures. Both the rates of allowance and the maximum allowances per farm are differentiated according to mountain and disadvantaged areas, and special rates apply in the areas of Thrace, Epirus and Crete.

Compensatory allowances have been paid in Greece since 1985 and accounted for 76 per cent of the total EAGGF appropriations for Reg. 797/85 for the period 1987-88. Compensatory allowances for LFA were the main item of commitments to Greece from the EAGGF under Reg. 2328/91 within

Table 10. **Young farmers benefited under Reg. 797/85 and Reg. 2328/91**

	Until 1987		1988		1989		1990		1991		1992		1993	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Crete	16	3	16	10	31	14	23	20	19	9	77	26	123	16
Iraklio	0	0	0	1	0	0	2	1	0	1	5	3	74	6
Lasithi	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chania	0	1	2	1	5	0	1	2	0	0	1	0	0	0
Rethymno	16	2	14	8	26	14	20	17	19	8	71	23	49	10
Greece	172	68	211	96	422	126	393	94	469	128	463	294	705	441

Notes: A. Number of young farmers who granted setting-up premium.
B. Number of young farmers who granted investment aid.
Source: Ministry of Agriculture.

Table 11. **Grants provided through the 75/268 Directive to farmers in Crete**

Mill. Dr at 1982 prices

	Chania	Iraklion	Rethymno	Lasithi
1982	160.0	169.7	162.0	71.3
1983	133.3	144.4	136.9	55.9
1984	123.2	172.3	124.9	58.3
1985	105.5	0.0	104.6	50.7
1986	80.0	143.5	92.0	39.9
1987	90.9	110.1	21.8	44.9
1988	61.9	215.8	75.5	57.2
1989	3.7	171.9	108.1	50.6
Average	94.8	141.0	103.2	53.6

Source: Ministry of Agriculture, as reported in Kambas, 1993, p. 5.

the CSF 1989-93, averaging ECU 38.92 million over 1987-91 (EC, 1994, p. 31). The number of holdings receiving the compensation allowances has been increasing regularly over time. Table 11 shows that there is no clear trend concerning annual changes in the distribution of grants provided through Dir. 75/268 among the four prefectures of Crete. The lower average grants in Lassithi is due to the absence of LFAs in this prefecture. The livestock sector benefited most from these measures.

4.4. Measures concerning processing and marketing of agricultural products

(Reg. 355/77; Reg. 866/90; Reg. 3669/93)

Reg. 355/77 was implemented in Greece almost immediately after accession in 1981 because of the poor conditions of marketing and processing activities at the time. The significant EAGGF contribution of up to 50 per cent of investment costs, together with the tradition of farmer co-operation in this field helped to ensure its adoption. In fact, up to the end of 1989, Greece had submitted some 3 000 projects under this Regulation, and in the same period the total EAGGF contribution was ECU 389 million, or some 15 per cent of total EAGGF guidance section transfers to Greece. Ten programmes covering cereal storage and drying facilities, olive products and oilseeds, fresh and dried fruit, tobacco, wine, flowers, seeds, animal feed, livestock production, and fisheries were approved with a total investment of ECU 789 million during 1981-88. In Crete, the wine sector received most of the grants (Table 12).

The basic innovation of Reg. 866/90, which replaced Reg. 355/77 following the reform of structural funds, was the decentralisation of the approval process for investment programmes. The Greek Ministry of Agriculture is responsible for the approval of any specific investment plan, while the Commission still possesses the right to conduct the wider operational programmes, sectoral programmes, in which

Table 12. **Grants and plans provided through the Reg. 355/77 to Crete**

1 000s Dr

	Approved grants (1)	Received grants (2)	(2)/(1)	Approved plans (3)	Completed plans (4)	(4)/(3)
Wheat	683 075	345 197	51%	19	14	74%
Wine	552 432	349 233	63%	6	5	83%
Olive	342 414	66 716	19%	13	3	23%
Fruit	545 765	172 830	32%	4	1	25%
Milk	326 047	105 577	32%	4	1	25%
Total	2 449 733	1 039 553	42%	46	24	52%

Source: Ministry of Agriculture, as reported in Kambas, 1993, p. 12.

investment plans are included. In Crete, there has been a good take-up of Reg. 866/90. Seventy-five co-operative projects were approved since 1991 with a total investment of some ECU 32.7 million. These included primarily olive oil and olive processing, and fruit trees.

4.5. Structural measures related to specific crops

a) Citrus restructuring programme

(Reg. 2511/69; Reg. 3223/88; Reg. 204/82)

This programme was approved in 1983 for the period 1984-88. The cost was ECU 172 million of which 50 per cent came from EAGGF. The programme was extended for a further two years 1988-89 with an additional budget of ECU 49 million after significant frost damage to some areas in 1987. Grants were 100 per cent of costs for small irrigation projects, 80 per cent of costs for marketing and processing, and between ECU 5 000 and ECU 21 000 per hectare for restructuring the rate depending on the variety. As with the other schemes, the citrus programme was directed at ''main occupation farmers'' who own cultivated land or have long-term tenure of it. Farm families with other gainful activities providing 50 per cent or more of ''family'', farmer and spouse, income could not apply.

Implementation of the programme has been disappointing, only 4 730 hectares have been restructured, compared with a target of 9 170 hectares for 1984-88. However, the implementation of irrigation, marketing and processing projects was more successful. At the end of the programme EAGGF had actually paid ECU 34 million, or 41 per cent of the budgeted amount.

In Crete, the citrus restructuring programme sought to improve the production and marketing conditions of citrus by improving quality and extending the marketing season. Activities supported by the measures include: replacement of old citrus plantations with new ''higher quality'' plantings; diversification of new varieties; investment in related marketing and processing facilities and; related small irrigation works.

b) Measures related to vines:

i) Restructuring of vines (Reg. 456/80; Reg. 776/85; Reg. 895/85 and Reg. 1442/88)

ii) Cessation of low quality production (Reg. 777/85)

iii) Phylloxera (Reg. 895/87)

These programmes have been important in Crete, where policy has encouraged quality improvements in the wine sector. The main objectives of viniculture policy in Greece are twofold: restructuring viniculture without any further increase in land used, and decreasing land under wine cultivation as well as wine production. During 1987, 30 per cent of the areas that were then determined as liable for restructuring VQORD wine production and 55 per cent of the areas that produced ordinary quality wine were in the insular parts of the country. As a result, a great number of the vineyards of the Aegean islands were uprooted.

In 1990, however, the system was revised and the possibility for an increase in land area planted to vines was allowed. As a result of this decision, there was an increase in vinicultural land of 1 500 ha, of which 1 300 ha were in the Aegean islands. Furthermore, a social EU Programme on Aegean islands recognised the need for special support for VQPRD wine producers in the Aegean islands for the period 1994-97, which was implemented by Reg. 2019/93. Although VQPRD wines usually command high prices, difficulties in marketing, transportation and communication could be a hindrance to the profitability of Aegean islands' wine production (OECD, 1997, pp. 95-112).

In 1988, the island of Crete was afflicted by the phylloxera disease, which led to a significant uprooting of vineyards. Consequently, the Greek government and the EC implemented special programmes. EC Reg. 144/88 provided for the permanent withdrawal from production and allowed for only 10 per cent of vineyard capacity, except for VQPRD wine production. The Regulation was very attractive to Cretan farmers who participated with 8 000 hectares of sultanas. The Regulation lasted until 1990.

4.6. Early retirement scheme

(Reg. 1096/88; Reg. 2079/92)

This scheme aims to encourage younger farmers, who can improve the viability of the remaining holdings, to take over from elderly farmers. Farmers are eligible for the scheme if they practise farming as their main occupation, are over the age of 55 and permanently cease all farming activities. The land released by farmers taking early retirement may either be withdrawn from production or used to enlarge neighbouring farms. Greece, which implemented the scheme in 1989, applies the second case (*i.e.* modernisation). It has been relatively well taken up, with 53 000 participants by the end of 1991, of which 4 800 were in Crete. The pension is set at ECU 1 800 per annum, compared with a maximum permitted rate of ECU 3 000 under the Reg. 1096/88. The rate of EAGGF reimbursement is 50 per cent. Although considered by farmers as a ''compensatory'' rather than a structural measure, its use has been associated with structural changes, particularly succession by a younger family member or, in poor farming areas where there is no successor, exit from farming.

Reg. 2079/92, which replaced Reg. 1096/88, was implemented in Greece in 1994. Out of 8 000 applicants, 4 466 farmers retired by 1996, of whom 208 were in Crete. The small uptake in Crete is attributable to the fact that the programme originally required retiring farming to withdraw permanently from production. However, since January 1996, this requirement was amended and farmers who rent land can also benefit from these programmes.

4.7. Community Support Framework (CSF)

Structural fund transfers to Greece reached 2.8 per cent of GDP in 1993 and co-founded 70 per cent of total public investment (EC, 1994, p. 14). The rate of absorption of appropriations of the funds within CSF 1989-93, under Objective 1 reached the high rate of 80 per cent, while for all EAGGF measures (Objective 1 and Objective 5*a*) the rate was 83 per cent in 1992.

The funds available to Greece from the CSF 1994-99 period amount to ECU 13 890 million at 1994 prices. It is worth noting that agricultural and rural development receive less emphasis with the shares devoted to this category being reduced from 18.5 per cent in the 1989/93 CFS to 14.5 per cent in the 1994/99 CFS. For agriculture, the main policies, are under the EAGGF Guidance budget, include, *inter alia*, the following. Speeding up the modernisation of agricultural structures through implementation of Regulations 2328/91, 1360/78, 1035/72 and 389/92 arising out of Objective 5a.[10] This will benefit 50 000 farms, the setting-up of 14 000 young farmers in conjunction with the early retirement of elderly farmers, the granting of compensatory allowances to about 250 000 farms located in disadvantaged areas, the improvement of pastures and feeding areas covering 65 000 hectares; Improvement of the processing and marketing conditions for agricultural and forestry products (Objective 5*a*), with particular emphasis on standardisation, presentation and quality. It is estimated that 1 200 businesses will be able to benefit from this sub-programme; Completion of the programmes undertaken with 1989/93 CFS, particularly on agricultural structures and restructuring of the olive oil industry (Reg. 895/85, 3222/88, 3223/88); The promotion of product quality, including measures for wine restructuring.

For Crete, the objective identified under the CSF 1989-93 for agriculture was to improve the competitiveness of traditional crops and to develop selected branches of production, particularly horticulture and floriculture in glass-houses, by exploiting the region's favourable climatic conditions. The programme thus anticipates the installation of modern-technology glass-houses and the modernisation of existing glass-houses over an area of approximately 42 hectares, at the same time as achieving energy savings for heating. It is also planned to economise irrigation water by improving the exploitation of available water resources. Other, measures concern protection and exploitation of forest areas, particularly forest protection (2 800 hectares) and reforestation (350 hectares).

Under the CSF 1994-99, the European Commission approved a programme of ECU 435 400 million to develop the endogenous resources of the island, with the focus on optimising the strengths of the agricultural and service sectors. About 14 per cent will be allocated to rural development. The European Community is contributing 71.74 per cent of the total investment, the rest is covered by the Greek

authorities and the private sector. The Community finance is provided by the ERDF, 82.2 per cent, the ESF, 4.8 per cent, and the EAGGF-guidance section, 13 per cent. In contrast to measures on tourism, whose rate of implementation was 152 per cent in 1995, implementation rates for rural development measures have been very low: 26 per cent in 1994; 61 per cent in 1995 and; 13 per cent for the first quarter of 1996 (YPETHO, Crete, EP-KPS 1994-1999.

4.8. Other measures

a) Integrated Mediterranean Programmes (IMPs)

The IMPs, which were introduced for Greece, Italy and France at the time of the Iberian enlargement of the EC, are considered as a multi-sectoral approach to regional and rural development, based on principles of partnership and integration. They cover all three economic sectors (primary sector, secondary sector and tourism) and offer support both to public infrastructure and private investment. Community support for IMP projects in Greece ranges from 55 per cent to 70 per cent and can cover items not covered by the competencies of the Structural Funds. The measures to be financed by the EAGGF Guidance Section relate to the development of agricultural services, irrigation, the provision of rural infrastructures, land reclamation, forestry measures, fish farming, animal husbandry schemes and the processing and marketing of certain types of products. The rate of implementation, payments as a proportion of commitments, of the IMPs in Greece varied considerably among regions and sectors. The lowest implementation rates were in sectoral sub-programmes for industry, tourism and agriculture, whilst the highest rates were for infrastructure. Administrative inadequacies and lack of efficient institutions at local level has been one of the basic constraints on effective implementation of the IMPs in Greece (EC, 1989). The IMP for Crete, which was approved in 1986, has a total budget of ECU 469.1 million + for 1986-92 and a 65 per cent rate of realisation. The programme is largely geared towards the development of the secondary sector.

b) Cessation of farming and set-aside and extensification measures

(Reg. 2/160 and Reg. 1096/88)

The uptake of these measures is very poor, with no set-aside or extension measures in Crete. Consequently, their impact on land mobility for structural reform purposes has been very limited.

c) National investment measures (National Law 1262/82)

The law, through the use of capital grants, tax relief and interest rebates, provides investment incentives for the various sectors, including agriculture. In Crete, up to 74 per cent of investments were undertaken in the tertiary sector, whilst the primary sector (agriculture, forestry and fisheries) attracted less than 3 per cent (Carabatsou-Pachaki, 1996, p. 186).

V. AN ASSESSMENT OF AGRO-STRUCTURAL POLICIES

Given the objectives of agro-structural policies, one should expect that such policies would have:

- Retained rural population;
- Modernised agricultural structures by improving the land structure of farms;
- Rejuvenated agricultural population (young farmers);
- Encouraged conversion, diversification, reorientation and improvement in quality of production;
- Encouraged the establishment of producers' associations and, in general
- Improved agricultural competitiveness.

Have these expectations materialised? The task of quantifying and attributing the impacts of agro-structural policies is a complex one and only tentative conclusions can be drawn. Ideally, an assessment

of agro-structural policies would require the comparison of a number of agricultural structural indicators over the period that such policies were in place with the counterfactual situation of what would have happened in the absence of such policies. Unfortunately, such an approach is cumbersome requiring the construction of sophisticated econometric models.

Furthermore, some of the policy measures have been amended over time and others have been adopted only recently; yet their effects will be long lasting. Hence, to gauge the full impact of these policies, longer time series are needed. Even if more data were available, additional issues would have to be confronted. These include the possible conflict between policy targets and policy instruments, the difficulty of establishing the timing and the degree to which a single policy instrument affects a particular target, and the need to distinguish the effects of previous or other policy measures also in place as well as of exogenous factors such as natural disasters.

Having noted these caveats, preliminary analysis of the evolution of the main structural variables (''policy targets'') since Greece accession to EU, 1981, is presented to shed some light on whether agro-structural policies were successful in removing structural impediments and ameliorating the competitiveness of the agricultural sector. In particular, it will look at changes over time in the rural population, average size of farm holdings, production mix, agricultural employment and GDP, and some indicators of agricultural productivity.[11]

The analysis also draws on a recent study by the *Institute for the Study of the Greek Economy* (Nikolinakos, 1995). The study, which is based on field work and uses a stratified sample survey of a thousand agricultural households in Crete, analysed the effectiveness of different structural measures and the attitudes of farmers towards these measures as applied to Crete over the 10-year period 1981-91.

5.1. Maintenance of rural population

During the 1981-91 period, the region's rate of population growth was higher than the national average (Table 13). However, population growth by prefecture exhibited great diversity, reflecting unequal rates of economic development of the leading sectors, agriculture and tourism, across prefectures. But, the trend in the rural population has been downwards, whilst the urban population increased over time for all prefectures. The annual average decrease of the rural population for 1981-91 was the same as in 1971-81 (-0.1 per cent). The rate of urban population increased at an annual average rate of 2.2 per cent during 1971-81 (1.9 per cent for the country) and 1.6 per cent during 1981-91 (0.6 per cent for the country). The semi-urban population also increased, albeit more slowly. It could therefore be argued that the conditions created by agro-structural measures were insufficient to reverse the downward trend in the rural population.

Table 13. **Annual percentage changes in population, 1971-91**

	Urban		Semi-urban		Rural		Total	
	1971-81	1981-91	1971-81	1981-91	1971-81	1981-91	1971-81	1981-91
Crete	2.2	1.6	1.9	1.0	–0.1	–0.1	0.9	0.7
Chania	1.5	1.5	–0.8	0.7	–0.4	–0.4	0.5	0.6
Rethymno	1.6	3.4	–1.0	–0.8	–0.2	0.2	0.2	1.1
Iraklion	2.8	1.3	3.7	1.6	0.0	0.1	1.5	0.8
Lassithi	..	..	1.3	0.8	0.0	–0.3	0.5	0.2
Greece	1.9	0.6	0.9	1.5	–0.4	–0.1	1.0	0.5

Source: YPETHO; KEPE; NSSG, Population Censuses.

5.2. Improvements in farm land structure

Over the 1980-90 period, average size, physical and economic, increased. This was brought about by an increase in agricultural land and a decrease in the number of farm holdings (Table 14). However, the average size of farm holdings in less favoured and mountainous areas decreased as the share of holdings in these areas increased over time.

The increase in agricultural land is mainly attributed to an increase in the amount of rented land, particularly in the mountainous areas (Kambas, 1993, p. 38).[12] In contrast, owned farm-land changed only slightly. The lack of markets for financial capital, part-time farming and pluriactivity, and output-related agricultural support policies could be amongst the factors explaining low mobility of farm-owned land.

The share of the cultivated area which is irrigated has increased, from 16 per cent in 1981 to 19 per cent. Although this share is still lower than the national average, it could be argued that the quality of farm land has improved over time. It appears that structural measures have succeeded in increasing the size of both irrigated and pasture land per farm at the expense of dry land. This is attributable to either the abandonment of low productivity land and/or the substitution of irrigated for dry land via investment projects financed partly by structural funds, or through public irrigation works (Nikolinakos, 1995).

The number of farm holdings in Crete increased between 1980-83 and 1985-87, but fell overall by almost 13 percent as compared to 5 per cent for Greece. The decline in farm holdings in Crete was more pronounced in the period 1987-90 (13 per cent).[13] The decline in the number of farms occurred primarily in the middle and high farm size classes, whilst the number of farms in the lower classes tended to increase. These results tend to suggest that there is no a clear pattern of land concentration over time (Annex Graph A.1).

Table 14. **Changes of farm holdings and average size, 1980-93**

	Crete						
	1980	1983	1985	1987	1990	1993	Average change (%)
Total agricultural area (1 000 ha)	270	492	530	420	403	347	10
No. holdings (1 000)	100	101	97	99	88	83	–3
Holdings in less favoured areas			56%	67%	68%	69%	19
Holdings in mountain areas			49%	54%	55%	55%	7
Average physical size (ha)	2.7	4.7	5.5	4.3	4.6	4.2	14
Average economic size (SGM)		3.2	3.8	3.4	3.6	5.2	15
Average physical size in LFA (ha)			8.2	5.5	5.9	5.3	–13
Average physical size in mountain areas (ha)			9.0	6.0	6.4	5.7	–13
Parcels per farm	8.8	9.0	9.1	9.2	7.9		–2
Average area of parcels	3.0	5.5	4.7	5.2	5.8		23
Irrigated cultivated land	16%				19%		17
	Greece						
	1980	1983	1985	1987	1990	1993	Average change (%)
Total agricultural area (1 000 ha)	3 550	3 908	4 116	3 842	3 661	3 539	0
No. holdings (1 000)	899	959	948	855	850	819	–2
Holdings in less favoured areas		48%	48%	60%	60%	60%	6
Holdings in mountain areas		35%	35%	36%	36%	36%	1
Average physical size (ha)	3.6	3.6	3.8	4.5	4.3	4.3	4
Average economic size (SGM)	3.8	3.5	4.2	4.1	4.4	6.2	12
Average physical size in LFA (ha)		4.7	5.2	4.6	5	4.8	1
Average physical size in mountain areas (ha)		4.7	5.4	4.4	4.7	4.5	0
Parcels per farm	5.9				5.9		1
Average area of parcels	6.2				7.2		16
Irrigated cultivated land	26%				28%		8

Source: EUROSTAT, FSS, 1989/90; Statistical Yearbook of Greece.

Overall, the pace of structural change seems to be rather slow. The empirical evidence does not provide a clear trend concerning improvements in farm-land structures. The increasing trend in total agricultural land observed during the first half of the 1980s was reversed after 1985. The decline was more pronounced in the low land areas, suggesting a transfer of agricultural land for urban development and other economic activities, particularly tourism (Kambas, 1993, p. 38).

Moreover, land fragmentation, despite some improvement, has not changed significantly. Parcels per farm holding decreased by 2 per cent over the 1980s, while the average area of parcels has increased by 23 per cent (Table 14). It appears that structural measures have had little effect in removing one of the overriding structural weaknesses of Cretan agriculture. Policy incentives provided mainly through Reg. 1096/88 in order to achieve land consolidation were insufficient to deal with the impediments stemming from the prevailing institutional framework such as inheritance law, the underdeveloped market for rural land as well as the resistance of farmers due to the dominance of permanent crop production.

5.3. Farm GDP and labour

Following long-term trends, the contribution of agriculture to total GDP and employment fell (Table 15). A comparison of the two figures indicates that the former has fallen less than the latter, implying rising productivity of labour due to technological change and/or increasing capital intensity. The decline of the agricultural labour force stemmed from a decline in male farm labour, while female farm labour has been increasing over time.

Table 15. **Changes in employment, GDP and age structure, 1980-93 (%)**

	1980	1983	1985	1987	1990	1993
Share of agricultural employment	52	51	51	51	50	37
Share of agricultural GDP	32	39	39	36	88	29
Agricultural income per farm[1]	574	624	656	558	565	n.a.
Farm labour > 55 years old	50	53	54	55	52	54

Note: 1 000s Dr, at 1977 prices.
Source: OECD Secretariat's estimates.

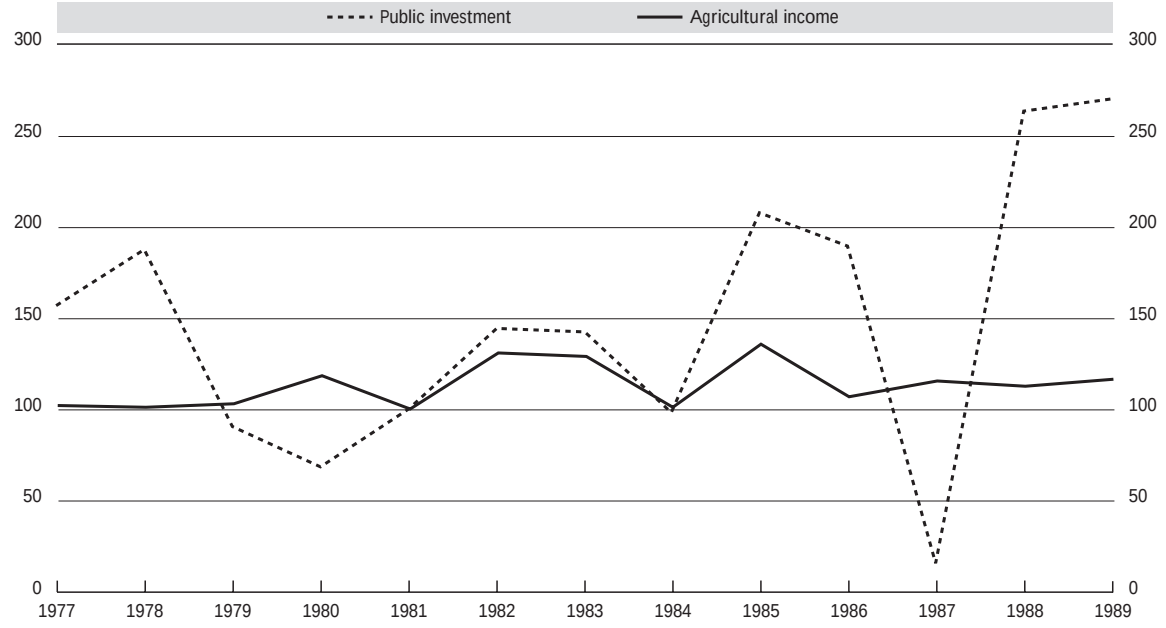
Farm household incomes in real terms have not improved significantly over time. Available evidence tends to suggest that real incomes per farm in 1990 were not discernibly different from those in 1980 (Graph 2). Structural measures were primarily directed toward young farmers. This is positive, given the ageing agrarian population in Crete. Yet the age structure of farmers has not improved. In fact, the percentage of farmers over 55 years increased from 49 per cent in 1981 to 52 per cent in 1991. The ageing problem in the farm population is more acute than for the country as a whole.

5.4. Changes in product specialisation

The relative importance of crop production has increased over time from 74 per cent in 1983 to 78 per cent in 1990 (Table 16). Overall, there is a tendency for the importance of permanent crops to increase, particularly of olive production. It appears that there has been an increasing specialisation in the whole island in the production of olive and horticulture, citrus fruits in Chania and vineyards in Iraklion (Donatos, Kanaris, Mergos and Hilas, p. 106).

The increase in olive cultivation took place despite the fact that various programmes for the improvement of agricultural structures as well as the regional multi-fund programmes in Crete aim at the gradual reduction of the cultivated area of olive trees. Therefore, natural conditions such as climate

◆ Graph 2. ***Agricultural income and investment per farm, 1977-89***
1981 = 100



Note: 1977 prices.
Source : Ministry of Agriculture, as reported in Kambas, 1993.

Table 16. **Crops and animal output, 1980-91 (%)**

	1980	1983	1985	1989	1991
			Crete		
Crops	78	74	77	78	78
Livestock	22	26	23	22	22
			Greece		
Crops	68	67	70	72	72
Livestock	32	33	30	28	28

Source: EUROSTAT, Regio database.

and soil only partly explain the increase in cultivation of olive trees. A more important factor perhaps is the possibility of part-time employment which characterises olive tree cultivation. If this is so, then it could be expected that such trends would continue in the future, particularly for the production of olive oil (Donatos, Kanaris, Mergos and Hilas).

The relative importance of vineyards declined over time both in terms of area and volume of production. The cultivation of citrus fruits increased, but remains concentrated in Chania. Cultivation of vegetables and fodder crops also increased in both area and volume of production. Off-season demand for garden products, particularly tomatoes and cucumbers, as well as the favourable climatic conditions and the support from the government were the main factors contributing to the expansion of greenhouses. Greenhouse cultivation could be considered as a complementary rather than a competitive activity in rural areas as the area used for greenhouses is not appropriate for olive cultivation and

viniculture. In addition, construction of greenhouses is done by local craftsmen at the place of production, with positive implications for employment and income creation in rural areas.

Supply factors such as the ability of producing at competitive prices and marketing, rather than demand factors, could be the binding constraints on future growth of the Cretan greenhouse sector. There is a great scope for modernisation, as the majority of greenhouses are simple constructions, built by the producers themselves and suffer from a number of drawbacks which affect their production capacity. The choice of the type of greenhouse and technology are the determining factors of costs of production, period of production, quality of the products and thus of competitiveness of the product (Donatos, Kanaris, Mergos and Hilas, p. 142). The government within the context of development law 1262/82, and considering greenhouses as an agricultural activity of modern technology, has supported such actions. Nevertheless, modernisation of greenhouse cultivation is contingent upon the education of producers and the provision of information.

Diversification towards new varieties is also a priority for orange production towards varieties which could be used for direct consumption as well as for juice is necessary. Although the quality of the products in Crete is very good, they are vulnerable to diseases. Thus, it is necessary to intensify the education of farmers in the use of appropriate cultivation methods in terms of irrigation, fertilisation and cultivation of soil.

5.5. Productivity improvement

Although a wide range of indicators on agricultural productivity and efficiency are customarily used in the literature, there is no unequivocal agreement as to which is superior (EC, 1991, Chapter 6). Table 17 reports a number of alternative indicators. It should be kept in mind, however, that these indicators are partial, that is, they only take into account one particular input or group of inputs and ignore the effects of all other inputs.

The various indicators utilised suggest that there has been some improvement over time, albeit not dramatic. The sector is becoming more intensive, employing less labour per hectare and some improvements in productivity have been achieved. Moreover, agricultural mechanisation, as measured by arable land per four wheel tractors, has substantially expanded over time. Significant improvements in land productivity were observed for vegetables and citrus fruits, particularly oranges. In contrast, a dramatic decline in land productivity of grapes of all types (sultana, wine grapes and table grapes) was recorded. This decline could be associated with the phylloxera disease which plagued Cretan vineyards in the 1980s (Nikolinakos, p. 50). For olives, productivity seems to have remained stable as cultivated land and olive-oil production have increased at about similar rates.

Nevertheless, mirroring national trends the sector has attracted less investment over time. Investments were primarily directed towards the tertiary sector in general and to the tourist sector in

Table 17. **Annual changes in productivity and efficiency indicators, 1980-93 (%)**

	Average SGM/AWU	Output/ AWU[1]	GVA (fc)/ AWU[1]	Average SGM/100 ha AA	Average AWU/100 ha AA	Output/AA ha	Average AWU/farm	Output/ Intermediate inputs[2]	Mechanisation index[3]
1980-83	–4	–5	–6	–10	–7	–11	–6	–1	–4
1983-85	7	9	12	0	–5	2	–1	–2	–3
1985-87	–1	–7	–5	5	6	–3	–2	–3	–5
1987-90	6	28	29	–0	–5	20	–3	3	–4
1990-93	14	–5	–5	15	1	–5	–2	–	–

Notes: AA = Agricultural area; SGM = Standard gross margin; AWU = Annual work unit; GVA = Gross value added.
1. ECU.
2. Constant 1977 prices.
3. Mechanisation index = Arable land over four wheel tractors.
Source: OECD Secretariat calculations based on EUROSTAT FSS and Ministry of Agriculture.

particular. In 1991, in Crete the primary sector (agriculture, forestry and fisheries) attracted only 3 per cent of investment as compared to 58 per cent being allocated to the tertiary sector (Graph 2; Annex Table A.1). The corresponding shares for Greece were 8 per cent and 24 per cent.[14] In the last decade, one-quarter of the national investment was directed to Crete and most of it, 60 per cent, has been invested in the tourist industry. Thus, in the same period the number of beds in hotels has been doubled representing the greatest increase among all the regions in Greece.

Substantial enhancement in productivity could be achieved primarily with the improvement of marketing and an increase in the value added of production. Policies sought to improve distribution and marketing through the establishment of co-operatives and direct marketing, cutting out costly middlemen and substantial funds were made available to provide storage and refrigeration facilities. Not all ventures proved successful and their losses have contributed to the high public deficit. A recent study on the olive oil and wine co-operatives in Crete found that consumers knew nothing about product quality, environmental influence and company prestige, although they rate its packaging highly *(*Nikolaidis, *et al.*, 1993*).*[15] Furthermore, output-related support policies such as the extra subsidy being paid to processors up to 1995 for standardising olive-oil proved to be very inefficient as processors were over-estimating the amounts of oil they had processed.[16]

Policy incentives have not yet succeeded in persuading growers and processors to add value to production. For olive oil, for example, which is increasingly seen as a healthier alternative to vegetable oils and international demand is rising very fast, the existing distribution channels are cumbersome, with many participants involved in the distribution chain: the grower, privately-owned or co-operative mills, privately-owned or co-operative packing and bottling units, brokers, distributors, wholesalers and retailers. Olive oil production and trading are very fragmented, with most exports being made in bulk rather than as extra virgin olive oil, which commands the highest prices. The new EU system, which defines zones of olive-oil production according to the region of origin, could lead to a premium for quality and could lessen the aforementioned structural impediments. Such ''quality strategy'' has the potential not only to secure producers' incomes by promoting higher value products and generate employment in rural areas, but it can also protect consumers from being misled over the origin of products.

5.6. Farmers' attitude and evaluation of structural measures[17]

The eventual success or otherwise of agro-structural policies hinges heavily on the extent to which these policies are adopted by farmers. The *Institute for the Study of the Greek Economy* carried out a study aimed at assessing the effectiveness of EC structural measures and analysing farmers attitudes towards these measures by means of a common questionnaire to farmers in Crete and Sardinia, Italy. The purpose of the study was to identify similarities and differences in the effects of the structural measures and in farmers attitudes towards measures as well as towards the overall CAP.

The study points out that the socio-economic profile of the Cretan farmer who participated in structural measures was somewhat different from that of non-participant farmers. The representative farm holder was relatively younger, but with a lower level of education, he was a member of a farmers' co-operative and his farm located in a mountainous area, mostly in Iraklion. He had a larger farm, due to a more extensive use of irrigated land, thereby utilised more labour per farm and had higher incomes originating from larger values of crop and animal output.

Farmers considered the increase in income as the most important positive effect of structural measures. Other benefits such as adaptation of new crops, were viewed as of secondary importance. The effects were mostly felt by larger and predominantly crop-oriented farms. Farms which were affected by these policies increased their holdings of irrigated and pasture land, while they decreased their dry land. The main beneficiaries were farmers specialising in livestock raising and olive oil production. In contrast, farmers specialising in vineyards found the whole complex of structural measures related to vineyards inadequate. Farmers' perceptions about the significance of structural policies were positively related to availability and quality of information on these policies, as well as to effective implementation. The negative attitude of farmers was attributable to the introduction of insecurity and

uncertainty related to the adoption of new varieties, particularly for crops, introduced by structural policies.

Farmers' clear preference was for income support programmes rather than structural measures. This may reflect a number of factors. First, it may stem from the fact that structural measures were limited in scope; second, the financial incentives provided may not have been sufficiently attractive to encourage participation; third, farmers could not meet the requirements for participation, and; finally it may reflect a short-sighted attitude towards consumption and investment decisions.

Measures to improve agricultural structures through investment projects (Reg. 797/85, Reg. 72/159) were the most popular among farmers. Farmers participating in these measures have increased specialisation towards crops, particularly sultana and wine grapes, and the size of their parcels and the amount of irrigated land increased over time. However, this specialisation in production did not result in a significant difference in the overall value of farm output from that of farmers which participated in other measures.

A smaller number of farmers expressed preference for cessation of farming and farm consolidation (Reg. 1096/80, Dir. 72/160) measures. They were more concentrated in mountainous areas and in the prefecture of Rethymno. The average age of the holder and his family were significantly higher than those of farmers participating in other structural measures. Their average income, both inclusive and exclusive of non-agricultural income, was lower in 1991 than that of other participant farmers.

The group of farmers who expressed preference for aid to mountainous regions (Dir. 75/268), about 10 per cent of the sample, were specialised in animal stock raising. Participation in this directive was found to be related to farmers' membership in co-operatives. Pasture land size and parcels per farm were higher than in other structural measures. It appears that this structural measure contributed to more extensive animal stock breeding and led to an improvement in the relative incomes of the participants.

Measures for permanent abandonment of vineyards (Reg. 777/85, Reg. 456/80 and Reg. 776/85) were the least popular in the group, while measures on restructuring wine-making (Reg. 895/85) were the most popular. Farmers participating in this measure were found in Iraklion, they were less educated, with a higher average household size. Their income, although not significantly different from participants in other measures in 1981, was lower in 1991. Farmers who considered Reg. 895/85 most effective were concentrated in Iraklion, they were younger, used more labour and fared badly in terms of incomes during the period under consideration. Similar observations apply to the Community Operational Programme for phylloxera. However, participation in this measure was extensive. Measures for restriction of citrus fruit production (Reg. 2511/69 and Reg. 3223/88) were most popular in Chania, the major citrus fruit region in the island, and they were concentrated mostly in plain areas. Participation was very low, less than 1 per cent.

The clear majority of farmers was dissatisfied with informational, administrative and technical aspects of implementation of agricultural policies. Cretan farmers had to wait up to six months before a decision was made with respect to their application for participation in structural measures. Moreover, the lag between approval of the application and first payment was on average 8 months. These lags differed systematically across prefectures and geographical zones. Iraklion and mountainous areas fared worse.[18] Educational level, younger age of the holder, membership in co-operatives, and high gross income from agricultural activities were found to be important factors facilitating the flow of information. Most of the farmers, about 61 per cent, considered the quality and comprehensivenesss of information they received inadequate. This result holds true irrespective of the socio-economic characteristics of households, prefecture or geographical zone. The most often quoted source of information was the co-operatives, while the direct channels of official information were considered of secondary importance. Roughly one half of the farmers in the sample believed that favouritism was prevalent and there was a widespread disbelief regarding the fairness of the procedures for participation in EU structural programmes. These beliefs were voiced to a greater extent by younger farmers.

The importance of public administration in determining the success of policies is confirmed by a similar case study on the region of Sardinia in Italy (ISPROM, 1994). The level of managerial efficiency of

institutions administering structural measures was considered by farmers to be quite low, with very long application and consultation times, particularly in remote geographical areas. Public administration was viewed to have a discouraging attitude and was prone to favouritism. The most widespread measures are those deemed ''easily accessible'' and smaller farms find bureaucratic difficulties most burdensome. The support of professional organisations and associations is considered extremely important.

The Crete study also found that the perceived effects of structural measures, were not strong enough as to cause a differentiated judgement on the overall effects of agricultural policies, price support and structural measures. In other words, despite the fact that structural measures mattered, their impact was not potent enough to make participant farmers have different opinions from non-participants about the overall effects of agricultural policies. The opinions on agricultural policies overall were mainly determined by perception of benefits and costs of price support schemes and not by the structural dimension.

The contradictions between price support policies and structural policies were also evident for the case of viniculture. The incentive of policy to uproot part of vineyards in order to curb production was so strong that producers of VQPRD wine also found it attractive and participated in the uprooting programme. This has not only led to environmental problems but also actively undermined structural policies aimed at encouraging VQPRD wine production.[19]

These conclusions were also confirmed by the Sardinian (ISPROM, 1994) and The Arkleton (1992) studies. In particular, both studies pointed out the conflict between price support and agro-structural policies. The Arkleton study, for example, found that the ''rather satisfactory'' intervention prices for citrus in Greece have blunted the effects of quality improvement schemes (The Arkleton, p. 97).

Another important issue examined by the study on Crete was whether structural measures have actually reached the right farmers. The study argues that the answer is a qualified yes. The focus of measures on young farmers, on the relatively large farms, utilising more productive land, and on the geographically disadvantaged areas of the island, the mountainous areas, are cited as the main positive effects. On the negative side, the study cites the failure of structural policies to reach farmers with superior education. The users of structural measures were found to be less educated than non-participants.

VI. CONCLUSIONS

The agricultural sector is one of the two most important economic sectors in the Cretan economy both in terms of GDP and employment creation. In addition, production, transport, processing and sale of agricultural products provide a stimulus for the development of many economic activities in the rural economy. Traditional patterns of agricultural production are enhanced and complemented by modern high-return agricultural production, supported by the favourable climatic conditions of the region. Moreover, there are important linkages between the agro-food sector and the other economic sectors.

Nevertheless, potential contribution of the island's agriculture to the rural economy is only partly exploited and there is a considerable scope for productivity improvement. Small size and fragmented holdings; complex system of land property rights and an aged, low-skilled, poorly-educated agrarian population resisting changes to traditional farming methods are the main structural impediments.

Structural policies attempting to improve productivity and increase competitiveness of the sector are promising in enhancing the efficiency of the agricultural sector. They need, however, to be carefully designed and implemented. Despite their ambitious aims, it could be argued that they have not succeeded in alleviating structural impediments of the agricultural sector and maintaining rural population during the 1980s. Late introduction of such measures, administrative inadequacies and institutional rigidities at the local level and their concurrent implementation with price-support policies are some of the main reasons explaining this failure.

Output-related agricultural policies have affected the context in which structural policies operate. To enhance the spatial synergies and reinforce the linkages between the agricultural sector with other sectors in the rural economy, policies should have clear objectives, be coherent and tailored to specific

structural impediments of rural areas. The scope for increasing the relative importance of the agricultural sector in the rural economy of Crete with appropriate structural investments, provisions for agricultural education and training is considerable. There are very good prospects for carving out niche markets for high-quality traditional Greek foods, aimed at health-conscious consumers. Agro-structural policies should place more emphasis on increasing the competitiveness of the dynamic parts of the agriculture and agro-food industries with more competitive advantages. There is also a need to encourage efficient forms of co-operation (companies, co-operatives, etc.) that will permit the cost-effective production of such goods, by reducing external costs for the small farmer. Closely related is the requirement for the development of manufacturing enterprises for the vertical integration of agricultural production involving the processing, standardisation and marketing of products to increase the value added to production.

NOTES

1. In addition, the EU has taken special measures to tackle specific problems of the Cretan agricultural sector such as the Community programme for phylloxera, which plagued Cretan vineyards in the 1980s.

2. Structural funds include the European Social Fund (ESF), the European Regional Fund (ERF), the Financial Instrument for Guidance in Fisheries and the European Agricultural Guidance and Guaranteed Fund (EAGGF). These funds supplement national expenditures, with the share of national funding being varied by country and programme. The overall contribution of these funds to rural development is expected to amount to almost Ecu 30 (US$39) billion for 1994-99, most of it from the EAGGF.

3. The official Greek definition defines rural areas as the territories of the communities with less than 2 000 inhabitants and semi-urban areas with 2 000-9 999 inhabitants.

4. The prefecture of Chania accounted for 23 per cent in 1991 (at 1970 prices), the prefecture of Lassithi 15 per cent and that of Rethymno around 12 per cent. The highest GDP per capita is in the prefecture of Lassithi, which is higher than the national average, and lowest in Rethymno and Chania.

5. Over 2 million tourists visited Crete in 1992. In Iraklion alone, arrivals of foreign tourists exceed 15 per cent of the total entry of tourists into Greece and more than 20 per cent of chartered aircraft destined for Greece land at Iraklion.

6. For the crop sector the generated effects were 9.2 per cent for total output, 4.1 per cent for income and 22.1 per cent for employment. For the food processing sector these impacts were about 10 per cent.

7. Crete accounts for more than a fifth of cultivated area in olive trees in the countries.

8. In late 1908s, there were 43 for wine processing out of 328 in the country. Of these about 40 per cent are co-operatives and the rest private, while the corresponding shares of co-operatives for the rest of the country is much less. There are also 14 firms of processing raisins out of the total 37 in the country which are concentrated in Iraklion, which is the main harbour of exporting raisins (Donatos, Kanaris, Mergos and Hilas, p. 128).

9. The focus of the first EU agro structural policies was on ''full-time farmers who could reach a level of agricultural income comparable with those in other sectors of employment, the encouragement of land mobility to provide additional land to this group through retirement of farmers who could not reach the income objective, and the provision of associated advisory services and training''. Although mandatory, they were introduced through national legislation only slowly and alongside pre-existing legislation.

10. Many of the measures concerning agriculture are implemented under Objective 5*a*, others, particularly those concerning land reform, are carried out at national level under Objective 1, while some EAGGF Guidance measures are included in the regional section.

11. Noteworthy, the implementation of the CSF objectives is also monitored through a set of performance indicators specifying targets to be achieved over a five year period such as agriculture's share in employment and GDP, percentage of farmers more than 55 years old, share of crop production in livestock production and number of plots per farm (EC, 1995*a*, p. 42).

12. A possible explanation could be that those remaining in the mountainous areas increased the size of their holdings by acquiring rented lands belonging to those who left the area and who previously abandoned their land (Kambas, 1996, p. 28).

13. Differences among prefectures are also significant. Although farm holdings declined in Rethymno, Lassithi and Chania, in Iraklion increased over the 1981-91 period. The rise in the number of farm holdings in Iraklion could be due to increased pluriactivity in the rural economy of the prefecture stemming from the availability of employment opportunities in the secondary and tertiary sectors.

14. The composition of investments of the Reg. 1262/82 portrays similar picture. Up to 74 per cent of investments in Crete were undertaken in the tertiary sector, whilst the primary sector attracted less than 3 per cent (Carabatsou-Pachaki, 1996, p. 186).

15. However, marketing methods used for wine are more advanced and sophisticated than those for oil olive.

16. Since 1995 the subsidy is paid to the growers after it was revealed that processors were defrauding of around Drs 7 billion annually by overestimating the amounts of oil they had processed (FT, 16/5/96).

17. This section is based on The Institute for the Study of the Greek Economy (1995).

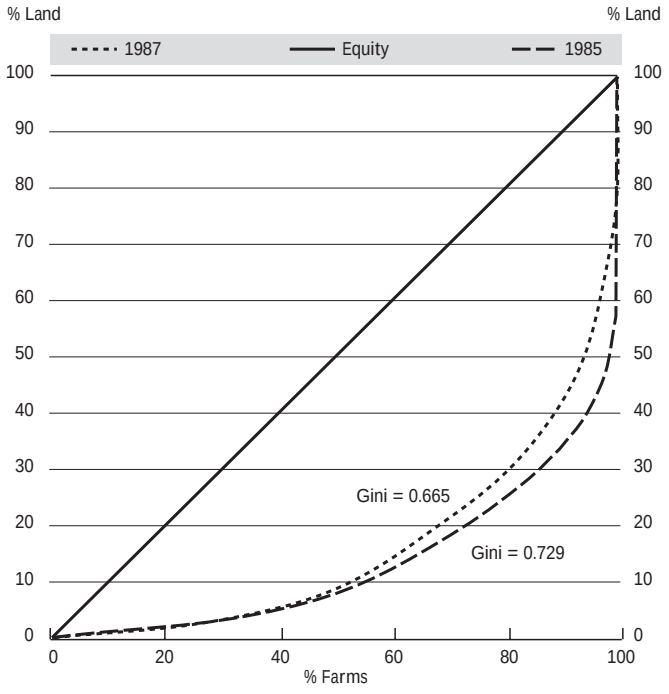
18. In Iraklion in 1985, there were no payments from Reg. 75/268 due to bureaucratic delays and the grants were transferred to the next year (Kambas, 1993, p. 5).

19. Similar results are also reported for the island of Lemnos (OECD, 1997, pp. 95-112).

Annex

GRAPH AND TABLES

◆ Annex Graph A1. ***Concentration of farms by physical size in Crete***



Source: OECD Secretariat calculations based on Eurostat Farm Structure Surveys.

Annex Table 1. **Main socio-economic indicators**

		Crete	Greece	EU-12
Demography	POP (1 000) (1992)	545	10 323	346 455
and population	POP/km^2 (1992)	65	78	147
	Pop change (1982-92)	0.8%	0.5%	0.3%
	Age < 25 (1992)	36%	34%	33%
	Age > = 65 (1992)	16%	14%	15%
	Net migration (1992)	4.0%	4.7%	35.0%
	Dependency ratio (1993)	1.3%	1.5%	1.2%
	Rural population (1991)	46%	28%	
Living standards	Infant mortality (1992)	7%	8%	7%
	Higher education (1992)	11%	11%	14%
	Hospitals beds/1 000 habitant (1991)	4.9	5	
Infrastructure	Vehicles per 1 000 habitant	134	142	
Labour markets	Employment (1 000) (1993)	214	3 715	138 135
	Employment growth (1981-91)	1%	0.3%	1.3%
	Activity rate (1993)	55	48.7	55.1
	Full-time (1993)	94%	96%	85%
	Unemployment rate (1994)	3.8%	8.9%	11.4%
Economic aggregates	GVA factor prices (Mrd ECU) (1992)	2.5	50.7	
	GVA/POP (ECU) (EU-12 = 100)	40	45	100
	GVA/POP (PPS) (EU-12 = 100)	55	61	100
Sectoral shares	Share of agr. empl. (1993)	37%	21%	6%
	Share of indus. empl. (1993)	15%	24%	32%
	Share of serv. empl. (1993)	49%	55%	63%
	Share of agr. GDP (1992)	29%	17%	22%
	Share of indus. GDP (1992)	16%	27%	
	Share of serv. GDP (1992)	55%	56%	
	Share of agr. GCF (1991)	3%	4%	3%
	Share of indus. GCF (1991)	39%	63%	
	Share of serv. GCF (1991)	58%	24%	
Research	Share in GDP (1992)	8%	4%	
Labour productivity	Agriculture	48	100	
	Industry	81	100	
	Services	68	100	

Source: EUROSTAT, FSS, 1989/90; Regions Statistical Yearbook, 1995; Kepe; Statistical Yearbook of Greece, 1991.

Annex Table 2. **Distribution of area by geographic region, 1991**

Geographic region and department	Municip. and communes	Ground formation	Total area (1 000 stremmas)	Agricultural land	Pastures	Forests	Other	Irrigated cultivated area
Crete	567	Total	8 336	38%	52%	5%	6%	19%
	201	Level	1 893	59%	30%	1%	10%	
	165	S-M	2 354	40%	52%	3%	5%	
	201	M	4 090	26%	62%	8%	4%	
Iraklio	190	Total	2 641	55%	36%	2%	7%	20%
	93	Level	984	70%	20%	0%	10%	
	46	S-M	734	55%	37%	2%	6%	
	51	M	924	39%	51%	4%	5%	
Lassithi	88	Total	1 823	31%	56%	8%	4%	36%
	10	Level	214	35%	56%	2%	7%	
	45	S-M	835	31%	61%	3%	4%	
	33	M	774	30%	51%	15%	3%	
Rethymno	130	Total	1 496	33%	62%	1%	4%	9%
	33	Level	237	54%	38%	1%	6%	
	33	S-M	290	38%	56%	2%	5%	
	64	M	969	26%	70%	1%	3%	
Chania	159	Total	2 376	26%	61%	7%	6%	16%
	65	Level	458	50%	36%	2%	12%	
	41	S-M	495	34%	56%	3%	6%	
	53	M	1 423	16%	70%	10%	4%	
Greece	5 921	Total	131 957	30%	40%	22%	8%	28%

Note: S-M = Semi-mountain; M = Mountain.
Source: Statistical Yearbook of Greece, 1991.

Annex Table 3. **Farm employment, 1991**

	Iraklion	Lassithi	Rethymno	Chania	Crete	Greece
Family	70 306	28 733	25 528	33 368	157 935	1 570 533
of which employed in the owner's holdings						
Exclusively	78%	73%	76%	74%	76%	79%
Mainly	4%	4%	4%	5%	4%	4%
Secondarily	18%	23%	20%	21%	20%	17%
Permanent	159	69	94	83	405	6 189
Seasonal	74 656	12 903	12 207	21 600	121 366	1 202 288

Source: Statistical Yearbook of Greece, 1991.

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CASE STUDY – JAPAN: HILLY AND MOUNTAINOUS AREAS*

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EXECUTIVE SUMMARY

The study focuses on the rural economy in hilly and mountainous areas and attempts to draw some policy options to revitalise these areas. Such areas are characterised by adverse social and economic trends such as depopulation, out-migration, ageing of the population, low productivity and predominance of farm households. While agriculture remains one of the key sectors, agricultural conditions tend to be more difficult than those in flat farming regions. Moreover, the structure of the agricultural sector is characterised by diversity, with a limited number of large-size farms and many small and non-commercial farms. The opportunities to improve agricultural productivity and farm incomes from increasing the size of farm holdings are limited. Furthermore, farm households are heavily dependent on off-farm sources to supplement their incomes.

Policies aimed at the revitalisation of hilly and mountainous areas are increasingly important in Japan. In addition to the aforementioned socio-economic problems of these areas, the long-term trend of migration of the population to densely-populated urban districts is regarded as one of the main problems of Japanese society. People's concern for the maintenance of rural areas as a source of rural amenities, food and cultural heritage has led to the recognition of the need for alternative policies to stimulate the economy in hilly and mountainous areas. Like in other OECD countries, agriculture has been regarded as one of the most important industries in these areas.

Market price support policies tend to favour the most prosperous rural areas and they have not been particularly successful in ensuring a satisfactory livelihood for many farm households in hilly and mountainous areas. Reductions in agricultural support, however, are likely to adversely affect some hilly and mountainous farmers who are highly reliant on farm income. While there may be some scope to further develop labour-intensive farming in these areas through well-targeted agricultural policies, there could be a need for coherent cross-sectoral forms of support if the trend in out-migration from these areas is to be restrained.

It is important to take several factors into consideration in deciding on the desirable direction of agricultural policies to better achieve rural goals in hilly and mountainous areas. First, productivity enhancement through enlargement of farm size should be pursued as much as possible. Second, the clear identification of policy objectives and instruments aimed at addressing these goals is critical. These instruments may include measures to encourage farmers to undertake new activities such as extension, advisory services and market promotion. Finally, the socio-economic development of hilly and mountainous communities might be addressed more efficiently by measures designed in a broader policy context, like cross-sectoral programmes which are targeted to the specific needs of these communities. The proposed alternative policy mix would be most cost-effective if designed within a framework of reduced overall support to the agricultural sector.

I. INTRODUCTION

Rural development has been of growing importance in the overall policy framework for Japan, although the population density in remote areas is much higher than the OECD average.[1] Statistics indicate that rural areas, defined in Japan as those outside the Densely Inhabited District (DID)[2] classification, account for as much as 97 per cent of Japan's national land but only 45.5 million people, 37 per cent of the total population in 1990 (Box 1). In 1960 rural areas contained the population of 52.6 million, 56 per cent of the total (Annex Graph 1). This shift from rural to urban areas has been an OECD wide phenomenon as a consequence of uneven economic growth and preferences; it has been the main factor in the Japanese policy context in trying to achieve a balanced development throughout

the country. Another explanation of the emphasis on rural development is that rural areas have traditionally been accorded an important status in Japanese society as places to live, source of cultural heritage and traditions as well as being the main source of domestic food production (OECD, 1995). These rural zones are considered to be located chiefly in hilly and mountainous areas (HMAs), given that they cover most of the Japanese territory.

Rural development policy in HMAs has been mainly based on agriculture and forestry, since these sectors have been regarded as the major industries in terms of both income and employment. Also, from the Japanese viewpoint, agriculture in these areas is seen as having other important functions in terms of the protection of national land, conservation of environment and provision of rural amenities. However, the agricultural sector is now faced with various challenges which are illustrated by a decrease in the size of the farming population, ageing among farmers, lower labour productivity, and lack of farm successors and new entrants. An issue which has been given great prominence in agricultural policy debates in recent years is the need for alternative measures to activate the farm household economy and to revitalise local communities in HMAs.

The paper first provides an overview of HMAs in terms of their socio-economic structure as well as the structural characteristics of the agricultural sectors. Then it discusses overall agricultural policy and recent developments, particularly in relation to HMAs. An attempt is made to make a preliminary assessment of the implications of agricultural policies for these areas, including market price support policies and structural measures. To provide a concrete background to the analysis the paper compares two villages located in different geographical zones. Finally, the paper endeavours to draw some conclusions about the possibilities and options of designing a more appropriate policy framework to achieve the stated policy objectives in more cost-effective ways.

Box 1. **Definitions of rural areas in Japan**

Japanese statistics define four types of areas, taking account of farming conditions. The definition of these areas given below is used throughout this study.

- ***Urban area:*** municipalities where the proportion of DIDs in the inhabitable area (total land except lakes or forests) is 5 per cent or more, and the population density is 500 persons per km^2 or more (or population in DIDs is 20 000 persons or more); or municipalities where the proportion of cultivated land in the inhabitable area is less than 40 per cent, and the population density is 500 persons per km^2 or more except those where the proportion of forest land and grazing land in total land is 80 per cent or more.
- ***Flat (rural) area:*** municipalities where the proportion of cultivated land in total land is 20 per cent or more, and the proportion of forest land and grazing land in total land is less than 50 per cent, except those where the paddy field is of a gradient (inclination tangent) of 1/20 or more and other farming areas are of a gradient 8 degrees or more, exceed 90 per cent of the total land; or municipalities where the proportion of cultivable land in total land is 20 per cent or more, where the proportion of forest land and grazing land in total land is 50 per cent or more, and where the paddy field is of a gradient of 1/20 or more and other farming field is of a gradient 8 degrees or more, is less than 10 per cent of the total land.
- ***Hilly area:*** municipalities where the proportion of cultivated land in total land is less than 20 per cent except those which are classified as "urban area" and "mountainous area"; or municipalities where the proportion of cultivated land in total land is 20 per cent or more except those which are classified as urban areas and flat areas based on the above definition.
- ***Mountainous area:*** municipalities where the proportion of forest land and grazing land is 80 per cent or more, and the proportion of cultivated land in total land is less than 10 per cent.

II. HILLY AND MOUNTAINOUS AREAS

2.1. An overview

Of the total land area of 38 million hectares, approximately 70 per cent of Japan is hilly and mountainous with only 13 per cent, or 5 million hectares, suitable for agriculture. However, the 1990 statistics on demography indicates that the population in HMAs accounts for only 15 per cent of the total. Rapid depopulation and ageing are among the key issues to be addressed in the context of revitalising these areas. In 1994, the proportion of municipalities where the population is decreasing is 75 per cent in HMAs, and only 36 per cent in other areas. Also, the share of inhabitants of age 65 or more reached 18 per cent in HMAs in 1995, as compared to 11 per cent in other areas.

Population

A closer look at the type of inhabitants in the various regions indicates that the farm population is still significant in HMAs. In 1990, the number of inhabitants in farm households[3] accounted for almost 40 per cent of the total population in HMAs, while their share is 14 per cent on average. The farm population dominates also in flat rural areas. Conversely, the proportion in urban districts is as little as 6 per cent.

Households in rural communes

There are as many as 140 000 rural communes[4] in about 3 000 cities and villages. On average, farm households account for 16 per cent for all households in rural communes in 1990. However, this proportion varies across regions. In hilly and mountainous communes farm households account for 36 per cent of all households, while in urban districts their share is just negligible. The proportion of farm households is declining. In 1980, farm households were 22 per cent of all households in rural commune on average, and 44 per cent in HMAs.

There are many rural communes where farm households predominate. For example, in around 30 000 communes – 21 per cent of all communes – the share of farm households exceeds 80 per cent. Such communes are, in general, characterised by a relatively small number of households (*e.g.* less than 50 households in total), while on average there are 172 households per commune. Assuming that most of these small communes are located in HMAs, it would be noted that farm households are prevalent, being relatively important in these areas.

Depopulation and ageing

Farm population is decreasing rapidly in HMAs as well as in other regions. During the period 1990-95, the number of farm households has declined by 10 per cent in HMAs, which is higher than the 9 per cent fall in flat rural areas but smaller than 13 per cent in urban areas. Also, ageing among farm household population is increasing in Japan, notably in HMAs. The share of farm household inhabitants in HMAs of age 65 or more is around 26 per cent in 1995, which far surpasses that of all households in Japan (Box 2).

Box 2. **Increasing ageing among farm population in HMAs**

Proportion of the people of age 65 or more (%):

	1985	1990	1995
All households	10.3	12.0	14.5
Farm households	17.3	20.0	24.7
Farm households in HMAs	18.2	21.2	26.3

The above data suggest that because of the relatively high importance of the farm population and farm households in HMAs, one of the key issues for rural development in these areas may be how to provide gainful activities for farm households there. However, the effectiveness of agricultural policies to achieve this policy goal may significantly depend on how important the role is which the agricultural industry plays in the economy in HMAs.

2.2. Agriculture in hilly and mountainous areas

Agriculture in HMAs accounts for about 40 per cent of agricultural activity in Japan in terms of the area of arable land, the value of production, the number of farm households and the number of farm workers (Box 3). While macroeconomic data to show the relative importance of agriculture in HMAs is unavailable, the contribution of agriculture to the rural economy in general has been declining. In 17 prefectures covering almost 60 per cent of the nation's whole territory (which are defined as "predominantly rural"[5] areas by the OECD's Rural Indicators as part of its Rural Development Programme) agricultural employment as a share of total employment fell from 33 per cent in 1970 to 14 per cent in 1990. Although it is likely that a similar trend applies to HMAs, in some cases the industry may play an important role in the economy.

Box 3. **40% of Japanese agriculture is in HMAs**

Share of HMAs to the nation's total in terms of:			
Area of arable land	(1994)	→	42%
Value of production	(1994)	→	37%
No of farms	(1995)	→	42%
Farm labour	(1995)	→	42%

Importance of rice and livestock sectors

As in other areas, rice is the chief sector in HMAs with a share of around 30 per cent of the total value of production in 1994 (Annex Graph 2). A notable feature of agriculture in HMAs is the greater importance of the livestock sector; dairy, poultry, beef and pigmeat account for 8.2, 8.1, 6.0 and 4.8 per cent of the total value of production, respectively. The fruit and vegetable sector accounts for 27 per cent of the total value of production in HMAs. While these three sectors account for a large share of agricultural production in HMAs, a somewhat different observation can be obtained from the analysis of the number of farm households by different types of production. In 1995, farms that depend principally on livestock products accounted for 6 per cent of total farms in HMAs, and those dependent on fruits and vegetable accounted for 18 per cent. However, farms who sell mainly rice account for 64 per cent. This evidence indicates that in HMAs the average farm income of a few livestock, fruit and vegetable farms is considerably higher than many small rice farms.

Low productivity and low dependence on farm income

The level of agricultural labour productivity (net income per work hour) differs considerably between the regions, due to differences in farm size, in particular in the rice sector (Annex Graph 3). In 1995, the average area of rice planted was 0.7 hectare for the country as a whole and 1.0 hectare for flat rural areas. However, reflecting various geographical disadvantages, the average size of rice farming in hilly areas is reported to be 0.6 hectare and in mountainous areas just 0.5 hectare. Similarly farms specialising in livestock products, fruits and vegetable in HMAs tend to be small. The agricultural structure in HMAs – small farms and aged farm workers – may have significantly lowered the overall agricultural labour productivity in the areas.

The level of farm household income differs across regions, and also, the dependence of farm households on agricultural activities (Annex Graph 4). The off-farm income in HMAs is smaller than in other regions, mainly reflecting limited income opportunities from non-farm sectors. However, since the agricultural productivity in HMAs is low, the farm income is also smaller than in other regions so that even in HMAs the reliance on farm income is limited. This situation may be partly attributable to the prevalence of small rice farms in HMAs. As a consequence, the total farm household income in the areas becomes considerably lower than the other regions.

Diversity of farm type

From the distribution of farm households by value of agricultural sales, in HMAs as many as 56 per cent of all farm households have annual farm sales of less than ¥ 0.5 million (Annex Graph 5). [For reference, the gross annual revenue of each Japanese farm household was ¥ 9.6 million on average

in 1995.] These farms may be regarded as ''non-commercial'' farms, operating agricultural activities mainly to economise on their food expenditures. The region's lower dependence on farm income may be largely ascribable to these numerous ''non-commercial'' farm households.

Some large farms also exist in HMAs, though their number is quite small. In 1995, the largest 5 per cent of farms in HMAs held 40 per cent of the total farmland. The largest quartile of 1 hectare or more occupy more than 70 per cent of the total farmland (Annex Graph 6). It is clear that such larger farms account for a great proportion of agricultural production.

Concerning the livestock industry, the average farm size in HMAs is in general smaller than the other regions, yet to a lesser extent than is the case of the rice sector. For example, in 1995 the average number of dairy cattle, beef cattle, fattening pigs and broilers held by each farm in HMAs is on average 37, 12 and 413, respectively; while the national averages are 42, 15 and 434, respectively. This may be reflected in the relatively high dependence of livestock farm households in these areas on farm income. A similar situation may also be observed for some fruit and vegetable farms in HMAs.

From the above description, it may be concluded that there are broadly three types of farm households in HMAs:

– a few, larger sized farms managing efficient operation like those in flat rural areas, who play a critical role in the agricultural sector;
– some farms in the livestock sector and some other sectors, who are rather small sized due to various geographical disadvantages, yet with a high dependence on farm income;
– and a majority of tiny farms with least dependence on farm income.

III. MAIN AGRICULTURAL POLICY SETTINGS AND RECENT DEVELOPMENTS

3.1. Support level

Decreasing overall support but still at high levels

Agriculture in Japan is supported through a mix of administered prices, trade measures sometimes combined with supply management regimes, and other structural programmes. The level of assistance, as measured by the percentage PSE, which at 77 per cent was almost double the OECD average in 1995, has remained among the highest for OECD countries over years (OECD, 1996). The rice, and livestock sectors, in particular dairy, still receive very high levels of assistance. The total PSE on average in 1992-94 decreased by 12 per cent compared with 1986-88, largely due to a 9 per cent fall in supported producer prices (Annex Graph 7).

Declining support prices

Administered prices have been applied for almost all major commodities. For rice, the Government purchases some 1.5 million tonnes at administered prices from producers as national reserves, about 14 per cent of consumption. For wheat and barley, the Government purchase price is applicable to all domestic production. There are minimum producer prices for sugar beet and cane. For pigmeat, a quasi-governmental body gives producer's organisations assistance to buy and store domestic pigmeat when domestic prices breach the floor price of the stabilisation band. Market prices are maintained by administered prices, together with various types of trade measures as explained below. Also, deficiency payments are given for soybeans, calves and milk for processing.

Recently the level of market price support (MPS) has been on a declining trend, mainly reflecting a fall in administered prices. Using the PSE/CSE database, the nominal average producer price for 10 MPS commodities (wheat, barley, rice, beet, cane, milk, beef, pigmeat, poultrymeat and eggs) decreased by almost 20 per cent over the period 1979-81 to 1995 (Annex Graph 8). By commodity, the nominal producer price of rice, milk, beef and pigmeat fell by 7, 18, 23 and 31 per cent over the same period, respectively. For reference, the price of commodities as expressed by the GDP deflator in Japan increased by nearly 30 per cent during the same period.

The reduction in the support price has a number of policy implications for the agricultural sector, especially in the context of HMAs. For example, the statistics shows that in the rice sector the production cost of small farms (1.5 hectare or less) exceeds the price which they receive.[6] In other words, the average producer price of rice is now supported at a level considered profitable only for relatively large farming operations. This fact suggests that rice production in HMAs is, in many cases, far from being profitable (Annex Graph 9). This is because the average size of rice farms in HMAs is only 0.6 hectare, and because the paddy fields are often located on slopes where the production tends to be fairly costly. A similar argument applies also to the livestock sector, to the extent that the management size in HMAs is smaller in general than other regions.

3.2. Border measures and beef liberalisation

Various trade measures apply for many major commodities, including rice which was subject to an import quota at 4 per cent of domestic consumption in 1995, rising to 8 per cent in 2000. A high domestic mark-up is imposed on rice imports. For some other products tariffication (*i.e.* conversion of non-tariff measures to tariffs) has been applied as a result of the Uruguay Round agreement, while for certain products (*e.g.* wheat, barley, butter and skimmed milk powder) imports are under a state trading system where high mark-ups are imposed. For pigmeat a differential duty is in effect. For many other products tariff only protection applies, including beef, for which imports were liberalised in 1991. By contrast, feed grains are subject to almost no border protection.

Following the three-year period (1988-90) when the import quota was gradually expanded, tariffication was implemented on beef imports in April 1991. Since then, the volume of imports has been rising sharply, almost doubling over the period 1991-96 (Annex Graph 10). As a consequence, the proportion of beef imports in total consumption reached 61 per cent in 1995, a large increase from 49 per cent in 1990. While this market-oriented reform has generated considerable benefits to consumers, the implications for producers may have also been significant. One example is that the nominal producer price of beef fell by more than 20 per cent during the period 1991-96.

The increase in beef imports has had the greatest impact on the hilly and mountainous agriculture, reflecting the importance of beef and dairy sectors in the regions (in 1994 the share of these two sectors in the total value of production was 14 per cent in HMAs, compared to 9 per cent in other regions). This is illustrated by a significant fall in value of production of the beef and dairy cattle sectors,[7] by 20 per cent in HMAs over the period 1990-94, in contrast to a 10 per cent decline in flat rural areas (Box 4).

Box 4. **Beef and dairy value have sharply fallen in HMAs**

Value of production in beef and dairy cattle sectors (¥ billion):

	1990	1994	Change
All Japan	1 506	1 274	♦ 15%
Flat rural	498	446	♦ 10%
HMAs	737	589	♦ 20%

3.3. Structural measures

While a number of OECD countries have been moving towards greater use of direct income payments, Japan has not made a substantial move in this direction, choosing instead to focus on measures related to industry structure and rural improvements. This policy direction was reinforced by a major package of budgetary measures with a total cost of ¥ 6 trillion initiated in 1995 related to the implementation of the Uruguay Round agreement, to be implemented over the six years to 2000. Measures under the package include: investment in farm infrastructure and rural communities, such as land consolidation, irrigation,

Box 5. **Budgetary package as major thrust for structural policy**

Outline of the package (1995-2000):

Total cost	→	¥ 6.0 trillion
of which:		
Type A	→	¥ 4.4 trillion
Type B	→	¥ 0.8 trillion
Type C	→	¥ 0.8 trillion

roads and sewage (referred to as "Type A" in Box 5); measures to facilitate structural improvements through, for example, assistance to increase farmland mobility and encourage the entry of young farmers ("Type B"); funds provided in respect of mitigating burdens upon farms' debt and funds for farmers in geographically disadvantaged areas ("Type C").

Land consolidation and improvement

Included among major policy instruments to achieve efficient farm enterprises, which is regarded as one of Japan's principal policy targets, is the implementation of land consolidation and improvement, funded by public infrastructure investment. To date 51 per cent of paddy fields have been consolidated in plots of around 0.3 hectare or more, which is regarded as standard by the Japanese criteria[8] (Annex Graph 11). However, on flat lands 64 per cent of paddy fields are already reconstituted into standard plots while on steep slopes only 33 per cent are consolidated. This fact suggests that productivity enhancement by means of land consolidation and improvement is slower in HMAs.

Farmland mobility

Policies aimed at accelerating farmland mobility by amalgamating land into efficient farm enterprises are increasingly important in Japan. Such policies are largely implemented through public funds with a low interest rate and preferential taxes, offered under certain conditions to farmers wishing to enlarge farm size. There is an increasing number of farms where the main person is 65 or more but has no farming successors. In 1995, the share of those farms in the number of households reached 21 per cent, while the land area managed by those farms covers only 12 per cent of the total (Box 6). These proportions are even higher in mountainous areas. While this fact indicates that there will be a greater potential of farmland mobility in the near future, it will not always be feasible to reallocate "mobilised" land to remaining farmers given the prevailing geographical impediments.

Box 6. **Only fewer farm successors in HMAs (1995)**

Share of farms with a main person aged at 60 or more who has no farming successors:

(% share in)	Number	Land area
All Japan	20.6	11.6
Flat rural	17.2	9.6
Hilly	21.6	12.2
Mtns.	24.6	14.8

Improvement in living conditions

Policies to assist rural communities are attracting greater attention. The living infrastructure in rural areas is considerably inferior to that in urban areas; for example, in 1994 only 15 per cent of households in rural communities (including non-farm families) were equipped with sewerage while in urban cities this ratio was 62 per cent (Annex Graph 12). A similar situation also applies in the case of construction of roads and public facilities (*e.g.* public gardens). This evidence may reinforce the argument that more emphasis be placed on a need for broader-based farm and rural policies, *i.e.* public investment in rural living conditions to revitalise the society particularly in HMAs.

Development of other industries

Also as part of farm policies aimed at rural development, Japan has long been providing measures to develop non-farm industries, mainly assembly plants, in rural areas. This policy is usually implemented in the form of public assistance and preferential financial and taxation arrangement provided for private industry to locate in rural areas. However, the success of these measures has been rather limited, in particular in mountainous areas (Annex Graph 13). This is mainly because during the last decade the appreciation of the yen has weakened the economic attractiveness endowed to mountainous areas, *i.e.* their cheaper labour and land costs which were previously comparable even to overseas competitors. As a consequence, the migration of urban industries to overseas, but not to HMAs, has

been accelerated. This highlights the importance of macroeconomic policies in influencing the success of the rural development policies.

IV. CASE STUDY: FLAT RURAL VILLAGES VS. HILLY VILLAGES

4.1. Profiles

This chapter attempts to illustrate the general tendencies described in the previous chapters by comparing two villages selected from different regions. One is *Ajikata Village* which is located in the flat rural area, and the other is *Sekikawa Village* in the hilly area. Both villages are within the *Niigata Prefecture*, which is at some distance from the *Tokyo Metropolitan District* and where rice production is predominant. The area of *Ajikata* is 1 444 hectares, of which arable land accounts for 72 per cent. *Sekikawa* is much larger at 29 961 hectares, while it is mostly covered by dense forest so that the arable land area occupies just 5.1 per cent of the territory. In 1995, the total population of *Ajikata* was 5 031 while that of *Sekikawa* was 7 781. The 1995 population density for the two villages was 348, and 26 persons per km^2, respectively, compared to the national and prefectural average of 332 and 227 persons per km^2.

Agriculture still plays an important role in *Ajikata*, which is located in an almost completely flat area. The total population there has been maintained at the same level during the last 10 years. In 1995, the number of farm households was 32 per cent of all 1 129 households (Box 7). Of the total labour, 24 per cent is engaged mainly in farming; this proportion exceeds 40 per cent if part-time farmers are also included. Although these indicators show a declining trend in recent years, the contribution of the agricultural sector to the economy as a whole has increased recently. This is illustrated by the data on net agricultural income, the proportion of which slightly rose to 17.3 per cent of the village's total net income (¥ 8 billion) in 1993, despite the fact that in 1993 there was an extremely poor rice harvest.

Box 7. **Ajikata: share of agricultural income is small but rising**

(1985 = 100)	1990	1995
Population index	101.9	101.0
Share (%) of agriculture in:		
No. of households	36.6	32.2
Labour (mainly farm)	25.9	24.4
Net income (1988-93)	16.9	17.3

Labour productivity in *Sekikawa's* agriculture is rather low, resulting in its limited economic performance. The village is characterised by steep geographical conditions with 93 per cent of the land subject to slopes of at least 8° gradient, and 52 per cent of the territory over 30° gradient. The population has been rapidly declining over the last 10 years. Of the total 2 021 households, farm households accounted for 47 per cent in 1995 (Box 8). This represents quite a high proportion, despite a small decline from the level of 1990. However, the share of agriculture in the total village net income is declining and was only 10 per cent in 1993. This discrepancy may be attributable to many inefficient farm workers; the share of farmers mainly engaged in agriculture fell below 20 per cent in 1995, but reached nearly 70 per cent if part-time farmers were also included.

Box 8. **Sekikawa: many farms but limited farm production**

(1985 = 100)	1990	1995
Population index	96.0	92.3
Share (%) of agriculture in:		
No. of households	50.6	46.6
Labour (mainly farm)	20.0	18.0
Net income (1988-93)	12.6	10.0

Yet the agricultural sector still plays an important role in *Sekikawa's* economy. Apart from the sectors related to public services and goods (*e.g.* road construction, river conservation works), tourism, manufacturing and agriculture are the village's three largest industries. Among them, the tourist sector grew at an annual rate of 2.1 per cent during the period 1988-93, while the manufacturing sector has recently shown a decline both in the number of enterprises and the employment (Annex Graph 14). The driving force of the sector was an electronics company which the village introduced a decade ago with public assistance valued at ¥ 74 million, including budgetary outlays at the national level. Though it still

generates considerable business for the village, the sector as a whole is stagnant possibly due to the highly appreciated yen and the accelerated migration of enterprises to overseas.

The main thrust for *Ajikata's* agricultural development is the mixed farming of rice cultivation and horticulture (Annex Graph 15). This has been made feasible by improved productivity as a result of mechanisation based on flat paddy fields. Over the 1980-95 period the average size of farm expanded from 2.37 to 2.66 hectares, which is much larger than the 1995 national or prefectural average of 1.20, 1.28 hectares, respectively. The statistics indicate that the production growth mainly occurred in the horticulture sector (vegetable and flowers), the output of which almost doubled between 1985 and the 1992-94 average. This increase, together with a growth in the rice sector, fully compensated for the reduction in the livestock sector (dairy and pigs). Overall, the agricultural industry has been contributing to the development of the village economy through productivity enhancement.

The reduction in agricultural production in *Sekikawa* is largely attributable to the contraction of the livestock industry, in particular the pig and beef sectors where the value of production fell by 37 per cent between 1985 and the 1992-94 average (Annex Graph 16). The reduction was not compensated for by growth in other sectors, although the rice production slightly increased. Despite hardships in geographical conditions, the average farm size is relatively large and expanded from 1.19 to 1.44 hectares during the period 1980-95. However, *Sekikawa's* net agricultural income per farm household was estimated to be ¥ 1.4 million in 1994, being much lower than *Ajikata's* ¥ 3.7 million, and indeed, even lower than ¥ 1.5 million of the *Niigata Prefecture* where the average farm size is smaller than *Sekikawa*. This is another illustration of the rather poor labour productivity, as described in the previous paragraph. Overall, the farm sector plays a limited and diminishing role in rural society, probably due to this low labour productivity.

In both villages, there has been a notable change in the agricultural structure which is illustrated by a decrease in the number of small farms as well as an increase of large farms. For example, the number of *Sekikawa's* farm households with farmland of 1.5 hectare or less declined by 37 per cent over the period 1970 to 1995, while those with 2.5 hectares or more increased fourfold although the numbers are small (Annex Graph 17). A similar observation can be made concerning *Ajikata*, although to a lesser extent.

4.2. Factors affecting policy effectiveness

The aforementioned shift towards larger farms has also generated considerable diversification in farm structures. As a result, in *Sekikawa*, a limited number of larger sized farms hold a predominant proportion of the total agricultural sales. Just 7 per cent of farm households had sales of agricultural products at ¥ 5 million or more, but accounted for 40 per cent of the village's total farm sales in 1995 (Annex Graph 18). It is likely that these large farms are highly dependent on agriculture and play a visible role in the rural economy. On the contrary, the smallest 40 per cent of farms sell just less than ¥ 1 million and apparently heavily rely on other activities. Such a diversified farm structure sheds light on the hypothesis that output related agricultural policies are not an effective device for the promotion of rural development. This argument would be controversial because agriculture is considered to play multiple roles such as land conservation and environmental protection and therefore the task of production-related agricultural policies should not be confined to rural goals. Nevertheless, the hypothesis might be true at least from the viewpoint that production based agricultural policies do not support households widely enough to include most of the rural society.

Ageing is also a common feature in the two villages. In *Sekikawa*, almost half the farmers were over 65 in 1995, a dramatic change from the situation in 1970 when most of the farmers were below the age of 60 (Annex Graph 19). This situation is similar even in *Ajikata*, albeit to a lesser extent. The policy implication of the ageing phenomenon is twofold: firstly, older farmers will be less responsive to existing policies aimed at facilitating productivity improvement; and secondly, retirement of many of these farmers in the near future will generate a considerable potential to enhance the size of farms. The latter issue has been regarded as the most crucial element for the improvement of labour productivity

in the Japanese agricultural sector (see the next chapter). Conversely, the former has been considered one of the major impediments for the achievement of the stated structural goals in Japan.

Measures aimed at increasing farm size are central to agricultural policies in *Ajikata*. For example, per hectare payments associated with farmland lease contracts are provided under certain conditions for the lessors or lessees concerned (Box 9). Moreover, a farmer regarded as "qualified" can be eligible for public funds with a low interest rate in order to expand farm size. Preferential taxation arrangements also benefit a "qualified" farmer. These measures have been vigorously implemented in the village over time: during the period 1983-95 payments of around ¥ 27 million in total were made to promote farmland mobility. The result is that the area of leased land and the land of which the ownership was transferred as from 1980 accounted for 18 per cent of total farmland in 1995, a sharp increase from 6 per cent in 1983. These measures are now carried on as part of the package of measures related to the implementation of the Uruguay Round agreement. In *Sekikawa,* implementation of similar structural programmes has been far less successful, due to the limited number of farms who have attempted to apply them.

Box 9. **Ajikata: per-ha payments to encourage land mobility**

If land is leased to "qualified" lessees, the lessor is paid:
¥ 0.05-0.1 mil. (duration 6-10 years)
¥ 0.1-0.2 mil. (10 years or more)

If land of retired lessors is leased to a "qualified" lessee, the lessee is paid:
¥ 0.1 mil.

Land improvement and consolidation is another aspect of efforts to improve production efficiency in *Ajikata*. Almost all farmland in *Ajikata* has been "consolidated" into contiguous plots of around 0.3 hectare or more, and the village is now under consideration for further improvement (*i.e.* 1 hectare plots) (Box 10). Other land-related projects such as drainage and construction of adjacent rural roads are also implemented under the Uruguay Round package of measures. Overall, in *Ajikata* there is wider scope for improved productivity through policies designed to foster larger farms, given the possibility of further land mobilisation expected as a consequence of retirement. This development may involve a reduced number of farm labourers, yet there would be a potential to further increase contribution of the agricultural sector to the village's total net income.

Box 10. **Ajikata: 96% of farmland is already consolidated (1993)**

Proportion of farmland shaped into plots sized at (%):

	Ajikata	Sekikawa
Less than 0.2 ha	4.1	47.4
0.2-0.3 ha	23.0	2.6
0.3-0.5 ha	73.0	0.0

The situation is different in *Sekikawa,* where the past reduction in the number of farm households has largely led to widespread land fragmentation albeit with a gradual enlargement of the average farm size. This development has prevented farmers from taking advantage of economies of scale. One of the largest farmers, for example, who manages 10.8 hectares of paddy fields commutes to separate farmland dispersed into 11 plots in three different villages. Indeed, the furthest paddy field is located 11 km away. Such fragmentation of farmland is commonly observed in HMAs. This fact suggests that measures aimed at raising labour productivity by maximising the physical farm size may have only limited effects on productivity.

4.3. Other issues

Agro-environmental problems are sometimes important in the context of rural development. *Sekikawa* provides an example: in the early 1980's, a livestock zone was established in the village aimed at fostering a larger livestock farms. The area leased to the farmers was at a distance from inhabited districts, in order to ease existing environmental concerns such as offensive odours and run-off of polluted water. Since then extensive efforts have been made by the local authorities to address these

issues through, for instance, advisory services for farmers and monitoring activities. Nonetheless, complaints have been continuously made by the inhabitants. While the current land lease contract will expire in 4 years' time, it may be difficult to obtain the consent of landowners to an extension of the contract. Needless to say, this is just one of numerous examples in HMAs which also comprise many cases where agro-environmental issues are well addressed. However, this example might suggest that environmental considerations are sometimes important in policy discussions even in HMAs, where the population density is not as high as in urban regions.

Various other programmes are provided for both villages mainly as part of the package of budgetary measures in relation to implementation of the Uruguay Round agreement. They include measures to meet social requirements rather than agricultural objectives, for example, the establishment of a public hall (Box 11). A settlement-promotion programme in *Ajikata*, which is co-financed by the national and the local governments, is another example. This programme is designed to provide unmarried male and female inhabitants, regardless of farmers or non-farmers, with chances to meet together and thereby to encourage their marriages. It may be difficult to properly assess the effectiveness of above measures at this stage due to the lack of information. However, it seems important that several considerations should be taken into account in evaluating these measures. For example, are policy targets of these measures clearly identified? Is it likely that well-targeted measures can achieve the stated rural goals more efficiently? Also, are cross-sectoral programmes more appropriate policy instruments for the development of HMAs, where the possibility of enhancing the production productivity through the enlargement of farm size is limited?

Box 11. **Sekikawa: examples of UR-related national measures**

Financial assistance was made for:
- Establishment of a public hall
- Building of a mushroom house to help reduce producers' initial costs
- Construction of a rice centre aimed at preserving the rice quality

V. SUMMARY AND CONCLUSION: DEVELOPING A BETTER POLICY MIX

Policies aimed at the revitalisation of HMAs are increasingly important in Japan. Adverse social and economic trends in these areas such as depopulation, ageing of the population, low productivity and consequential reduction in the viability may explain this development. Above all, the long-term trend of migration of the population to densely-populated urban districts is regarded as one of the main problems of Japanese society. People's concern for the maintenance of rural areas as a source of rural amenities, food and cultural heritage has led to the recognition of the need for alternative policies to stimulate the economy in HMAs. Like in other OECD countries, agriculture has been regarded as one of the most important industries in these areas.

5.1. Changing and diversified role of agriculture in hilly and mountainous areas

There are several key factors to be taken into account in the debates on how to address rural development through agricultural policy. Among them is the generally diminishing role which agriculture plays in the economy of HMAs. Today on-farm income accounts for only a limited proportion of the farm household economy in general, although farm households themselves continue to be important in hilly and mountainous communities. Also, agricultural households in these areas are highly diversified: many of them are non-commercial and depend little on agricultural income, while a small number of larger farms rely heavily on farming and produce a significant part of the total output.

The ageing of the farm population is another structural element which has policy implications. On the one hand, it suggests a weak response of farmers to output related policy options; on the other hand, it would suggest that there is a significant potential for improved productivity in the future as farmlands become available to remaining more efficient farmers. This is a crucial point for Japan where the government has long been adopting measures for the rationalisation of farm land and the modernisation of agricultural management to achieve improvements in productivity. Indeed, this has

been the mainstream of Japan's agricultural policy reform since the new direction of basic policies was announced in 1992, reinforced by the package of measures announced in 1994 in relation to the implementation of the Uruguay Round agreement.

5.2. Hilly and mountainous agriculture in the further reform context

The proposed direction of ongoing reform in the area of price policies is intended to accelerate the adjustment process in farm structures. It is based on the reflection that high levels of price support delay the pace of structural reform and rationalisation of farm land holdings into larger farm sizes. Also, the improved productivity and cost competitiveness of larger farming units are expected to permit a reduction in the wide margin between domestic and international prices for agricultural products. As a consequence, the administered prices have been gradually reduced in nominal terms during the last decade. For example, the supported price for rice, the most heavily protected sector in Japan, and one of the key products in HMAs, is now set at the level where production is only profitable for larger sized farms. In other words, costs of rice production may currently exceed benefits for many farms in HMAs, particularly those characterised by ineffective smaller farm units located on slopes.

In some cases the implementation of policy reform has involved the process of relaxing border protection aimed at improving market access. Farm income in HMAs is dependent to a greater degree than in other regions on the livestock sector. Sharply increased imports as a consequence of liberalisation of the beef regime have led to a greater impact on HMAs to the extent that the reliance of these regions on beef production is larger than in other areas.

There appear to be good grounds for suggesting that existing structural policies in Japan aimed at the rationalisation of farm land and the modernisation of agricultural management could assist in achieving the desired adjustment in farm structures to make agriculture more efficient. This is because greater mobility of land use is expected in the future. In fact, there is an indication that Japan's agricultural structure is moving towards this direction (Annex Graph 20). This process would provide a boost to the prospects of participating farmers and the communities in which they live. In particular, younger people and more efficient farmers could be encouraged to remain in rural communes and take up larger scale farming.

However, the efficiency of measures designed to achieve such policy goals may vary depending on the socio-geographical conditions of individual farms. This study suggests that measures to enhance productivity through rationalising farm land holdings into larger units may have a limited impact on agriculture in geographically disadvantaged areas, because farmlands are generally less modernised and more fragmented in these regions. Moreover, farmers' responsiveness to land improvement measures, which often require a considerable amount of financial outlays from farmers concerned, may have been already hampered by the inflexibility associated with the ageing labour structure, in particular in HMAs.

Lessons from these issues could be summarised as follows: in geographically disadvantaged farming regions such as HMAs, where opportunities for scale expansion and improved efficiency are more limited, some farmers are likely to be adversely affected by agricultural policy reform. Reducing market price support to encourage inefficient small farms to release their land for aggregation into larger farming units is likely to have a greater impact on some farmers who are highly reliant on farm income in more geographically disadvantaged regions. This is largely because market price support policies are unable to discriminate between the specific needs of the agriculturally favourable flat areas and those of unfavourable HMAs. Needless to say, however, adapting overall price support policies in order to improve the farm income circumstances of farmers in the most disadvantaged farming areas would prove enormously costly, and simply risk frustrating the structural goals.

5.3. Considerations for a better policy mix

Implications derived from the discussions above may assist in designing the future policy mix to better achieve the rural objectives in HMAs. Listed below are the factors to be taken into account in policy debates on this issue.

First, the clear identification of targets to achieve rural objectives within agricultural policies, and the adoption of carefully selected instruments aimed at addressing these goals, are critical. The generally low dependence of farm households on farm income would suggest a substantial potential for further policy reform without causing any serious problems for a large number of non-commercial farmers. Yet, a limited number of farmers, who are still highly reliant on agricultural income, play a visible role in the rural economy since they hold a predominant share in the farm production of the society. If agricultural policies are carefully tailored to these farm households, then they may have better long term prospects for viability.

Second, measures need to be designed in a broader policy context. The development goals of individual hilly and mountainous communities might be more efficiently addressed through cross-sectoral programmes that target public resources to the specific needs of these communities, such as rural infrastructure, provision of public services and information, encouraging the establishment of new economic activities. While the success of measures aimed at introducing manufacturing industries into HMAs has been rather curbed due to recent changes in Japan's economic environment, the possibility for the introduction of other new activities, such as green tourism, would be worth examining. In this context, the role of the national and local authorities in relevant areas such as education, training and advisory services to encourage the establishment of non-agricultural or agriculture-related businesses may need to be emphasised. The importance of local governments' participation in agro-tourism activities is illustrated in Annex I.

Third, the alternative policy mix would be most appropriate if designed against a background of reduced overall support to the Japanese agricultural sector. The need for continued reform has been repeatedly emphasised in Japanese policy debates, not only from the viewpoint of accelerating structural improvement and satisfying consumers interest, but also in the WTO context.

Although the current study does not attempt to discuss issues relevant to Japan's agricultural policy reform *per se*, it appears likely that further adjustments in policies will be necessary at least in the light of implementation of the commitments in the Uruguay Round agreement to reduce domestic support and increase market access. For example, Japan will import rice to meet the minimum levels required in the agreement, *i.e.* at 4 per cent of domestic consumption from 1995 rising to 8 per cent in 2000 which is above the general provisions of 3 per cent and 5 per cent, respectively (Annex Graph 21). Though it is not feasible at this stage to quantify the implications of this arrangement, such imports would cause at least some impacts on hilly and mountainous agriculture as rice is among the major sectors in these areas. Moreover, the fact that Japan's overall agricultural support remains very high by OECD standards, and is largely maintained by market price support, is in itself one of grounds for suggesting a need for further policy reform.

5.4. Developing a better policy mix

Based on the aforementioned three elements, and given the diversified structure of farm households in HMAs, approaches towards a better policy mix to revitalise the rural economy in these areas could be suggested. However, some caution is required. Any evaluation of current policies underlying such suggestions should not be confined solely to the rural development perspective. This is because agriculture and agricultural policies are considered to contribute to the achievement of multiple objectives, including the conservation of land and environment and the maintenance of rural amenities. These multiple functions may sometimes contradict each other. For example, efforts to revitalise the local economy through enhancement of production productivity achieved by the intensive input use may jeopardise the environmental performance in HMAs. Reflecting these considerations, emphasis should be placed on the following three areas: more efficient farm management, targeted sectoral programmes, and coherent cross-sectoral policies.

For the cases where enlargement of farm units is feasible from both geographical and environmental viewpoints, measures in pursuit for productivity improvement mainly through aggregating farmlands into large farms should be strongly pursued. This would involve a decrease in the number of total farmers in the regions. Nevertheless, adjustment in this direction would help to make the agricultural

sector in HMAs more efficient, profitable and thus attractive for young people. A continued reduction in market price support would assist in facilitating this process.

For regions where enlargement of farms is not feasible or is unlikely to enhance productivity but where agriculture still plays an important role in the economy, carefully targeted agricultural policies aimed at establishing sustainable farm management might appear to be more effective. In certain cases, the agricultural sector in HMAs has large potential to develop labour-intensive farming of high value added or new commodities specific to individual regions. Given that farmers in HMAs are often too small and lack the necessary management, assistance in such areas as extension, advisory services, and market promotion would encourage them to undertake new activities. Implementation of these programmes is most cost-effective if are designed in such a way as to target only selected farmers in HMAs. Although such measures are still closely linked with production, there is nonetheless likely to be an improvement because the linkage to production is weaker than traditional market price support, and because policy objectives are better targeted.

Finally, for a majority of small sized and non-commercial farm households**,** broader-based policies may often better meet their specific social needs. Such an approach would include a wide range of cross-sectoral measures aimed at revitalising hilly and mountainous communities, *e.g.* improvement in living conditions in these areas, various forms of general tax concessions, and direct income support. In this respect, two new developments have occurred recently in Japan which are worth of mention. First, in September 1996 the Study Group on the Agricultural Basic Law, an advisory group to the Minister of Agriculture, Forestry and Fisheries, submitted a report reviewing the current law and proposing a broad discussion on the establishment of a new basic law. The report says that several fundamental issues need to be discussed. These include, among others, the possibility of introducing direct income payments as part of policies targeting HMAs. Second, also in September 1996, the Prefectural Governors' National Conference in Japan asked the Prime Minister to implement new revitalisation measures for the nation's hilly and mountainous regions. It is reported that these measures encompass the improvement of living conditions and traffic infrastructure, and the adoption of a decoupling system to aid farm management in the regions. These developments may signal the possibility that Japan could move towards greater use of direct income payments, as has been the case in other OECD countries.

NOTES

1. For example, the population density of Japan's rural areas (defined as non-DID areas, see below) is 124 persons per km^2 in 1990, while that of all OECD territory is on average 27 persons per km^2, although with a wide variation among countries.

2. Densely Inhabited District (DID) is the area with population density of 4 000 persons per km^2 or more which forms a community with a population of 5 000 or more.

3. The definition of farm households in agricultural statistical terminology is given as those whose area of cultivated land is 0.1 hectare or more, or those whose sales of agricultural products amount to or exceed ¥ 150 000.

4. Rural communes are defined as communities where agriculture is operated.

5. Predominantly rural regions are areas where more than half of total population live in rural communities.

6. The interpretation of this statistics requires some caution. In the statistics the family labour cost, which is estimated from the wage data available for each prefecture, is applied to all farms in the same region on a non-discriminatory basis. Thus, labour costs of farms in HMAs, where wages are generally lower and farm workers are more aged than other areas, may have been overestimated.

7. In the Japanese statistics, value of production of the dairy cattle sector includes that of slaughtered dairy cows as well as milk.

8. This standard is set assuming that middle sized mechanisation system, which is common in Japan, works most effectively in plots of 0.3 hectare.

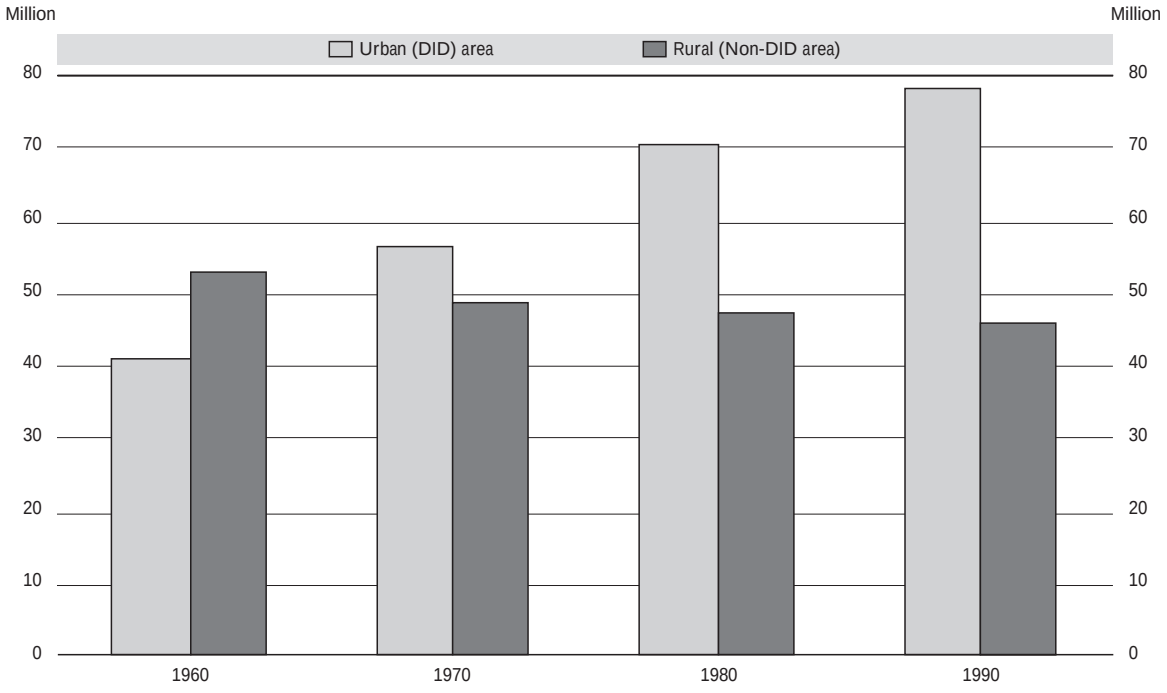
SOURCES OF BOXES

Box 1	Communication with the Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan.
Box 2	Management Co-ordination Agency (1990); MAFF (1995).
Box 3	MAFF (995), MAFF (1994*a*), MAFF (1994*b*).
Box 4	MAFF (1994*b*).
Box 5	OECD (1996).
Box 6	MAFF (1995).
Box 7	Management Co-ordination Agency (1990), Communication with *Ajikata*.
Box 8	Management Co-ordination Agency (1990), *Sekikawa* (1996).
Boxes 9, 10	Communication with *Ajikata*.
Box 11	Communication with *Sekikawa*.

Annex 1

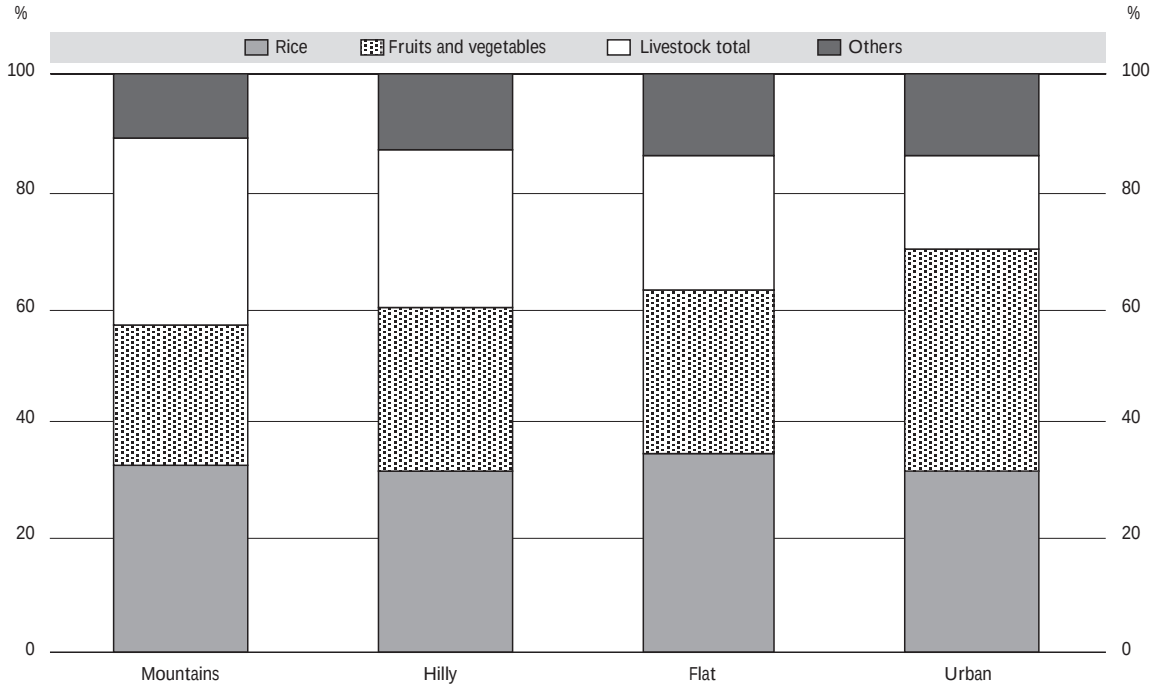
GRAPHS

◆ Annex Graph 1. ***Population in urban and rural areas, 1960-90***



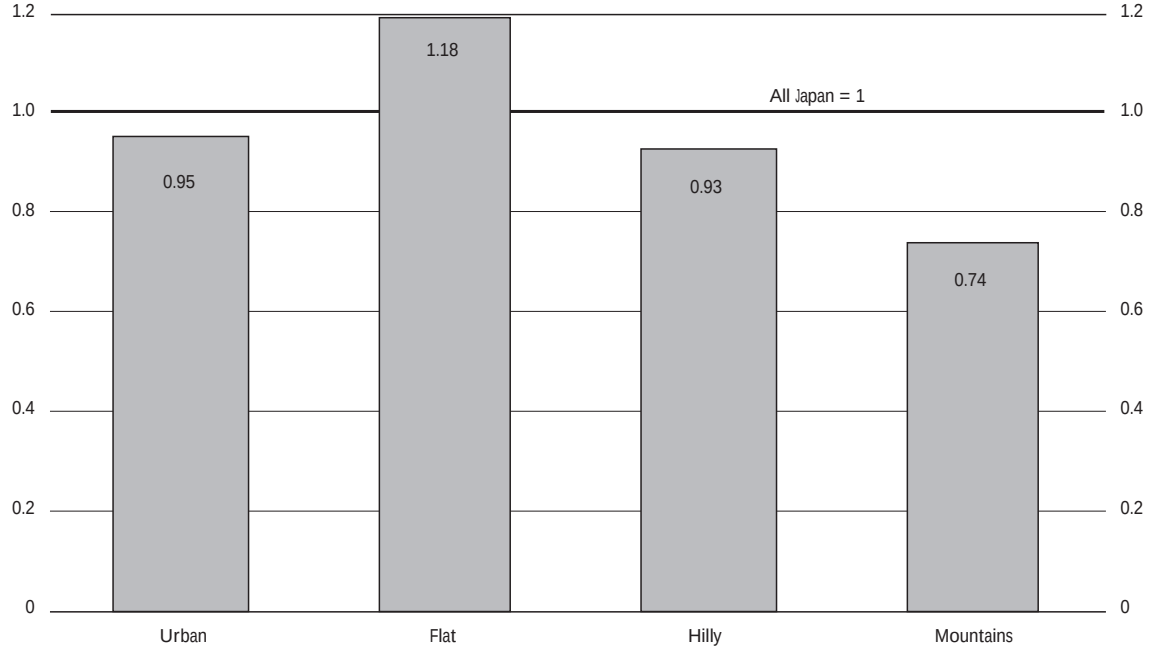
Source: Management Co-ordination Agency (1990).

◆ Annex Graph 2. ***Agricultural production by sector and region, 1994***



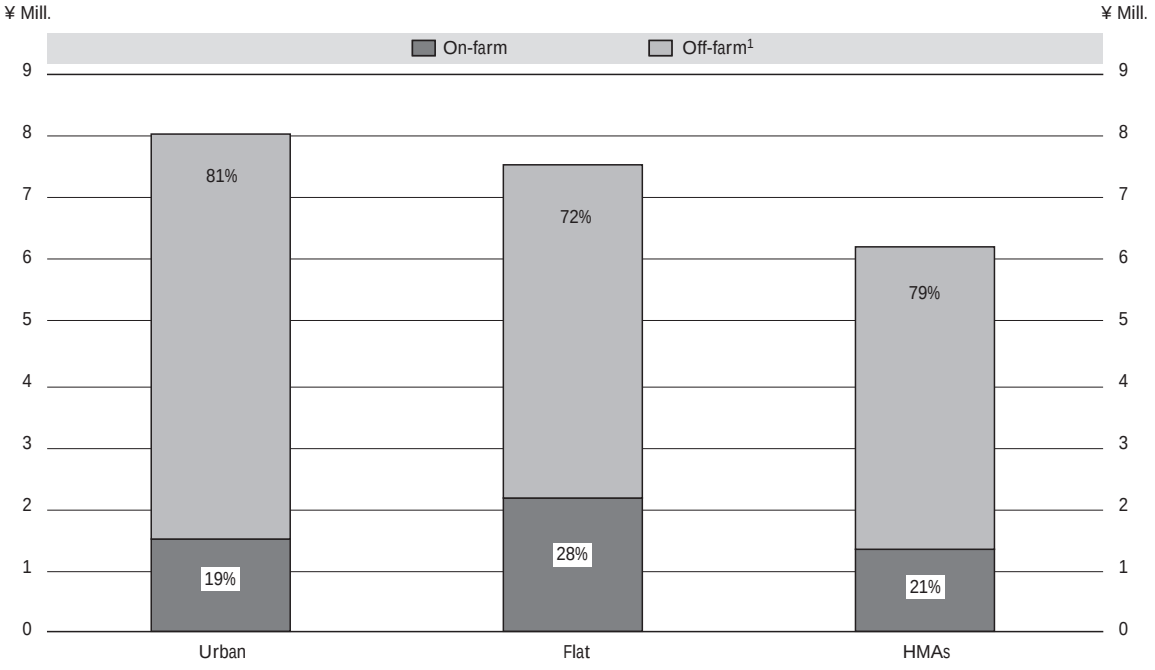
Source: MAFF (1994*b*).

◆ Annex Graph 3. ***Farm labour productivity*[1] *by region, 1994***



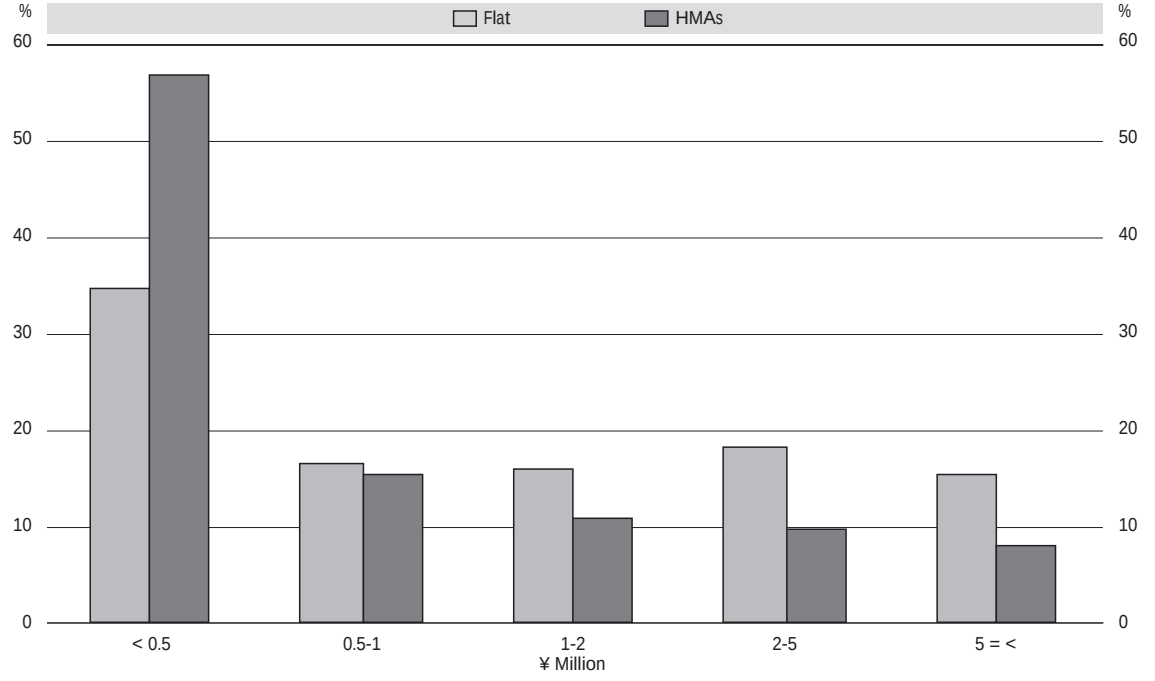
1. Net agricultural income per work hour.
Source: MAFF (1994*c*).

◆ Annex Graph 4. ***On farm and off farm income by region, 1994***



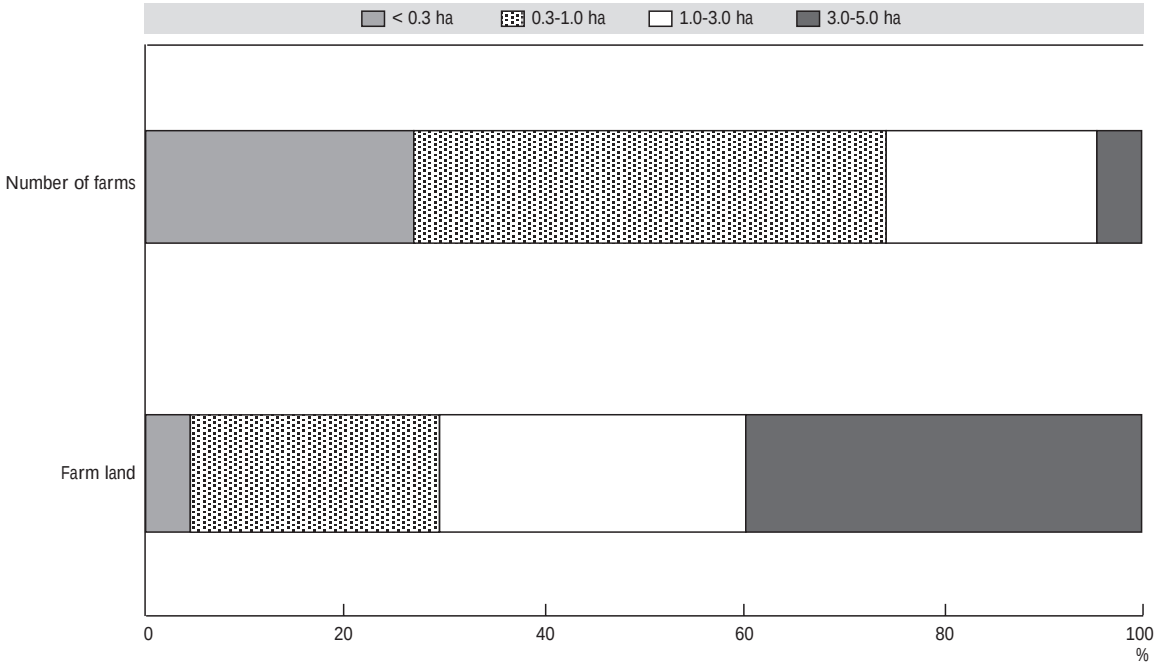
1. Pension and gifts non included.
Source: MAFF (1994*c*).

◆ Annex Graph 5. ***Distribution of farm households by value of agricultural sales, 1995***



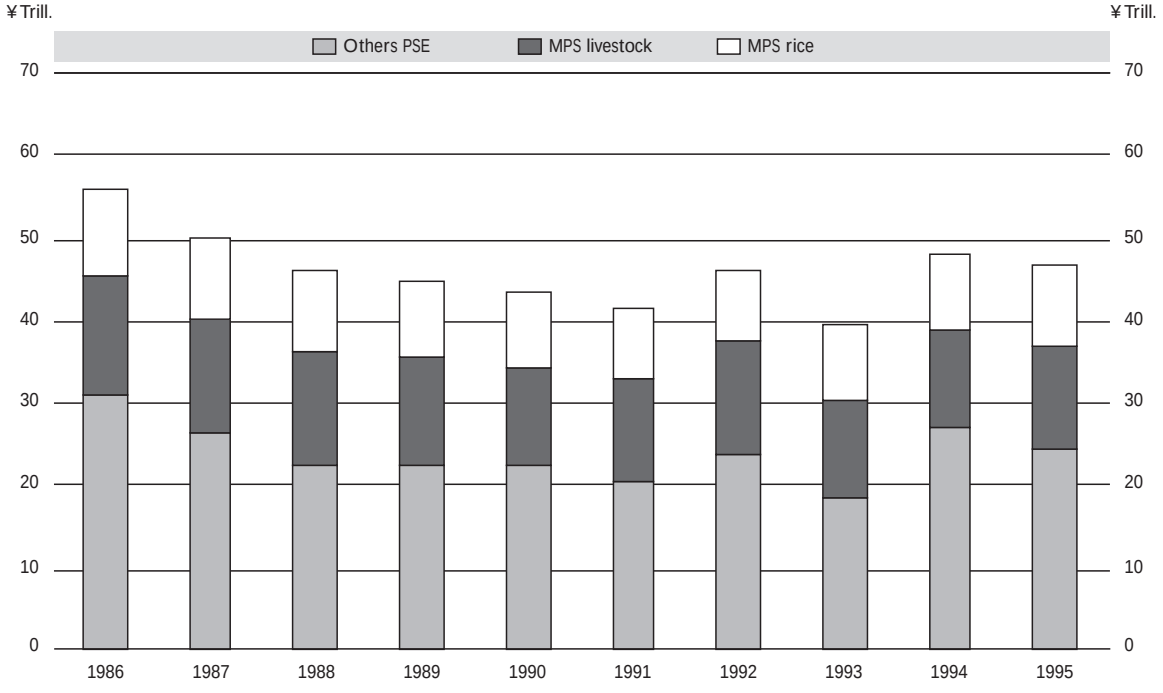
Source: MAFF (1995).

◆ Annex Graph 6. ***Distribution of farms by physical size in HMAs, 1995***



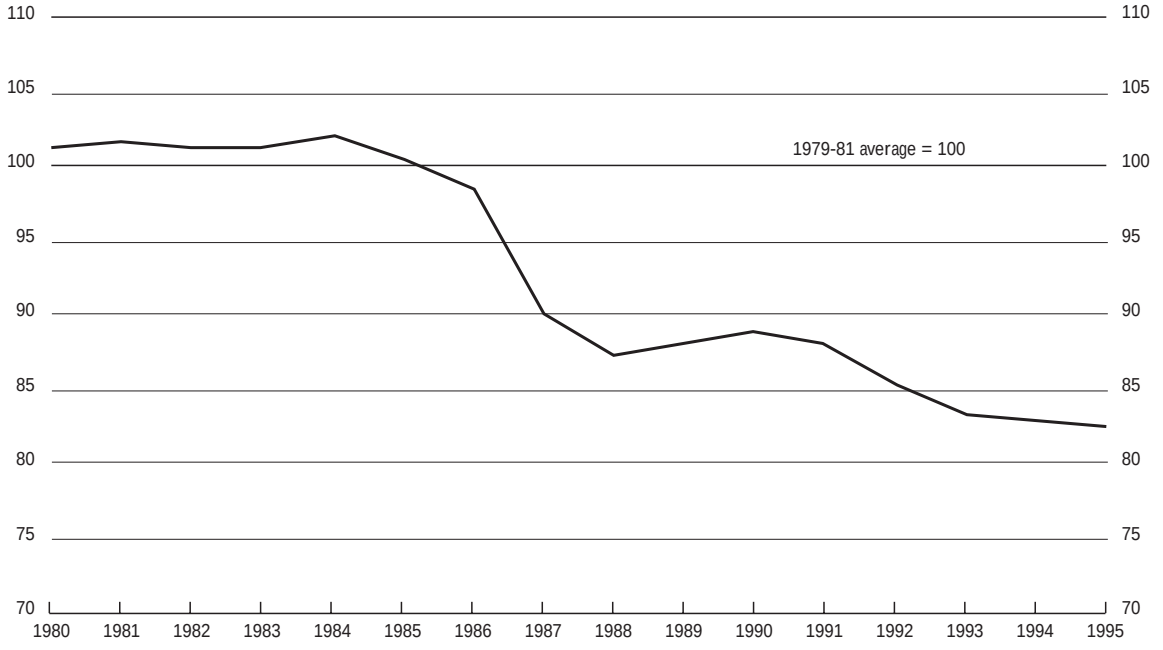
Source: MAFF (1995).

◆ Annex Graph 7. ***Evolution of agricultural support, 1986-95***



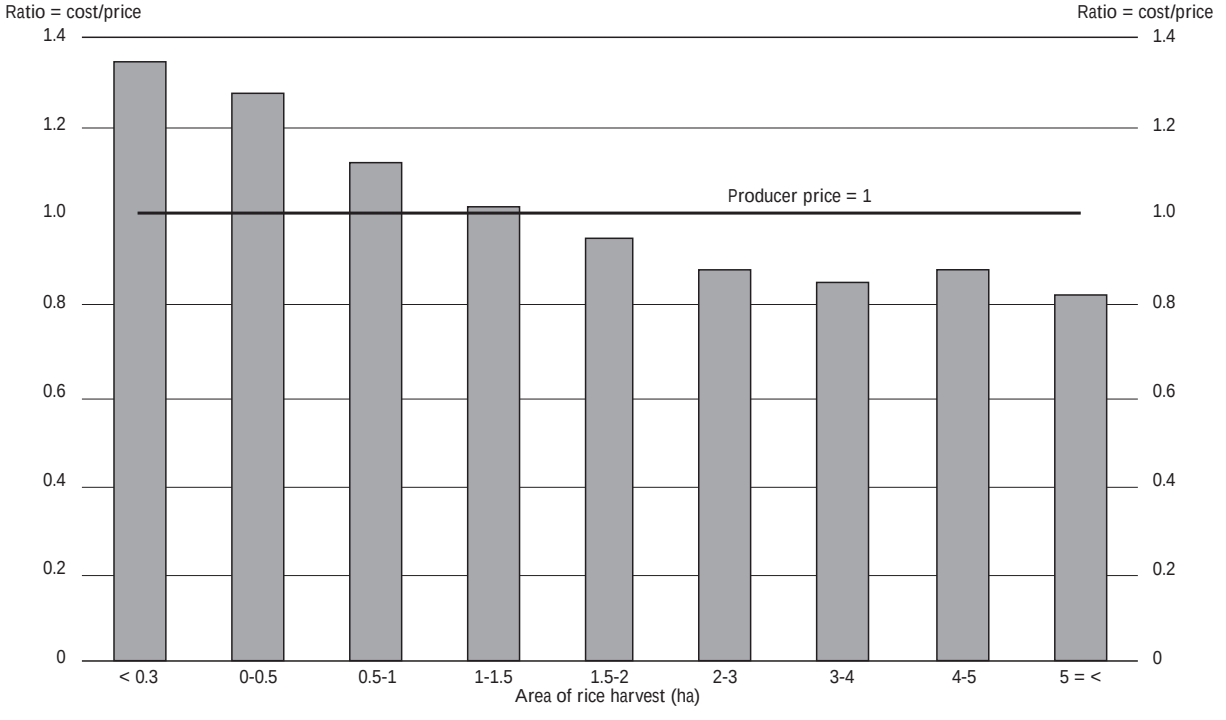
Source: OECD (1996).

◆ Annex Graph 8. ***Agricultural producer prices,[1] 1980-95***



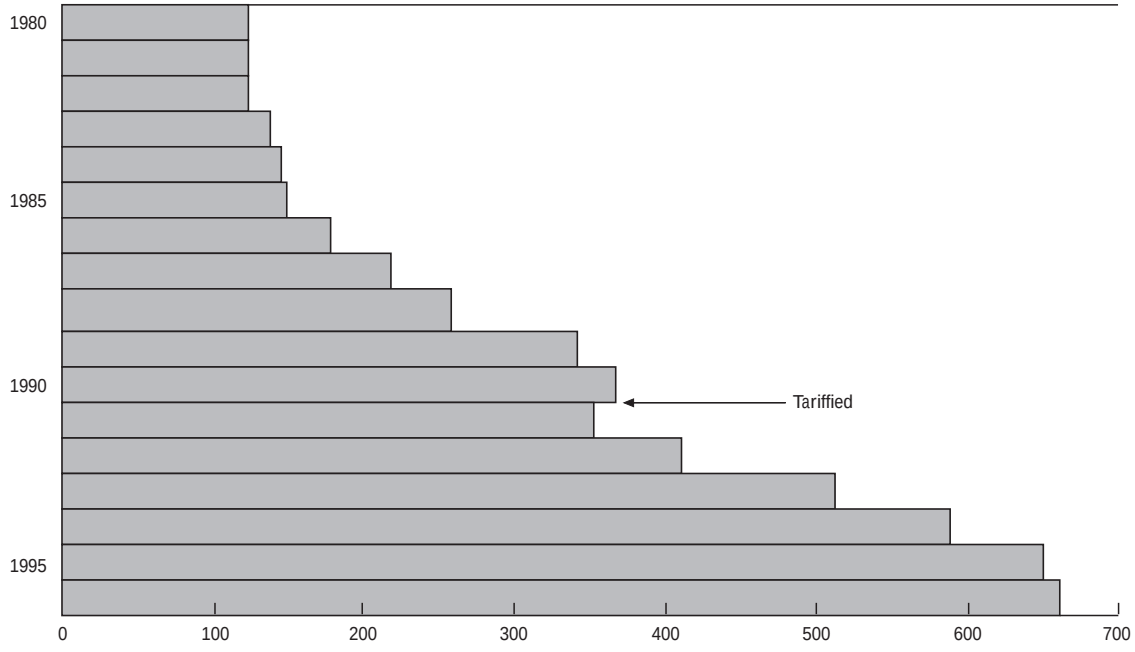
1. Producers price of supported commodities is defined as the average production price weighted by the value of production in 1979-81.
Source: OECD (1996).

◆ Annex Graph 9. ***Rice profitability, 1994***



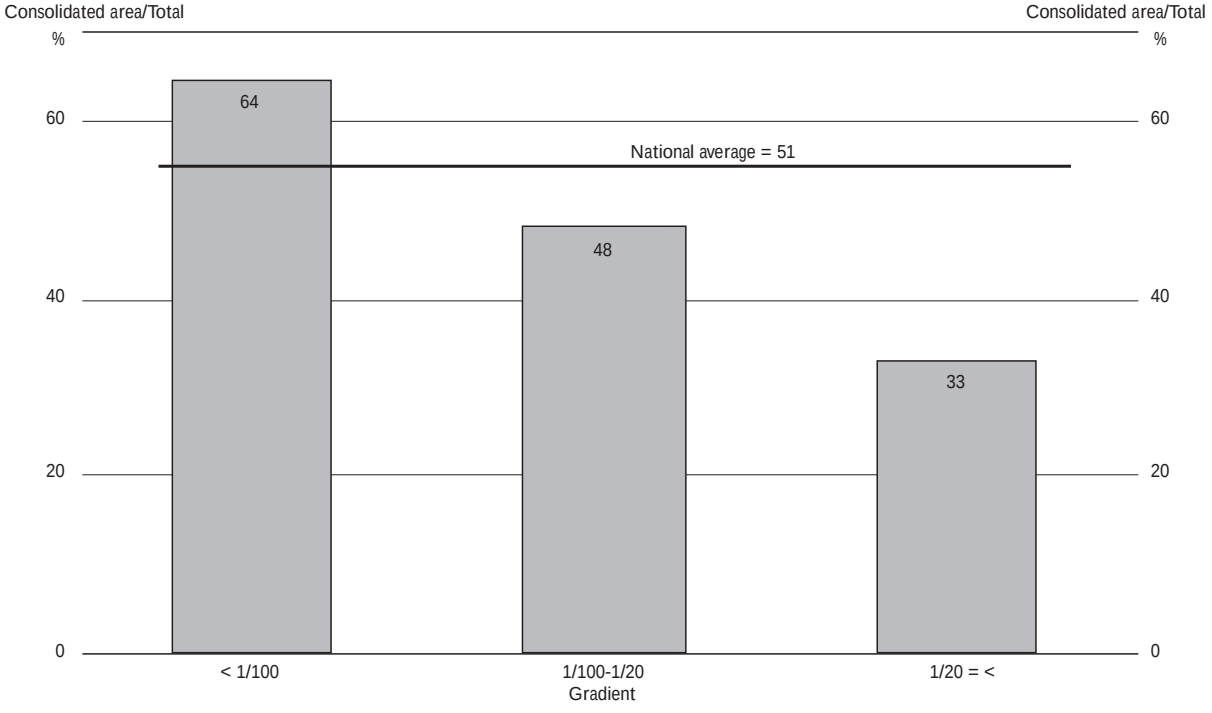
Source: MAFF (1994*d*).

◆ Annex Graph 10. ***Beef imports,[1] 1980-95***
1 000 tonnes



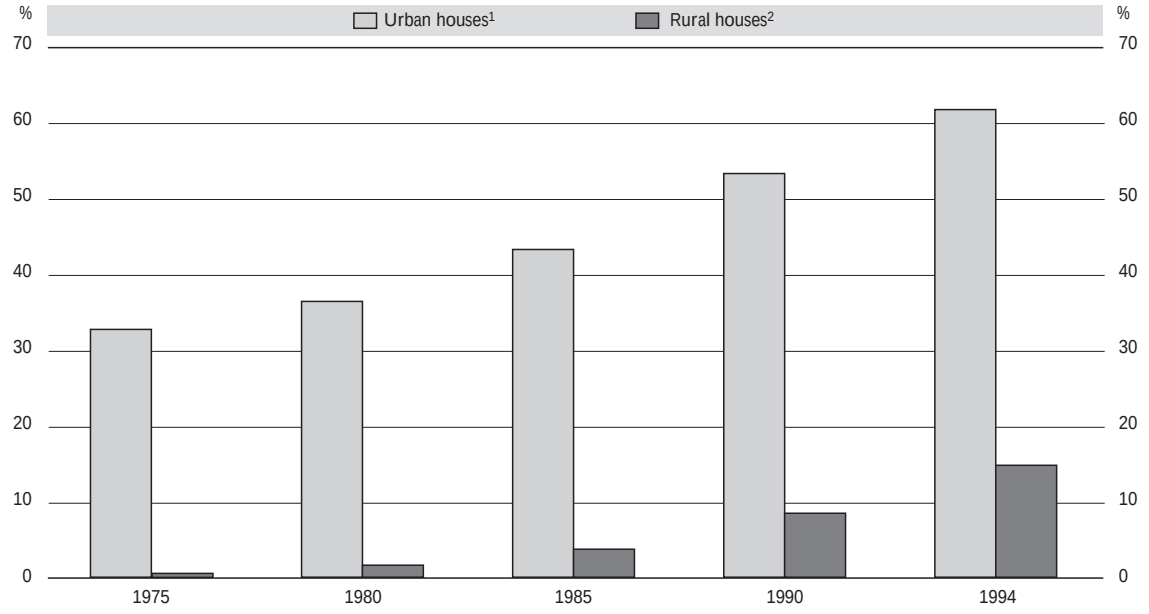
1. 1996 based on data from January to October.
Source: Ministry of Finance, Japan.

◆ Annex Graph 11. ***Land consolidation for paddy fields, 1993***



Source: MAFF (1993).

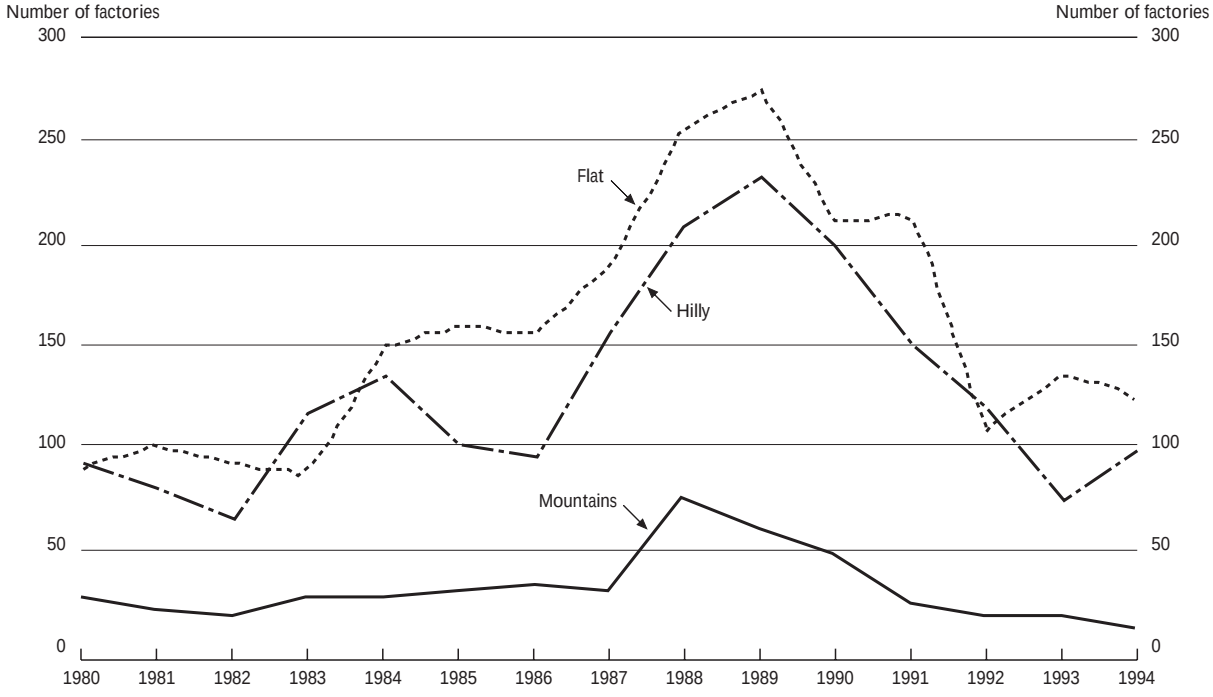
◆ Annex Graph 12. ***Households equipped with sewerage by area, 1975-94***



1. All cities.
2. All towns and villages.

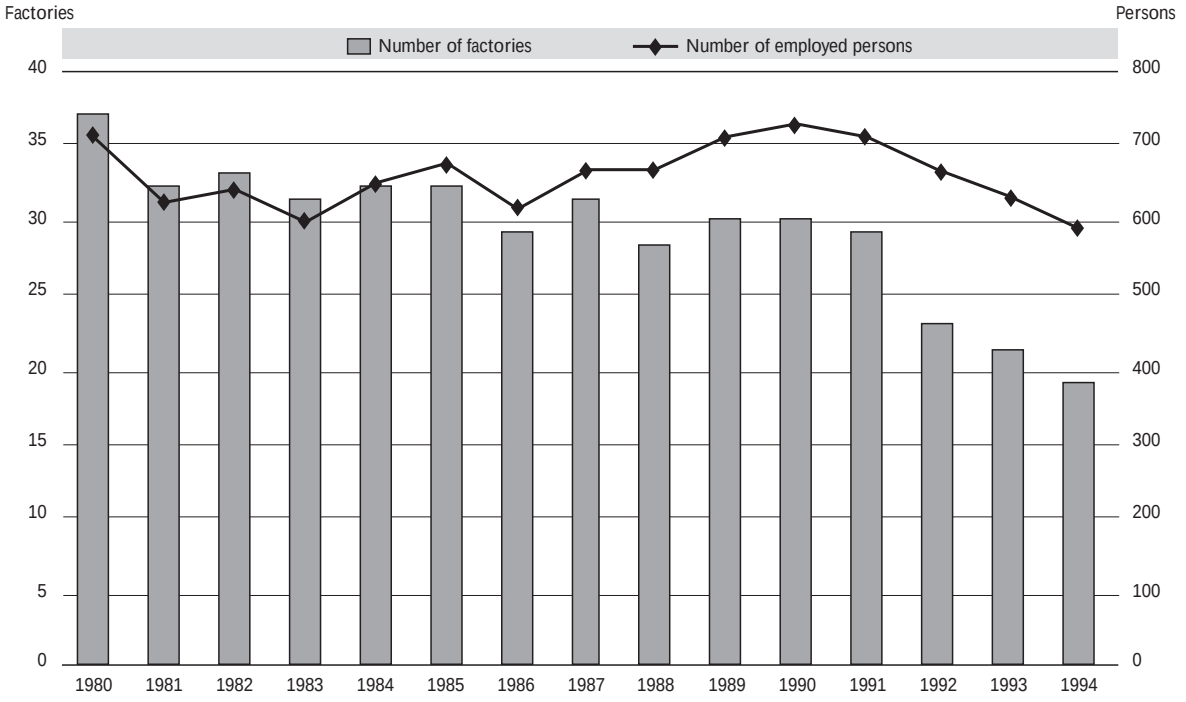
Source: Ministry of Autonomy (1994).

◆ Annex Graph 13. ***Number of factories by region, 1979-94***



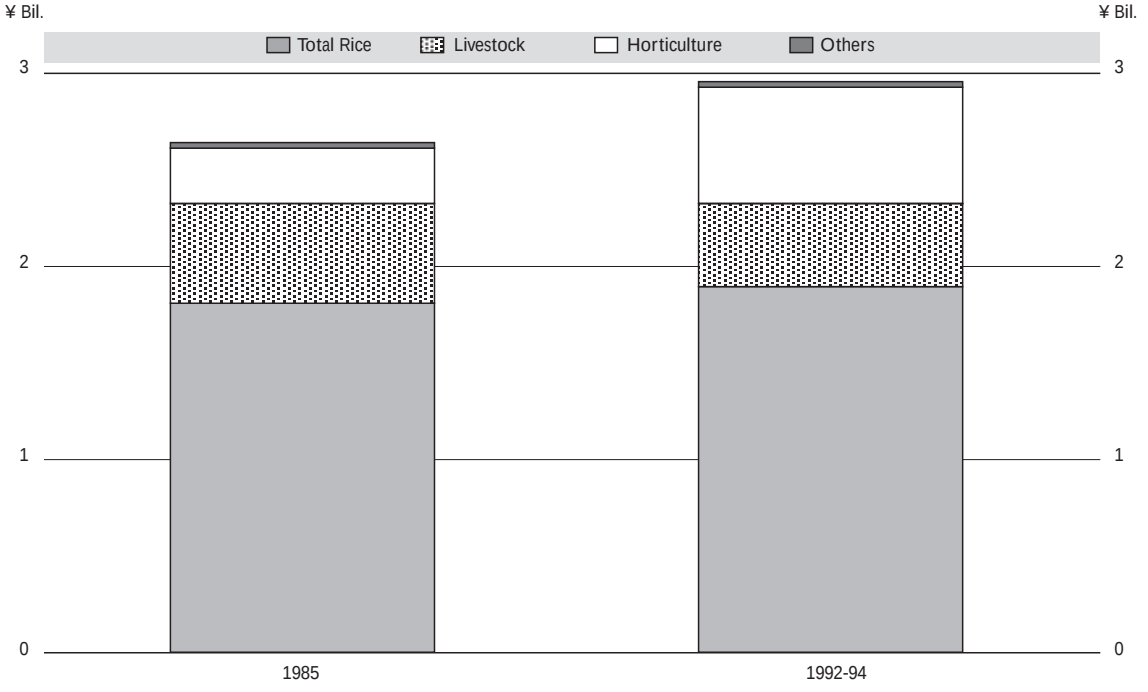
Source: Communication with The Centre for Promoting Establishment of Industry in rural areas.

◆ Annex Graph 14. ***Sekikawa: employment in the manufacturing sector, 1980-94***



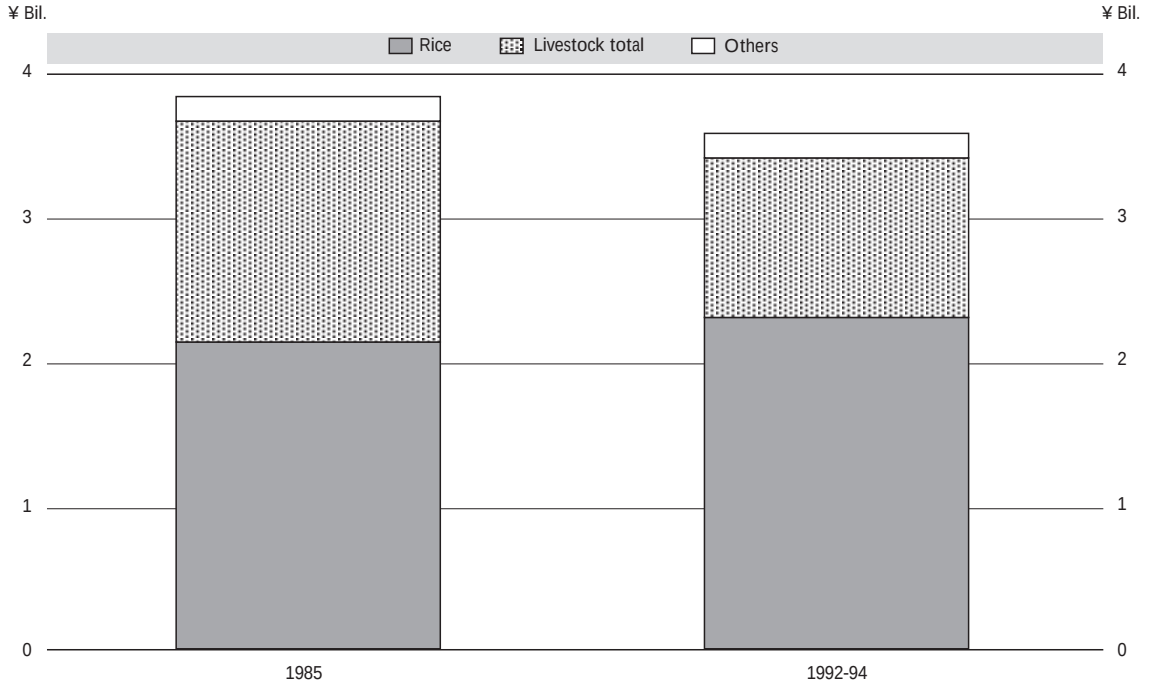
Source: Communication with the authorities of Sekikawa.

◆ Annex Graph 15. ***Ajikata: agricultural production, 1985-94***



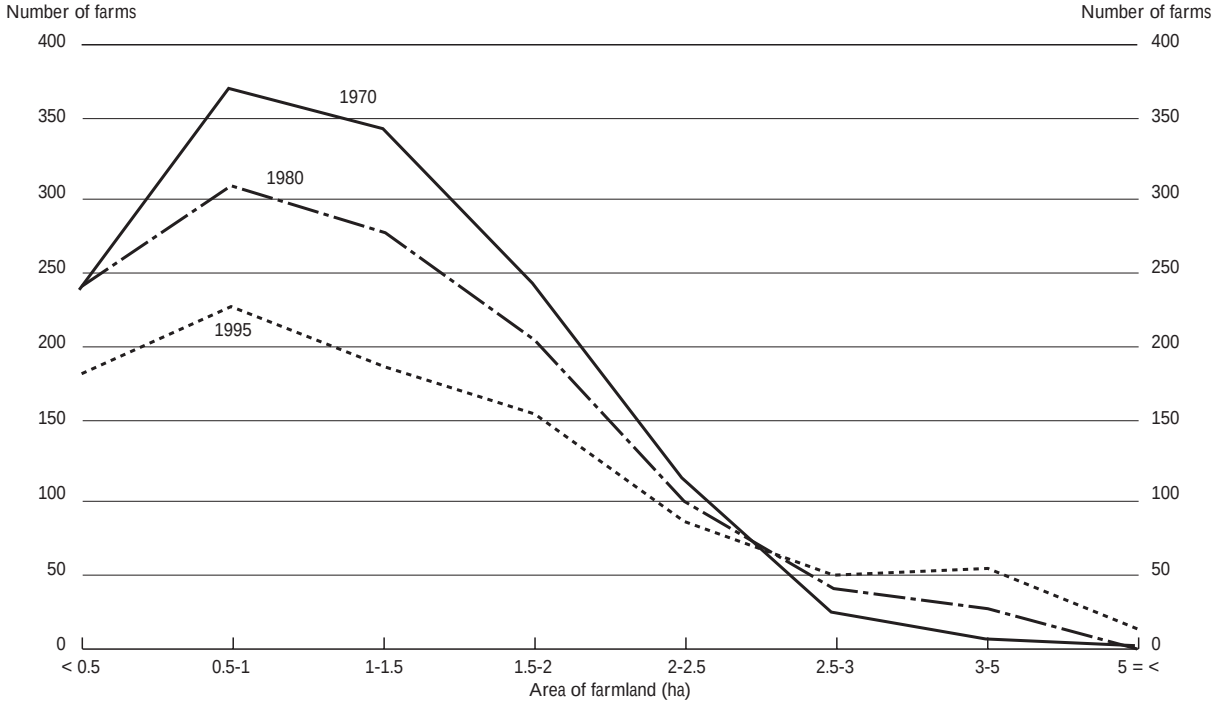
Source: MAFF (1994*b*).

◆ Annex Graph 16. ***Sekikawa: agricultural production, 1985-94***



Source: MAFF (1994*b*).

◆ Annex Graph 17. ***Sekikawa: area and number of farms***

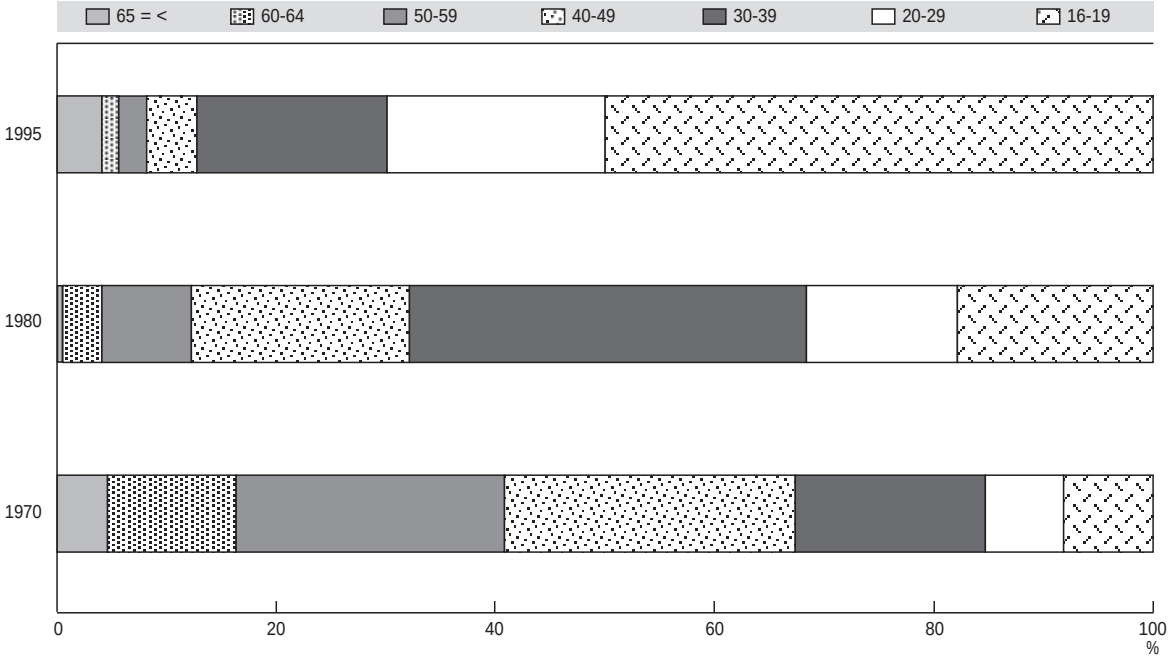


Source: MAFF (1995).

◆ Annex Graph 18. ***Sekikawa: number of farms and farm sales,***[1] ***1994***

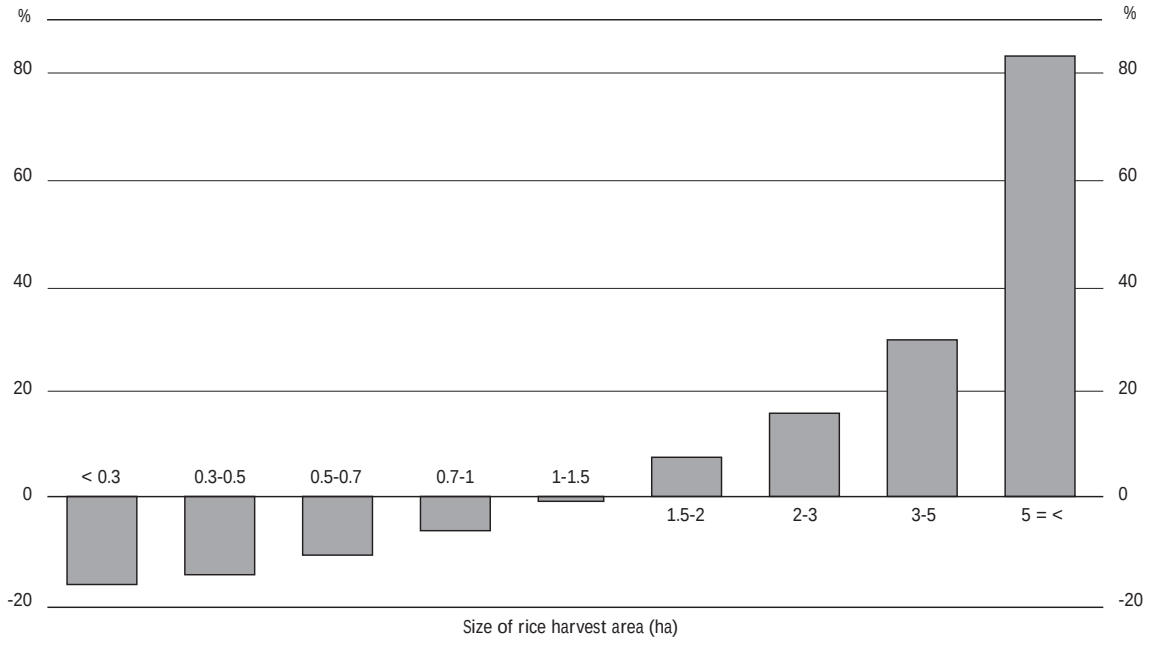
1. Farm sales of 5 million or more are estimated by the Secretariat on the basis of MAFF (1995).
Source: MAFF (1995).

◆ Annex Graph 19. ***Average farmers age, 1970-95***



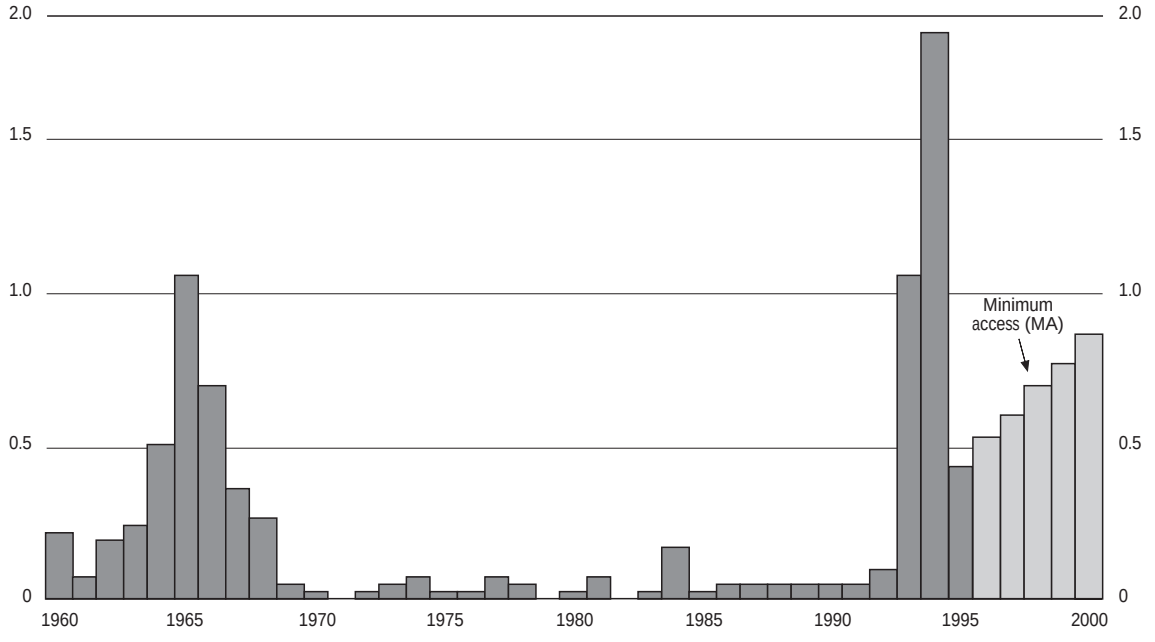
 Source: MAFF (1995).

◆ Annex Graph 20. ***Changes in rice farms numbers by area, 1990-95***



Source: MAFF (1995).

◆ Annex Graph 21. ***Rice imports, 1960-2000***
Millions tonnes



Source: Ministry of Finance (1996), Japan.

Annex 2

MEASURES ON *"TANA DA"* IN HILLY AND MOUNTAINOUS AREAS

"Tana Da": Small and Layered Paddy Fields on Slopes

Tana Da may be described as numerous tiny-sized paddy fields on slopes, developed by the way of terrace cultivation. They can be commonly found in Japan, in more than 200 hilly and mountainous villages. It appears that the people generally attach high importance to the beauty of *Tana Da*'s scenery. Indeed, many local authorities in HMAs are increasingly aware of the value of *Tana Da*'s amenities: to date some 20 local governments have introduced various programmes aimed at preserving them. Given below are the examples of these programmes.

***Tana Da* Fund** (applied only in *Wajima* City, in *Ishikawa* Prefecture)

Established	In 1994.
Objective	To establish the financial base to support the *"Sen Mai Da (Tana Da) Scenery Preservation Association"*, which helps farmers to operate the farming on the *Tana Da* located in the City. The support is intended to partly reduce the production cost, which is often very high due to various geographical disadvantages associated with *Tana Da*.
Total Amount	¥ 80 million.
Contributors	Prefecture (¥ 20 million), City (¥ 40 million), Local Chamber of Commerce, Agricultural Co-operative, Forest Co-operative, Tourist Agency Association, and others.

***Tana Da* "Owners" Programme** (applied in around 20 local governments)

Participants	Farmers (real owners of *Tana Da*), the local government, urban citizens who join the programme (called "Owners" in the programme).
Farmers	To lease their-own *Tana Da* to the local government. To be responsible for the maintenance of *Tana Da* at the request of the local government. To provide guidance for "Owners" on how to cultivate rice on *Tana Da*.
Local government	To administer the implementation of the programme. To pay the rent for the real owners of *Tana Da*. To pay the maintenance fee for farmers who take care of *Tana Da*. To advertise the programme particularly among urban citizens. To make contracts with customers wishing to be "Owners" of *Tana Da*.
"Owners"	To pay fees, based on the area or the term contracted, to the local government. Occasionally to enjoy working on *Tana Da* as farm operators. To harvest rice for their own use.

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CASE STUDY–NORWAY: SOGN OG FJORDANE AND VESTFOLD*

* This study was prepared by the Norwegian authorities.

◆ **NORWAY** – *County divisions in Norway*

Note: The map shows the county divisions in Norway as of 1st January 1995.

EXECUTIVE SUMMARY

The two counties selected are diverse both in terms of their degree of "rurality", agricultural structures and policy approaches. The county of Sogn og Fjordane has a population density of 6 persons per square kilometre, almost half of the national average, while the population density of the county of Vestfold is 89 persons per square kilometre. The county of Sogn og Fjordane is considered as a remote rural area, whilst the county of Vestfold is regarded as an intermediate rural area. Agriculture is more important in Sogn og Fjordane in terms of income and employment, while the average size of farms is bigger in Vestfold. Milk and meat are the most important products in the county of Sogn og Fjordane, while grain production is the single most important product of Vestfold.

Norwegian agricultural policy has multiple objectives, which are often difficult to reconcile: equitable farm income, regional development, food security, environmental preservation and economic efficiency. Regional development is seen as vital to maintaining the geographical distribution of population, especially in the most remote regions; agricultural policy is the primary means of fulfilling this, particularly in less favoured regions which lack alternative employment opportunities to agriculture. The geographical distribution of agricultural production is regulated by means of various policies in an attempt to stimulate labour-intensive production in areas where alternative industries are scarce. In addition, over the last decade, increasing emphasis has been accorded to promote interactions and complementarities between agricultural policies and rural/regional development policies, including environmental aspects. This intersectoral approach aims to promote employment opportunities through diversification of economic activities in rural areas. The income goal aims, *inter alia*, to equate agricultural incomes across different regions and farm sizes irrespective of production structure. At the same time, policies seek to make the agricultural sector as efficient as possible. Keeping small scale production in rural areas and the desire to enhance the efficiency of agricultural production is a major challenge facing policy makers.

The study argues that although agricultural policies did not succeed in stopping the out-migration process from the peripheral areas, they have managed to slow down the depopulation tendency. The policy objective to channel labour-intensive production to areas with a weak economic base has, to a certain degree, resulted in the maintenance of employment and settlement. On the other hand, relatively higher subsidies per unit of production received by the small holdings in these areas, implies that economies of scale have not been fully exploited. Pure economic efficiency considerations would suggest that conventional agricultural activities should be concentrated in the flat areas of the country. The study acknowledges the importance of conducive favourable macroeconomic policies such as low interest rates in securing and creating employment.

Concerning the performance of horizontal policies, the Rural Development Support Scheme, it is argued that the scheme seems to be showing an emerging success in so far as jobs within conventional agriculture are decreasing, but alternative jobs linked to farming seem to be increasing. Regional evaluation reports indicate that training activities aiming to improve the competitiveness of women on the labour market have brought good results and led to relatively more new jobs for women. Particularly favourable results have been achieved by helping female entrepreneurs to establish profitable enterprises. Overall, job creation seems to come about more easily in central areas as compared to peripheral regions.

I. BACKGROUND

1.1. Natural characteristics and other conditions

Norway is the northernmost country in Europe, and agriculture is carried out further north than in any other country world-wide. 7-8 per cent of the holdings are located north of the arctic circle. In general, climatic conditions are harsh, with arctic and sub-arctic characteristics in major parts of the

country. In addition, land area suitable for agricultural production is relatively scarce compared with other OECD-countries, although Norway's mainland extends from 58'N to 71'N, a total distance of about 1 750 km, which is greater than the distance between Oslo and Rome.

Norway is the most sparsely populated country in Europe after Iceland, with a population of 4.3 million. The population density is 13 people per km^2, compared to the European Union (EU) average of 145 per km^2. Settlement is widespread, with modern communities and cities all over the country. The low population density makes the peripheral regions of the country very vulnerable. In many communities, a further decline would threaten their future as viable societies providing the necessary private and public services at acceptable costs.

With respect to agriculture the natural characteristics imply low productivity, small optimum farm scale and large distances between producers and markets. In addition to natural constraints, Norwegian agriculture is restricted by a rather high level of input costs. As an example, the indoor period is approximately 230 days a year in the south and up to 290 days a year in the north. Thus, livestock production requires isolated houses and good storage facilities for fodder. Due to these handicaps, Norway has an aggregate degree of self-sufficiency in agricultural products of about 50 per cent measured in terms of calorie consumption, and more than 75 per cent measured in terms of gross value.

Settlement in all regions is an important objective of regional policy. Also, in order to achieve a sustainable utilisation of land area and natural resources it is aimed 1) to maintain the basic nature of the settlement pattern, and 2) to maintain and develop social structures and services for the rural population, which will secure social and economic living standards consistent with those in the rest of the country. In this context, it has been important to provide farmers with income possibilities and welfare schemes in line with those available for other groups of society. It is recognised that the agricultural sector will be a main contributor in these efforts.

There are considerable variations between the conditions found in different parts of the country. In this report the focus is on the divergences between the two counties Vestfold and Sogn og Fjordane. Vestfold is located nearby Oslo in the south-east, Sogn og Fjordane in the western part of Norway. Vestfold would be classified as intermediate rural, Sogn og Fjordane as remote rural. The population density of Vestfold is 89 persons per km^2, that of Sogn og Fjordane 6 per km^2. The two areas also differ as to topography. The former is relatively flat, the latter mountainous and hilly with fjords dividing the land area.

Agricultural policy approaches in the two areas accordingly differ substantially. Grain production is concentrated in the south-eastern part of Norway (including Vestfold), while the main products of the remote rural areas are milk and meat. It has been an aim of agricultural policy to direct the most labour intensive production to areas that are heavily dependant on agriculture for employment and incomes. As a result, regions with a high share of agricultural employment and a low gross value added in agriculture, are likely to receive a higher amount of state subsidies, than the more prosperous (economically integrated) regions.

1.2. History

The supply situation during both World Wars drew attention to the concepts of food security and self-sufficiency. Important considerations in shaping Norwegian post-war agricultural policy were therefore increased production, self-sufficiency, and the availability of supplies for emergencies. This, among other circumstances, led to the escalation plan for agriculture, adopted by the Parliament in 1975. The main objective was to promote a certain level of production, especially of staple farm products. In addition, it was an objective to provide farmers with the same level of income as industrial workers. In order to utilise the country's resources in the best possible way and to stimulate scattered settlement, policies aimed at regional production, mainly by increasing cereal production in the south-east and more labour-intensive production of milk and meat in the less favoured areas.

With high financial support farmers were encouraged to increase production. In Norway, as in many other countries, this policy gradually led to surpluses. In addition, more and more money was needed to fulfil the objectives, which was inconsistent with tighter budget limitations.

In 1993, the Parliament adopted new guidelines for agricultural policy. The overall objective is to develop a more market oriented agriculture. More cost-efficient production has been promoted by structural improvements, and greater market orientation is stimulated by allowing demand and price signals to influence production. The overall support level has been reduced and more targeted measures have been introduced. The share of direct payments not linked to production is the highest within the OECD area. More emphasis has been given to attain sustainable development. Farmers' income is not regarded mainly as an objective in itself, but more as a basic and necessary condition for the fulfilment of the main objectives. Reduced costs and thereby reduced dependency on transfers from taxpayers and consumers, are viewed as important both from a national economic point of view, and with respect to Norway's commitments in the WTO-agreement. The regional aspect of agriculture is still given high priority and funds have been established to develop new farm-related economic activities.

1.3. Main policy objectives

Norwegian agricultural policy is in general aimed at keeping up a high level of agricultural activity in all parts of the country, recognising and emphasising the *multifunctional role* of agriculture and agricultural policy as a contributor to the overall objective to maximise welfare for present and future generations. In general, the policy is aiming at sustainable development from an environmental and resource management perspective, as well as a viable development from an economic point of view.

In short Norwegian agricultural policy has four main objectives:

a) *A rather extensive set of measures are related to agriculture as producer of environmental public goods, linked to the preservation of the agricultural landscape.* Given the scarcity of agricultural land in Norway, agriculture certainly provides variation and contrast to the natural landscape. This interaction generates and preserves different public goods, which may be labelled: cultural and historic values; aesthetic values linked to recreation and leisure activities, including tourism; biological and ecological values; diversity; values related to human health and welfare. An example of the importance of agriculture's externalities, is agriculture's role as provider of vital inputs to the important and steadily growing tourist industry in Norway. Both as contributor to the beauty of the Norwegian landscape, and as contributor to settlement and social vitality in all parts of the country, agriculture, probably, generates values far beyond what is accounted as the isolated economic result of food production.

b) *Norwegian agricultural policy recognises agriculture's importance with respect to rural development, employment and settlement.* A decentralised settlement structure is viewed as important from a general welfare perspective and from its positive effect on preserving national culture and identity, as well as preventing social problems connected with migration, depopulation and centralisation. In large parts of Norway, alternative employment opportunities to agriculture are scarce. Rural development therefore has to be based on or related to agriculture to a large extent. Both internal and external factors seem to contribute to a stable trend of diminishing the agricultural sector, measured for instance by the relative economic importance or the number of farms and farmers. The significant, but diminishing importance of agriculture implies that rural development policies in general have to be aimed at developing new industries, both as an alternative and as a supplement to agriculture.

c) *Long term food security*. Both nationally and globally, long term food security, meaning some degree of protection and preservation of scarce food production resources for future generations, is important. In Norway, the policy is both aimed at limiting irreversible deployment of agricultural land for the extension of urban areas, and to stimulate preservation and use of land in less favoured areas. Biodiversity is another important aspect of the food security issue. These objectives are closely linked to the environmental objectives. In addition, maintaining an acceptable stock of human capital, through continuous employment and development of human skills in the agricultural sector, has relevance to the food security perspective.

d) *Consumer welfare, in a broad sense, linked to sound production methods, animal- and plant health.* Consumer welfare concerns are growing rapidly in importance in Norway, as in other OECD countries. The

debate on the use of hormones, pesticides, etc. in food production are related issues. Another dimension is ethical concern related to animal welfare, genetic manipulation, etc. generated by modern production methods and possibilities. It should be obvious that the notion sustainable agriculture has to include consumer welfare concerns.

II. AGRICULTURAL POLICY

2.1. Policies for conventional agricultural production

To achieve the objectives of agricultural policy, an extensive and differentiated range of measures has been introduced. The instruments used to implement agricultural policies are legislation, administrative measures, information, and economic measures, mainly settled by means of the Agricultural Agreement. The economic measures comprise both general and regionally differentiated payments linked to production. These measures aim to maintain production in all parts of the country. In addition, direct support is given in accordance with number of animals held and land area in use. The new guidelines, however, set for the agriculture policy in 1993, also included a shift towards using more targeted measures. Support and income measurement systems are being simplified, and monitoring and assessment procedures improved.

2.1.1. The Agricultural Agreement

The main principles of agricultural policy are laid down by the Storting (the Norwegian national assembly). The form of a number of measures and the implementation of agricultural policy are negotiated annually between the Government and the two farmers' unions, the Norwegian Farmers' Union (Norges Bondelag) and the Union of Norwegian Farmers and Smallholders (Norsk Bonde- og Småbrukarlag). The Storting confirms the Agricultural Agreement. The Agricultural Agreement relates to product prices, direct support and agricultural policy programmes. Through the Agricultural Agreement the unions are made responsible for market regulation.

Regulation of the system of negotiations with the farmers' organisations is laid down in the Basic Agricultural Agreement (Hovedavtalen), which was drawn up in 1950 and revised in 1992. Pursuant to this agreement, the two unions may request negotiations with the Government on economic conditions for the agricultural sector and measures for regulating these.

The Basic Agricultural Agreement (Hovedavtalen) contains regulations for the negotiation procedure and for the drawing up of time-limited agreements (Agricultural Agreements) and specific measures. The Agricultural Agreements relate to a two-year period and are re-negotiated each year. Negotiations for time-limited agreements occur in the spring of each year, and the agreements apply to the period from 01.07 to 30.06 of the following year.

2.1.2. Prices and support

Prices agreed upon in the Agricultural Agreement are mainly target prices. Since 1982 the cost of market regulations are financed by fees paid by the producers. Various forms of direct support are given for different products via budget transfers. Deficiency payments are given for milk, beef and sheepmeat.

Measures promoting regional production divergence have been relatively high grain prices, as well as regional support to milk and meat production, also comprising support given on the basis of farm structure. The country is divided into regions for each individual product. Higher support levels for milk, meat and fruit production have been granted to farm holdings located in remote rural areas than to those located in economically integrated and intermediate rural areas. In addition, there is support granted to reduce feed prices. Regional support is also given independent of the volume of production. The most important support measures are support given on the basis of land area, number of animals held, and direct price support to milk production. The rates encompassed by these schemes are all

degressive with farm size, and have maximum limits. The land area support is also differentiated in relation to region.

Transport support is given for important agricultural products and for feeding stuffs mainly in order to even out the income potential and consumer prices in different areas of the country. The transport support schemes also aim to equalise producer prices and to stimulate the location of processing industries in districts with a weak economic base. These schemes are components of regional support programmes, environmental programmes and rural development programmes.

2.1.3. Legislative measures

Strong historical and cultural traditions are attached to owning a farm or land property in Norway. This is, *inter alia*, because of the Allodial Act (Odelsloven). The Act gives relatives preference with respect to farm property and priority to the eldest child in taking over the farm. One effect of the Act is that the structure of landed property in Norway is rather stable. Another effect is that many farms have been kept within the same family for centuries. The Norwegian constitution of 1814, which states that the Allodial Act cannot be abolished, underlines the importance of the Act in Norwegian agriculture.

Family holdings and the desire to develop units that are able to provide a sound economic basis for a family are important elements in the Agricultural Land Act (Jordloven) of 1955. A central element of the law is the prohibition on dividing up agricultural holdings.

Pursuant to the Concession Act (Konsesjonsloven), farmland cannot be purchased without a specific "concession". The purpose of this act is to protect agricultural land by regulating the sale of land. Before being granted as "concession" the purchaser must be assessed as suitable and must agree to live and work on the property for at least five years after taking over.

The Animal Husbandry Act of 1975 (Lov om ervervsmessig husdyrhold) is designed to regulate the structure of pig and poultry production and to promote measures to prevent pollution. The Act was passed in order to maintain these types of productions as additional enterprises on small and medium-sized holdings. A concession is necessary for operations in excess of the specified limits. More cost-efficient production has been promoted, first by allowing larger pig farms and a modest price reduction in grain and feeding stuff. Small-scale farming is predominant, although there is a development in the direction of slightly larger farms.

2.2. Rural development policies

The structural adjustment process within the agricultural sector has presented a number of major challenges. Firstly, farmers and their families must be prepared to adopt new farm activities to complement existing ones. Secondly, new jobs for persons attached to the agricultural sector must be created. Thus, SME-policies and local entrepreneurship is increasingly seen as a strategic matter of priority.

Continuous efforts have been made – and are being made – to reduce the migration from rural areas. An additional challenge is, that in many remote areas in our country, an unfavourable population structure is developing in the sense that population share of women and young people is decreasing. Therefore, the new policy approach aims to include the concerns of women and young people. The new cross-sectoral policy approach aims to promote local operations providing infrastructure for economic development. Rural development should not be seen as business development only. Social and cultural networks and the active involvement of local inhabitants are important factors that must be taken into account. Rural areas can only effectively compete through the energy and talents of their people. Measures to increase the business skills of the agricultural population, and training that promotes the development of new skills and attitudes as well as innovatory actions, are encouraged. Measures have also been taken to provide local advisers in the agricultural extension services with competence enabling them to coach the farm family in diversification matters, especially when it comes to encouraging, advising and supporting female entrepreneurs.

In 1993, the Government had the Rural Development Support Scheme (RDSS) established on a nation-wide basis, as a supplementary contribution to regional state aid. The RDSS is meant to be an

incentive to farm family members to increase their incomes by adding alternative activities to the traditional ones. The RDSS offers grants as well as loans. During the last years, allocations to traditional agriculture have been reduced in favour of financial support schemes to promote rural development. Allocations through the Agricultural Agreement to RDSS funding have grown year by year, and amount to NKr 520 million in 1997, which include NKr 400 million for diversification purposes, and 120 million for investments within conventional farming. RDSS funding makes up part of the total budgetary spending on agriculture agreed upon pursuant to decisions made in the annual negotiation round between the Government and the farmers' unions. The main target group of RDSS funding accordingly comprises persons attached to farm holdings. Joint ventures, engaging a number of sectors, are also eligible for support.

The main objective of the RDSS is to encourage profitable economic development within and linked to farming by encouraging the establishment of new small and micro-scale enterprises, as well as the further development of existing ones; and by making arrangements to release potential for economic development, *e.g.* encouraging local initiatives that provide infrastructure for economic development. Subordinate objectives of the RDSS are: to promote quality development and marketing measures of rural products and services; to promote innovation, entrepreneurship and research; to promote the development of human resources. For diversification purposes the main eligible activities are: operations encouraging the establishment of small enterprises, *e.g.* grants for training, product development, promotion activities and small scale investments given to entrepreneurs starting an enterprise; operations promoting the further development of existing small scale enterprises; investment measures; and other measures, *e.g.* training to develop new skills, attitudes and innovatory actions. In addition to support for diversification purposes, the RDSS includes, as mentioned earlier, support for investments within traditional farming.

Types of "new" products supported are *e.g.* value-added and processed agricultural and forest products, services and products within new information technology, crafts, rural tourism activities and services, local souvenirs, etc. These products are based on resources found in rural areas and relative competitive advantages specific to the Norwegian resource base. Funding is available for both female and male applicants, but women are given priority. Regulations drawn up for RDSS funding, ascertain that initiatives promoting jobs for women must be emphasised. Also, in a couple of cases, support intensity is higher for female than for male applicants, *e.g.* support given to operations promoting the further development of existing enterprises.

The overall responsible authority is the Ministry of Agriculture. Support administration has been delegated to county level to be executed by the Governmental county agricultural and forestry agencies in co-operation with other sectors influencing economic development. At local level authorities dealing with agriculture and regional development are encouraged to co-operate.[1] The scheme provides horizontal support measures with the same level of support intensity in all parts of the country, urban areas excluded, but priority is given to peripheral areas with a high share of agricultural employment. Thus, rural development policies, just like conventional agricultural policies, are complementarily directed towards achieving regional policy objectives.

2.3. Regional development policies

In Norway, the overall general regional development policy has been based on the fact that regional development purposes to a great extent are taken into account through the implementation of agricultural policies. Thus, regional development needs are being met by extensive measures taken within the framework of the agricultural policy. For that reason, in Norway, regional development policy may be divided into two parts. In the first part, there is an explicitly defined regional development policy which aims to create employment within the private sector in rural, peripheral parts of the country and in some areas of industrial decline. Within this policy there are measures such as state aid to enterprises, but also more indirect measures to develop business infrastructure. Financial support is allocated through the Norwegian Industrial and Regional Development Fund (NIRDF), which has a double function: to foster internationally competitive enterprises and to stimulate activity and employ-

ment in peripheral regions. In addition, within important sectors like transport, health, education, fisheries and agriculture, regional development aspects are given great importance in the policy making. Infrastructure as well as services are available in all parts of the country as a result of this awareness of regional development responsibility within the sectors.

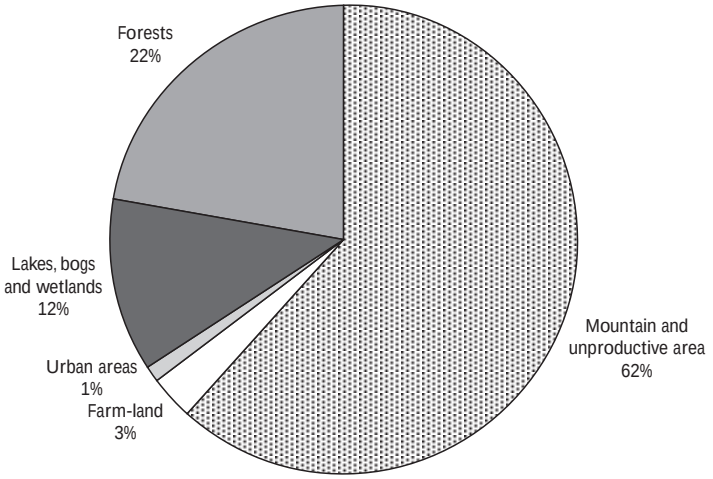
The second part, the regional aspects of policy within important sectors, is the most important of the two. In this target area of the NIRDF has been defined through statistical analysis based on a wide range of statistical data. It comprises the remote, peripheral areas with weak economies. Economically integrated areas receive little or no support. RDSS funding is available in all parts of rural Norway, but there is a pronounced concentration of support within the target area of the NIRDF. In 1996, 64 per cent of total RDSS funding was received by municipalities situated within the target area eligible for the NIRDF. In this way, peripheral areas with weak economies are favoured both by the NIRDF and the RDSS.

III. OVERVIEW OF NORWEGIAN AGRICULTURE – SOGN OG FJORDANE AND VESTFOLD

3.1. Agricultural land

The sparse but outspread settlement structure to a large extent reflects the historical access to scarce food resources. Norway is in general rich in natural resources, but not in agricultural land. The total agricultural area is approximately one million hectares, which is less than three per cent of the total land area (Graph 1). Per inhabitant, Norway has 0.2 hectares of agricultural land area, less than half the average within the EU. Yield levels are far below the European average. Five per cent of arable land is used for crop production for human consumption. More than half of the land is used for production of grass forage and an additional third for feed grains. From a national point of view, it has been important to secure existing farm-land and maintain a certain level of activity throughout the whole country.

◆ Graph 1. ***Land use in Norway, 1995***



Source: The Budget Committee for Agriculture, Norway.

Table 1. **Land area, 1995**

100 hectares

	Norway	Vestfold	Sogn og Fjordane
Field and garden	4 305.6	394.7	18.8
Meadow, grazing land and pasture	5 948.8	50.9	449.6
Total agricultural land	10 254.4	445.6	468.4

Source: The Budget Committee for Agriculture.

Grass is the single most important crop, covers more than 58 per cent of the agricultural land and is largely grown in less favoured areas. About 35 per cent of the total cultivated land area is used for grain production. In northern and western Norway and in the valleys of eastern Norway grass based livestock production is completely dominant, because of natural conditions, *i.e.* cold climate and short growing seasons.

Total registered agricultural land area in use has increased from 957 760 hectares in 1985, to 994 000 hectares in 1990 and 1 025 440 hectares in 1995 (Table 1). In Sogn og Fjordane land area in use has increased by 10 per cent for the period of 1985 to 1995, while agricultural land area in use in Vestfold has been stable in the same period.

3.2. Agricultural production

Agricultural production is limited by the length of the growing season, which is about 190 days in the southern parts and only 100 days in Northern Norway. Climatic conditions have a strong influence on yields and increase the risks associated with crop production. About three quarters of income in the agricultural sector derives from livestock production and one quarter from crop production. Milk and meat production are the cornerstones of Norwegian farming. Milk is the single most important product, accounting for more than 35 per cent of farm income. Meat accounts for about 30 per cent, grain 15 per cent and horticulture 10 per cent.

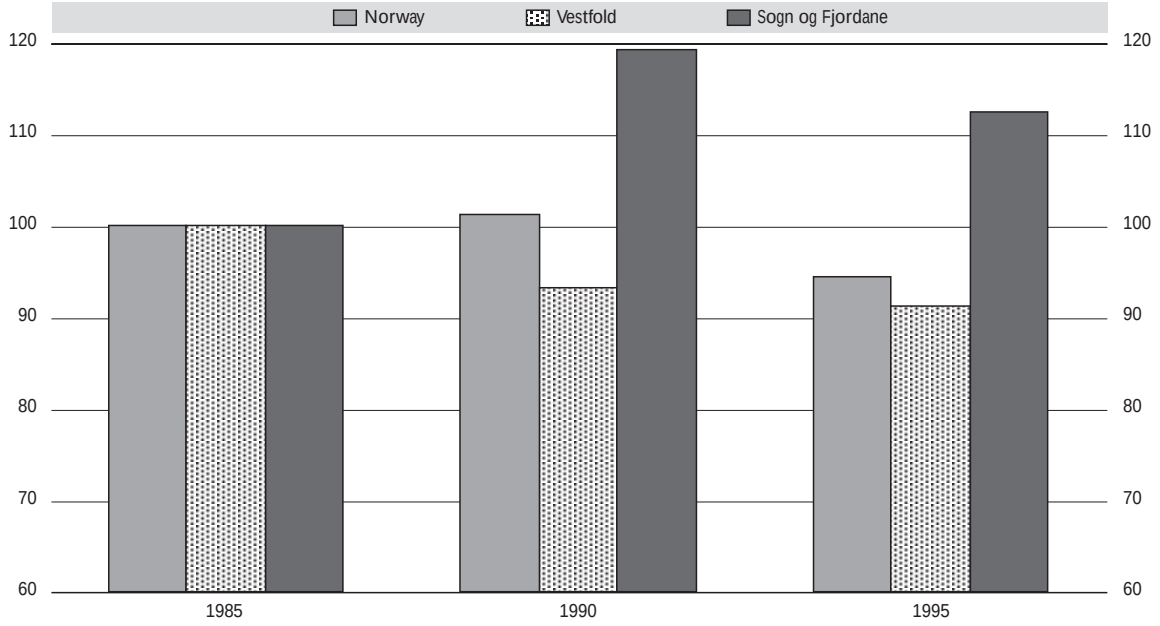
In northern and western Norway and in the valleys of eastern Norway, grass based livestock production is dominant. The main products are milk, bovine meat and sheepmeat. Cereal production takes place in the relatively flat regions of East-Norway, and some cereal is also grown in South- and Mid-Norway. Most commercial production of vegetables, fruit and berries takes place in the southern and south-western parts of the country. Table 2 shows total production in Norway and the share of the production in Vestfold and Sogn og Fjordane. Graphs 2 to 4 show the relative changes in productions from 1985 to 1995 for the whole of Norway and for Vestfold and Sogn og Fjordane. Milk production has

Table 2. **Agricultural production by product in Vestfold and Sogn og Fjordane, 1995 (%)**

	Norway[1]	Vestfold	Sogn og Fjordane
Grain	1 218	11.4	0.0
Milk	1 712	1.1	7.2
Beefmeat	83 992	1.2	6.6
Sheepmeat	24 767	0,3	10.5
Poultrymeat	29 100	6.3	0.4
Pigmeat	94 994	7.3	1.5

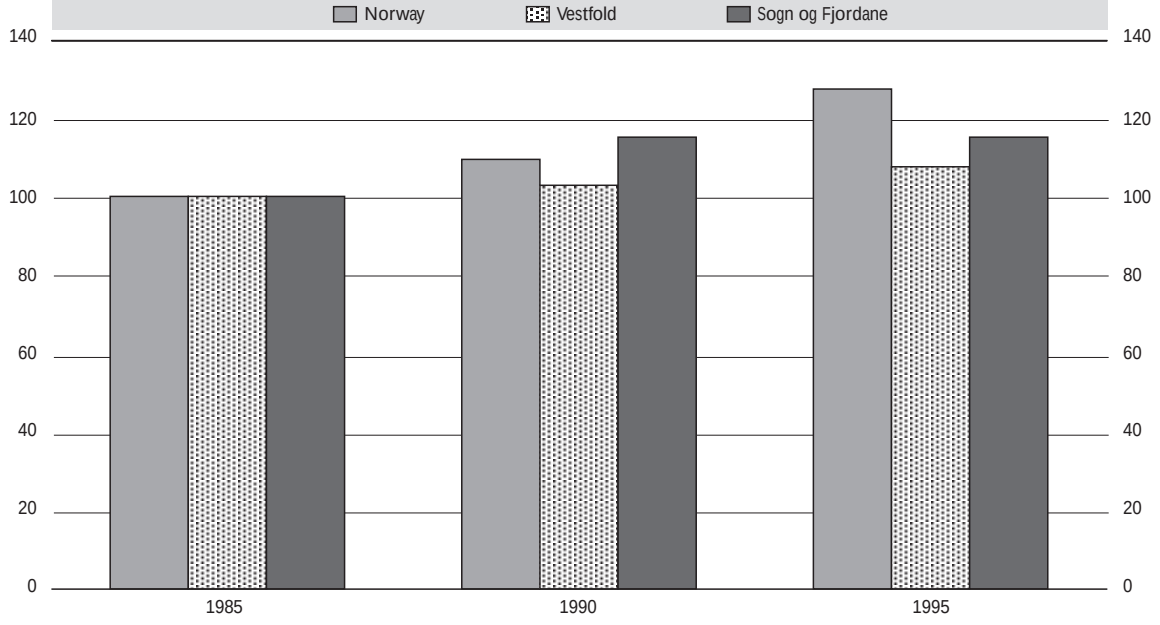
1. Grain in 1 000 tonne, milk in mill. litre, beef, sheep, poultry and pigmeat in tonne.
Source: The Budget Committee for Agriculture.

◆ Graph 2. ***Relative development of milk production, 1985-95***
Volume, 1985 = 100



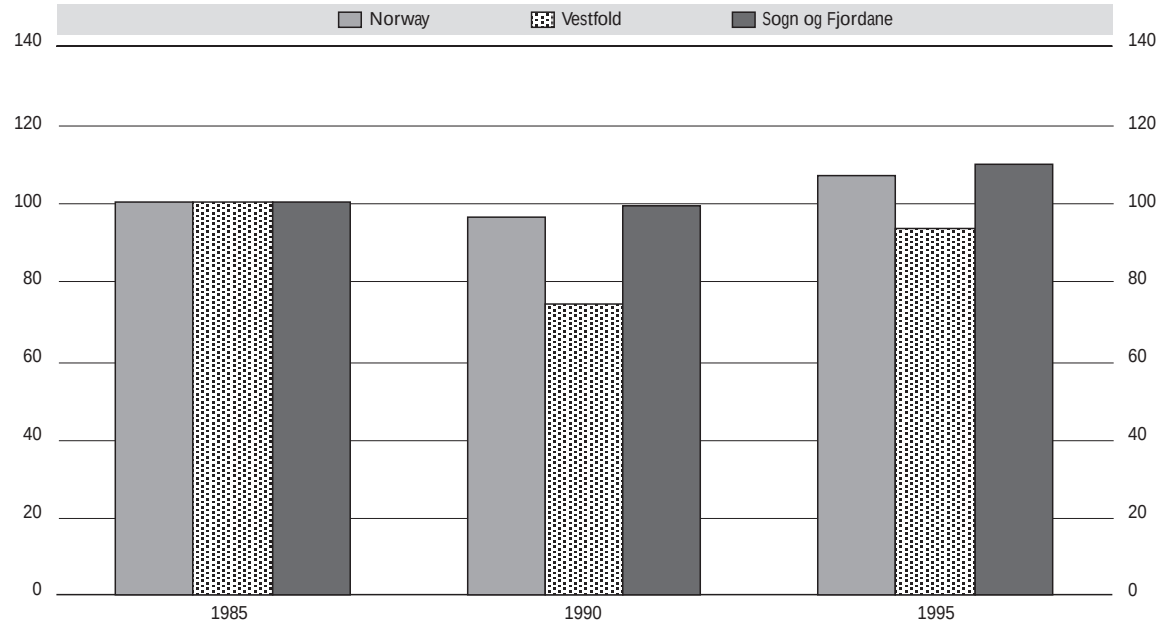
Source: The Budget Committee for Agriculture, Norway.

◆ Graph 3. ***Relative development of beefmeat production, 1985-95***
Volume, 1985 = 100



Source: The Budget Committee for Agriculture, Norway.

◆ Graph 4. ***Relative development of sheepmeat production, 1985-95***
Volume, 1985 = 100



Source: The Budget Committee for Agriculture, Norway.

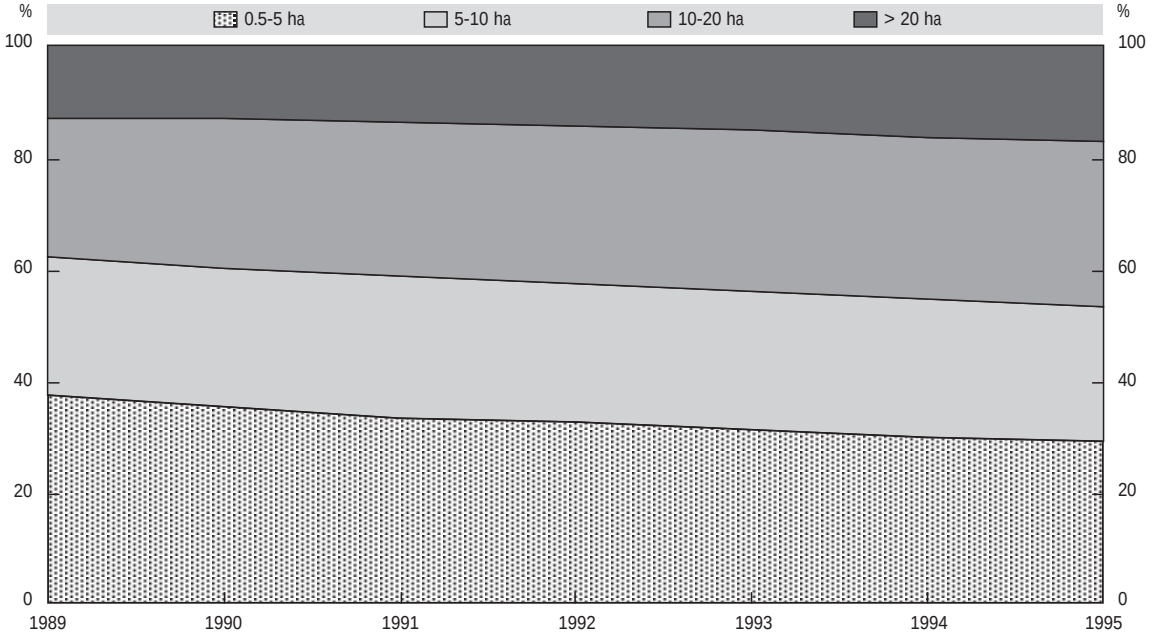
increased in Sogn og Fjordane, while it has fallen both in Vestfold and in the country as a whole. Beefmeat production has increased both in Vestfold and Sogn og Fjordane, but relatively more in Sogn og Fjordane than in Vestfold. Sheepmeat production has increased in Sogn og Fjordane and decreased in Vestfold, pig meat production shows the opposite development; increasing in Vestfold and decreasing in Sogn og Fjordane.

3.3. Farm structures and agricultural employment

As pointed out earlier, strong historical and cultural traditions, as well as legislative measures have had a great influence on farm structure and the appearance of the agricultural landscape. Since ancient times, it has been common to combine agriculture with other industries like fishery or forestry. Agricultural production has been carried out on an all-round basis, which also is the most common way today. Development of large holdings has been restricted by means of a set of structurally differentiated economic measures, investment grants and statutory measures. Part of the aim of the current economic measures is to promote a more even distribution of income between larger and smaller units and between production areas and regions. Many of the economic measures introduced in connection with the Agricultural Agreement (see below) therefore have a structural profile.

The size of the stocks are small compared to other countries. Because of mountains, lakes and forests the farmland is divided into scattered and relatively small plots, some of which are very hilly. Only limited areas have fairly wide stretches of flat land. The average farm size is about 10 hectares of cultivated land. The average size of forest properties is 56 hectares. 87 per cent of the farms have less than 20 hectares of cultivated land. The average field size is 1.5 hectares. In milk production, there are, on average, 12 cows per holding. In 1985 the corresponding number was 11 cows per holding. The average land area in grain production is 11.6 hectares per farm. Graph 5 indicates that small-scale

◆ Graph 5. ***Farm holdings by size of agricultural land area in use***



Source: The Budget Committee for Agriculture, Norway.

Table 3. **Holdings by size of cultivated land Vestfold and Sogn og Fjordane (ha), 1995**

		0.5-2 hectares	2-5 hectares	5-10 hectares	10-20 hectares	< 20 hectares	Total
Norway	Number	7 068	17 167	20 204	24 653	14 536	83 628
	%	8	21	24	30	17	100
Vestfold	Number	86	373	685	1 032	753	2 929
	%	3	13	23	35	26	100
Sogn og Fjordane	Number	547	1 676	2 261	1 667	164	6 314
	%	9	27	36	26	3	100

Source: The Budget Committee for Agriculture.

farming in Norway is dominant, with only a slow increase in average farm sizes. The average farm in Vestfold is bigger than that of Sogn og Fjordane (Table 3). More than 60 per cent of the holdings in Vestfold are greater than 10 hectares, in Sogn og Fjordane less than 30 per cent of the holdings are greater than 10 hectares.

Agriculture forms the main basis for economic activity and hence for settlement in many areas. Over the last decade, there has been a decline in the numbers of people engaged in agriculture (Table 4). About 3 per cent of Norwegian farmers leave business each year. Nevertheless, a high level of activity in agriculture, processing industry and associated activities remain an essential basis for development in many regions. In one out of four municipalities, agriculture directly and indirectly represents more than half of the employment. Agriculture is of greater importance for the employment and settlement in Sogn og Fjordane than in Vestfold. In 1995 Vestfold had 203 240 inhabitants and 2 929 farms (1.4 per cent), Sogn og Fjordane had 107 609 inhabitants and 6 314 farms (5.9 per cent).

3.4. Agricultural income and costs

In Norway, it has been an economic policy objective in general that the income distribution throughout the society should be rather even, both between regions, and between socio-economic categories. Previously, after the escalation plan in 1975, income considerations were more the driving force of policy formation than they are to day. The need for a more flexible income goal as a precondition for reform towards increased market orientation, to some extent has shifted the policy focus from farmers' incomes to agriculture's ability to perform its role as multifunctional provider of public goods. This policy has been carried out by means of a number of different measures, and with the help of a support system that aims to promote equal income opportunities throughout the country, in spite of varying production conditions. According to the OECD, about 71 per cent of gross income in Norwegian agricultural production, except horticulture, came as a result of import restrictions and governmental budget transfers in 1996 (OECD, 1997, *Agricultural Policies, Markets and Trade in OECD Countries: Monitoring and Evaluation*).

Income from agriculture, forestry and fisheries makes up a greater proportion of total income in Sogn og Fjordane (30 per cent) than in Vestfold (20 per cent), and consequently matters more to the former than the latter farmers. Graph 6 below displays the share of budget support and market income for different sizes of farms, productions, and locations. The figures for each "farm" is compiled by means of accounts made on a number of farms. Budget support accounts for a greater proportion of total income in sheep and milk production than in grain production. Budget support also accounts for more of the total income of small holdings than bigger holdings. The production-linked direct support has been reduced in recent years (Graph 7). This applies both to the products receiving such support, the area of the country affected by the schemes and the total amounts paid out.

Agricultural policy measures have also provided for the establishment of welfare facilities for farmers. One of the most important measures is the Vacation and Temporary Substitute Scheme, which provides farmers with possibilities for holidays and leisure time equivalent to those enjoyed by other occupational groups in society. In addition there is a Sickness Benefits Scheme and partial financing of national insurance contributions.

Since 1990, costs have fallen by more than 10 per cent (Graph 8). Reduced feed costs and interest costs account for most of the reduction. Still costs are higher in Norway than in most other countries. In Norway there are 8.5 hectares of land area per tractor. In Denmark and Sweden there are 17 hectares per tractor.

Table 4. **Number of man-labour years in agriculture, Norway, Vestfold and Sogn og Fjordane, 1980-95**

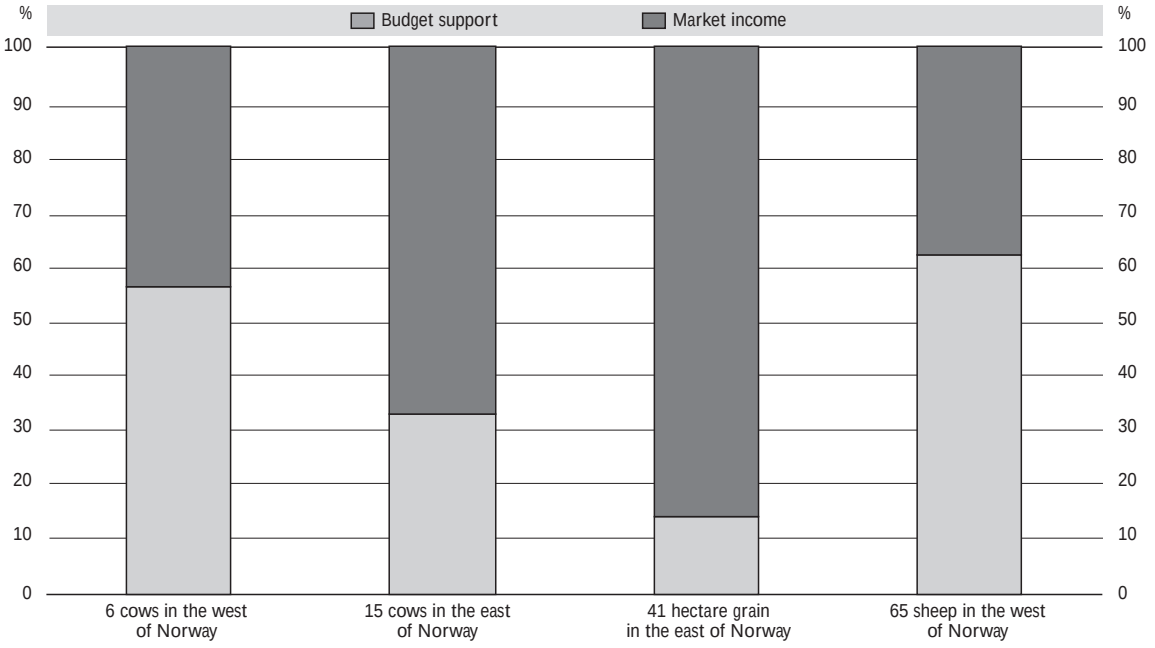
	1980	1986	1990	1995
Norway	124 700	1 100 100	98 500	91 600
Vestfold	3 780	3 090	2 840	2 540
Sogn og Fjordane	10 450	8 930	8 890	8 210

Source: The Budget Committee for Agriculture.

3.5. Rural development

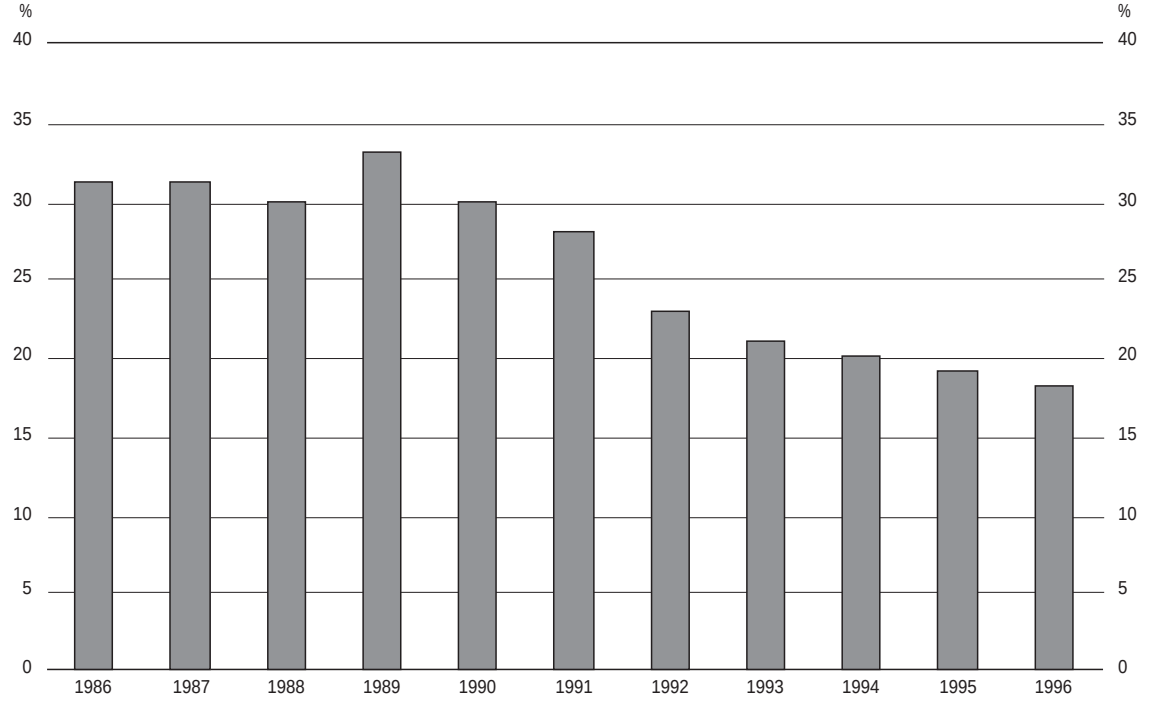
In general, small and medium sized enterprises (SMEs) are of significant importance to the Norwegian economy. As in many other countries, large company employment has been decreasing. In 1997, 0.5 per cent of all Norwegian business firms can be classified as being large, 3.5 per cent as being medium sized, and 96 per cent as being small or very small, that is, having less than 20 man-years. To

◆ Graph 6. ***Budget and market income for different types of farms in different regions, 1995***



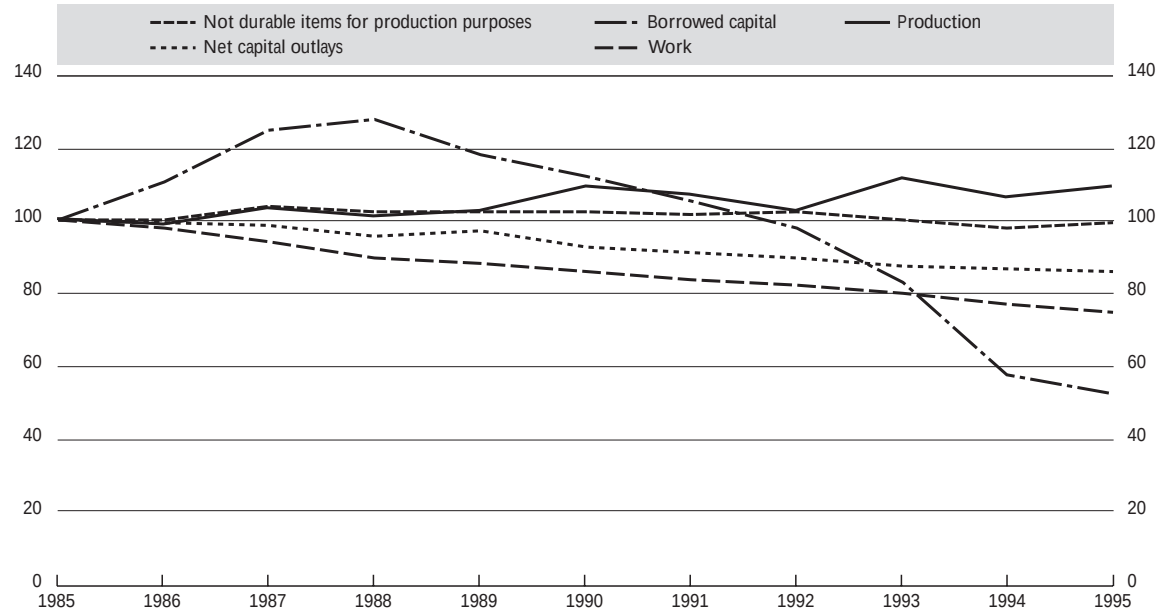
Source: The Budget Committee for Agriculture, Norway.

◆ Graph 7. ***Share of production-linked direct support of total budget support, 1986-96***



Source: The Budget Committee for Agriculture, Norway.

◆ Graph 8. ***Relative production and input in agriculture in Norway, 1985-95***
Volume, 1985 = 100



Source: The Budget Committee for Agriculture, Norway.

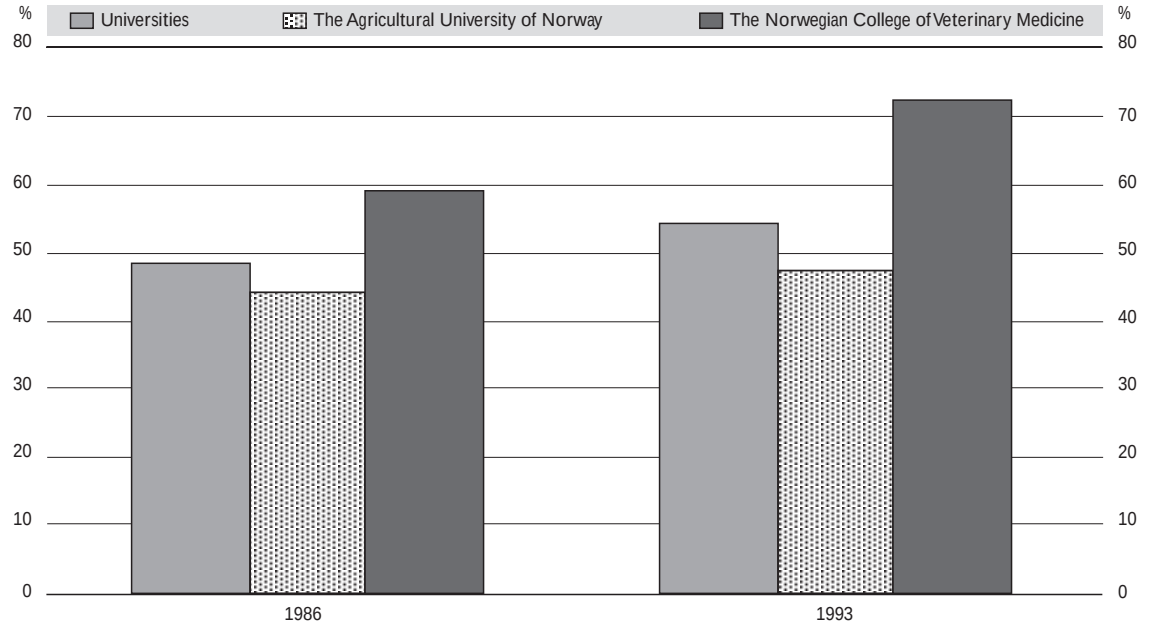
secure employment for rural populations in a restructuring process, the many new small start-ups linked to the agricultural sector are of great importance.

Reports on the impacts of RDSS funding in 1995 and in 1996, show an anticipated total increase of 1 000 man years for each of the two years. Anticipated number of man years is based on RDSS support granted, which is directed at certain eligible activities, that is 1) operations encouraging the establishment of small enterprises, 2) operations promoting the further development of existing small scale enterprises and 3) investment measures for diversification purposes. Support for the three listed activities makes up 40 per cent of total RDSS funding. It should be kept in mind that one man-labour year may imply several part time jobs. Many of the initiated projects are small and involve from 0.3 man-labour years and upwards, but to many farm holdings half a man-labour year, or even less, makes a difference as it enables the farm family to remain on the land engaged in agriculture.

For the county of Vestfold the total anticipated increase of man-labour years in 1996 was approximately 50. For the county of Sogn og Fjordane approximately 40. The county of Sogn og Fjordane is located in the target area of the NIRDF and has an employment rate of 17.8 per cent (1989) within agriculture. Thus, being located in the far western region of Norway, and having a high share of agricultural employment, Sogn og Fjordane was allocated an amount of NKr 34 million for RDSS funding in 1997, including 25 million for diversification purposes. Vestfold, being located outside the target area of the NIRDF, and having an employment rate of 3.7 per cent within agriculture (1989), was allocated an amount of NKr 15.2 million for RDSS funding in 1997, including 12 million for diversification purposes. These facts, as well as previous reports, seem to indicate that it takes more state subsidies to create one new job linked to agriculture in the remote rural areas as compared to the intermediate rural areas.

Annex Graph 1 shows net migration in the years 1986-90 and 1991-95, by county. A continuous outmigration process has been going on in the four northernmost counties as well as in Møre og Romsdal and Sogn og Fjordane throughout both periods. In both these areas, degree of outmigration is, however, lower in between 1991-95 than in between 1986-90. Another migration aspect is that more

◆ Graph 9. ***Female students in universities and colleges, 1986-93***



Source: The Budget Committee for Agriculture, Norway.

women than men leave peripheral areas. The population share of women, especially young women, in remote rural areas is decreasing. The population of such regions is declining and at the same time losing its demographic potential, in the sense that very few babies are born.

Research findings[2] show that, in rural areas, approximately 30 per cent of each generation's population is lost. This has been a fact for two generations. 58 per cent of the total population living in rural areas leave their home municipality. Simultaneously, a total number corresponding to 29 per cent of the same municipality's total population migrate into the same community. This leaves us with a net total loss of 29 per cent. Research findings also show that 65 per cent of all young women that grew up in the countryside, have migrated out of their home municipality by the age of 35. In some peripheral areas highly dependant upon agriculture for employment, the outmigration of young women has been so great that the present population mainly consists of single male farmers. One of the reasons for the female depopulation trend in remote regions today seems to be that suitable jobs for persons educated at college or university level are scarce.

In Norway, women are in the majority among students in institutions of higher education (Graph 9). Having finished their studies, it is hard for most of them to find a job in their rural home community. Therefore, many choose to settle down where there is a wide variety of job options, that is, in the urban centres. Also, rural areas do not offer the same variety of spare time activities, and are regarded as less attractive to live in. Total anticipated RDSS increase of man-labour years for women country wide amounted to 510 in 1995 and approximately 530 in 1996. The corresponding figures for Sogn og Fjordane were approximately 20 (1996). For Vestfold approximately 30.

IV. ASSESSMENT OF POLICY EFFICIENCY

4.1. Background for preliminary assessment

Norway is in line with its agricultural policy reform, gradually reducing support to conventional agricultural activities. At the same time, overall national policy objectives aim to maintain agricultural

activities in all parts of the country to secure a decentralised settlement structure and comparable living standard for all population groups in urban as well as in rural areas. The two main considerations are not easily reconciled.

In the search for the right policy path, agricultural policies are being reviewed with a view to combining them with new cross-sectoral rural development policies. At the same time, the pressure on public authorities to better appraise, monitor and evaluate the cost effectiveness of policies and support measures in achieving the aforementioned objectives, is growing. Parliament recently adopted new guidelines for promoting economic efficiency in public support spending, and comprehensive measures are being taken to introduce new monitoring and evaluation procedures. The new instructions comprise both the agricultural, rural and regional development sectors. State aid measures are to be analysed in respect of effectiveness. More exact knowledge about the impact of state support will enable more targeted policies and support measures to be adopted in the future.

Every year the Budget Committee for Agriculture, engaged by the Norwegian National Assembly, monitors and assesses the impact of policy measures and schemes. In the annual Proposition to the Storting on the Agricultural Agreement an appraisal of progress within the primary sector and the food processing industry is presented. This monitoring process lays the basis for amendments and changes to be undertaken in support policies. The achievements of specific policies are assessed in terms of their intended objectives. Policy amendments are made mainly in connection with the annual agricultural agreements. During 1997, an overall impartial evaluation of the impacts of RDSS-funding will be undertaken. Until now, only county based assessments of funding effects have been carried out in some counties.

4.2. Policy effectiveness

In addition to the main objectives listed in Section 1.3, which can be summarised as relating to the environment, to rural development, to long term food security and to consumer welfare, Norwegian agricultural policy must be efficient in the sense of encouraging viable, competitive development and the chosen policies should be cost effective. In addition, it should contribute to the achievement of the general objective of Norwegian economic policy to secure fair and even income distribution, both in regional and in socio-economic terms.

Pure economic efficiency considerations would suggest that conventional agricultural activities should be concentrated in the flat areas of Norway, that is, in the central parts of eastern Norway, in the middle part of Norway, Trøndelag, as well as in the south-west, Rogaland. However, if this occurred there would be a significant decline in traditional agricultural activities in the remaining regions, and an acceleration of outmigration from these regions. Since evaluation of the RDSS undertaken in a few counties seems to indicate that it is more costly to generate diversified economic activity in the remote rural areas than in intermediate rural and economically integrated areas, it is likely that there is a trade off between cost effectiveness and the strongly held desire to encourage and retain settlement in the more remote areas.

4.3. Success in achieving overall national objectives

As pointed out earlier, the demographic, economic and social trends causing urbanisation and population concentration in the south of the country have prevailed and the range of policies employed to counter these trends have not succeeded in stopping the outmigration process from the peripheral areas. Nonetheless, Norway has a prospering population in all parts of the country, suggesting that policies may have managed to slow down the trend towards depopulation.

The data compiled by Statistics Norway for 1996, however, indicate that after a few years of stable population in most parts of the country, the tendency is once again for people to leave the four northernmost counties, while the population of the south-eastern area around the Oslo Fjord is increasing (Annex Graph 2 and Annex Graph 3). Simultaneously, data show that, for each county, the trend is for people to move from the remote areas into towns. Exact figures from the analysis of 1996 are not yet

available. Research findings[3] also show that outmigration from peripheral areas is cyclical. There are periods when outmigration slows down because for example of high unemployment. The increasing outmigration in 1996 can be explained by an increase in job availabilities in urban areas. These vacant jobs, among other things, contribute to releasing the accumulated outmigration potential. Annex Graph 4 and 5 register proportion of workforce unemployed or engaged in Governmental measures to promote employment, by centrality and by county.[4] According to these tables there are no very large disparities in unemployment in rural areas as compared to urban areas. But problems of unemployment tend to be greater in peripheral areas, especially in Northern Norway.

Annex Graph 6 shows the proportion of persons with college or university degrees, including licentiate and doctors' degrees, by centrality. As it can be judged from the table, there is a substantial increase in numbers of persons with a high level of education in both peripheral and central regions in 1994 as compared to 1985. The increase is evenly distributed in urban and rural areas. Overall level of education, however, has been – and is still – lagging behind in peripheral areas. These tendencies are confirmed when the data are presented by county, as in Annex Graph 7.

Generally speaking, the tables illustrating degree of unemployment and level of education, confirm that there is a large degree of equality with respect to these parameters in all parts of Norway. There are, however, some differences. Level of education is growing all over the country, but peripheral areas continue to lag a little behind. Also, the rate of unemployment is higher in the peripheral areas (Annex Table 1). Nonetheless, the fact that living standards of people in peripheral areas are comparable to those in more integrated areas, is likely to be partly attributable to agricultural, rural and regional policies although the fact that economic policy has in general created the macroeconomic conditions conducive to growth and development has also undoubtedly been important.

4.4. Agricultural policies

Implementation of agricultural reform is an ongoing process. Some measures were put in place only a few years ago. It is therefore too early to assess the full effects. Regional differentiation has been carried on and strengthened by agricultural policy reform. Prices have been reduced since 1993, especially on grain, leading to reduced feed costs for livestock production. Total transfers associated with agricultural support policies have been reduced by more than 6 per cent since 1992. In the same period, farmers' costs have fallen by approximately 10 per cent. This has reduced farmers' dependency on transfers from taxpayers and consumers.

In the economically integrated and intermediate rural areas, off-farm jobs have been more available. The same areas are relatively more competitive for growing grain. In central regions like Vestfold, the labour market situation has made it easier for farm family members to have off-farm jobs. Grain production is more easily combined with off-farm employment than for example, milk production. Accordingly, farm structure development has resulted in bigger and fewer farms in central regions as compared to remote regions.

The geographical distribution of production has been affected, for most of the post-war period, by the agricultural measures applied. The purpose of this policy has been to channel labour-intensive production to the areas where alternative industries are scarce. In most of these areas, grass-based livestock production is the only agricultural production. Milk and meat are the most important products in the county of Sogn og Fjordane, while grain is the single most important product of Vestfold. Livestock production is higher in Sogn og Fjordane than in Vestfold, and Sogn og Fjordane has maintained or increased its share of livestock production during the past decade. Despite a decreasing number of farms in both counties, agriculture has been of great importance for the maintenance of settlement and employment in areas with a weak economic base. Number of farms and rate of agricultural employment have been, and still are, higher in Sogn og Fjordane than in Vestfold, although the relative decrease has been higher in Sogn og Fjordane than in Vestfold.

As indicated above, the policy to channel labour-intensive production to areas with a weak economic base, has resulted in the maintenance of employment and settlement to a certain degree. On the other hand, the higher subsidies per unit of production received by the small holdings, in addition

to limited options for expansion due partly to laws governing land purchase and use may imply that cost reductions linked to economies of scale have not been achieved. Similarly, policies to ensure equal prices throughout the country irrespective of distance from markets have contributed to the maintenance of production in the more remote areas, but at significant cost.

Production-linked direct support has been reduced in recent years. This applies to the products receiving such support, the area affected by the schemes and the total amounts paid out. Many of the new measures being put in place aim to increase or maintain the environmental public goods related to agriculture. Efforts have been made to de-link such payments from production but difficulties have been experienced in achieving a significant degree of decoupling, as highly valued positive externalities are in generally closely linked to agricultural production (joint production).

Due to the geographical limitations on agricultural production and the relatively low availability of arable land per person, long-term food security has been seen as an important aspect of agricultural policy in Norway. Support linked to arable land area has increased since 1990, and land area used for agricultural production has increased in the same period. Grain production has decreased, while less intensive grass production has increased. Agricultural production in peripheral areas has been stimulated, which has contributed to decreasing the trend towards depopulation. The immobility of agriculture has in the Norwegian case turned out to be important in securing the settlement pattern.

The level of milk production has been a political issue and quotas have limited production since 1983 as a single milk producer may produce only up to a certain quantity. Until 1997, these quotas have not been tradable. The quota system, regulating the extension and establishment of milk production enterprises, has served to maintain the structure and geographical distribution of production. In general, there is no opportunity to establish new dairy farms and there have been very few possibilities to expand milk holdings. The number of cows on average has been around 11-12 for more than 10 years. There has been little flexibility in the quota system and milk production capacity has not been fully utilised. Limited options for increasing milk production, may imply that potential cost reductions linked to economies of scale have not been realised, and new technology has not been fully exploited. As of 1997, trade in dairy quotas is permitted within regions, but at prices set by the authorities. The aim is to give the producers, an opportunity to fully utilise their capacity and increase their incomes. To maintain the regional distribution of milk production, the buying and selling of milk quotas is only allowed within targeted regions. The price-equalising system is simplified, administration is transferred to an independent organisation, and dairies may be established on the same terms as the existing dairy co-operatives.

4.5. Success/failure of the RDSS

The RDSS was established in 1993. Until now it has been too early to initiate more comprehensive appraisal of the impact of the scheme. An overall evaluation of the scheme is, however, being undertaken during the year of 1977. At present, all evidence available concerning the success of the scheme are some county-based evaluations, that suggest the following tendencies: Jobs within conventional agriculture are decreasing, but alternative jobs linked to farming seem to be increasing. Diversification policies are beginning to show some success. County based evaluation findings, based on actual RDSS funding results, show that the anticipated increases in labour years for both sexes, and for women especially, are being achieved. Modest start-ups show a gradual, but consistent increase as regards employment, turnover and outcome. Project outcome corresponds to start-up expectations.

Regional evaluation reports indicate that training activities aiming to improve the competitiveness of women on the labour market have brought good results and led to relatively more new jobs for women. Particularly favourable results have been achieved by helping female entrepreneurs to establish profitable enterprises. In this field, women received 56 per cent of all enterprise start-up grants in 1996. The amounts received by women were small, and the results clearly show, that female entrepreneurs succeed in creating new jobs with modest help. Nonetheless, both in general and specifically with respect to women, it seems to be easier to create jobs in central areas compared to peripheral areas,

where markets for new products and services are more easily built up and a wider range of potential niche production lines can be developed.

The county based reports show that women entrepreneurs have created new jobs within business lines that are to a large degree complementary to existing male-dominated business lines. This observation is important in a policy context, because more new jobs can be created in rural areas if we succeed in exploiting a broader range of rural resources. The situation to-day is often that the rural resource base represented by culture and heritage has been very poorly exploited. Rural women entrepreneurs have started niche enterprises within this field, and have thus succeeded in strengthening the diversification of the rural communities' considerable and often under used recourses.

Agricultural and regional policies in Norway have not succeeded in stopping or reversing the outflow of labour from agriculture or from rural areas in general but they have contributed to slowing it down and to ensuring a reasonable standard of living for those remaining in rural, especially remote areas. On the other hand, agricultural policies may have contributed to a certain rigidity in agricultural structures and high costs. Nonetheless, agriculture is considered to be of great importance in Norway in terms of its contribution to the environment and to long term food security in a country which is relatively resource poor in agricultural terms. But, the decline in the agricultural labour force continues and rural development policy is concentrating on the creation of diversified economic activities for rural people with particular emphasis on rural women and young people. Great attention needs to be paid to the need to fulfil the objectives of agricultural and rural policy in ways that they generate potentially viable economic activities in a cost effective manner. In addition, it is clear that for settlement and rural development goals to be achieved, a broad-based, coherent approach to policy is required that does not depend entirely on agriculture.

NOTES

1. The Norwegian administrative structure consists of three levels: the central Government level, the county level and the municipality level. There are 19 countries and 439 municipalities in the country.

2. Kjetil Sørlie, researcher, Statistics Norway and Institute for Urban- and Regional research.

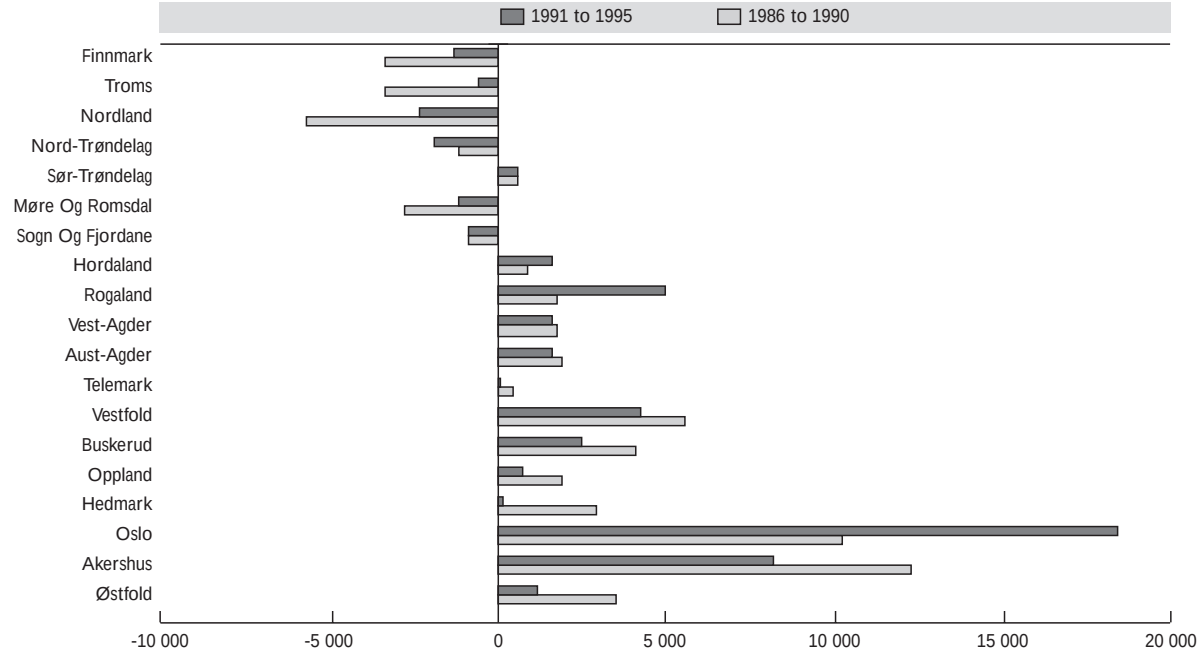
3. *Ibid.*

4. Persons registered as unemployed or engaged in Governmental measures are persons that are *de facto* redundant. They are being educated to fill vacancies, or they are being engaged in jobs established by the Government on purpose to reduce unemployment.

Annex

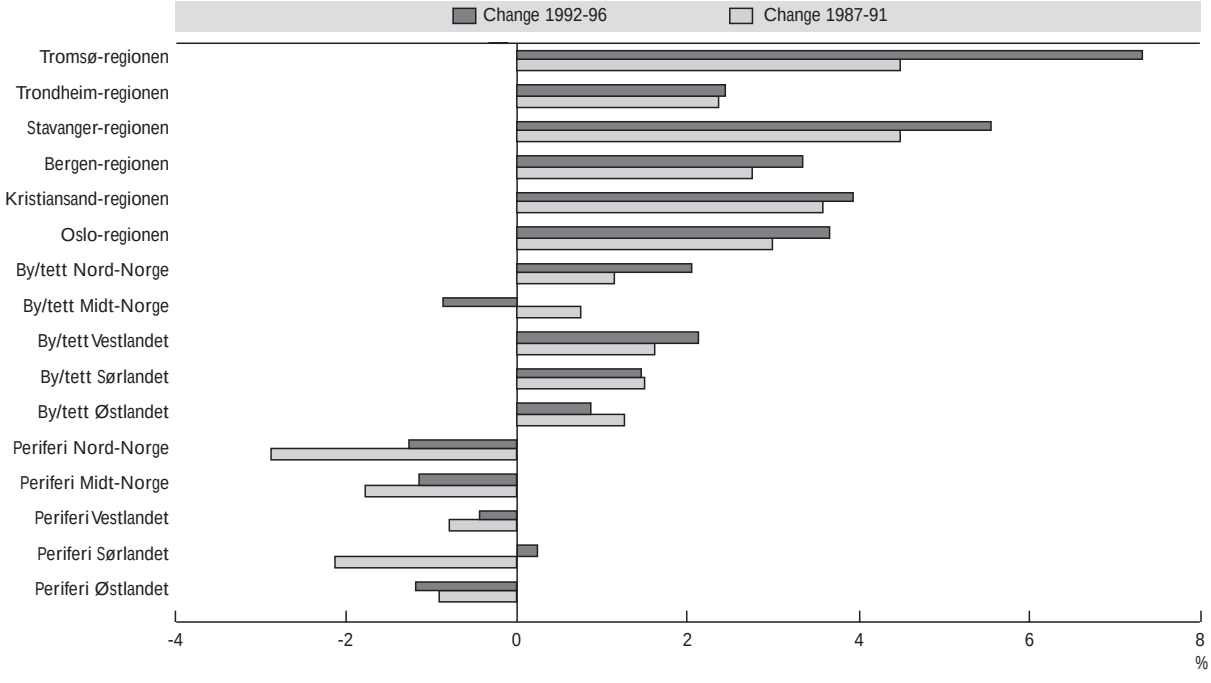
GRAPHS AND TABLE

◆ Annex Graph 1. ***Net migration by county, 1986-95***



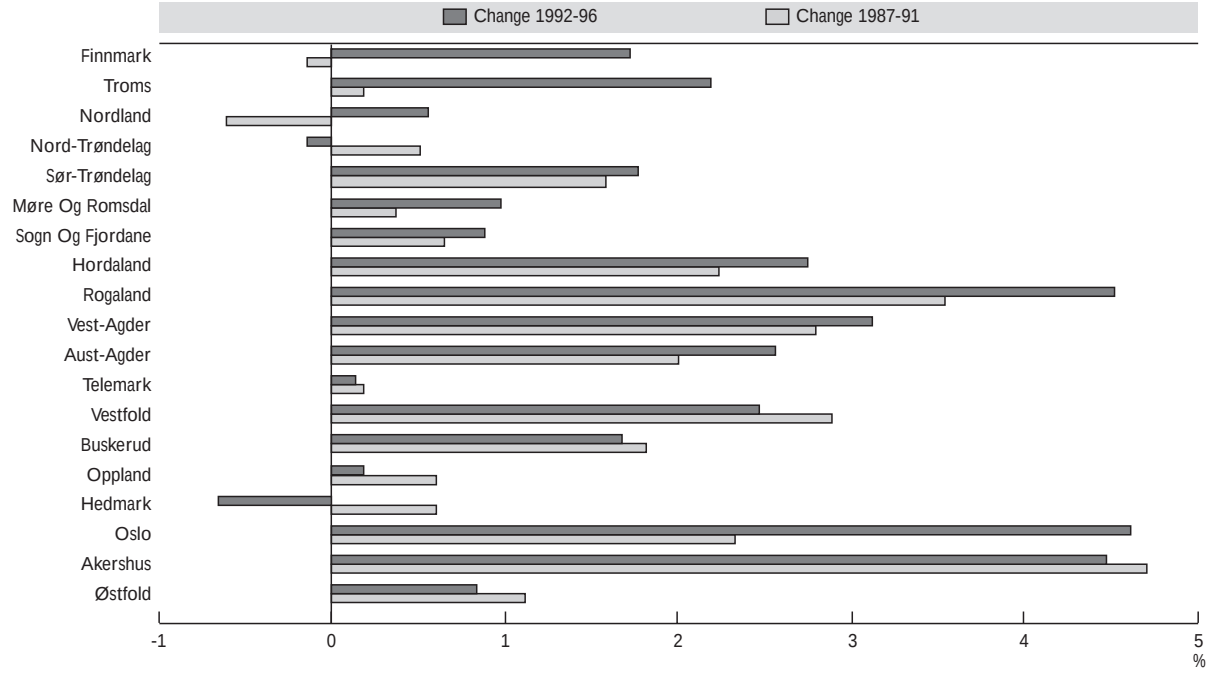
Source: Statistics Norway.

◆ Annex Graph 2. ***Population changes by centrality, 1987-96***



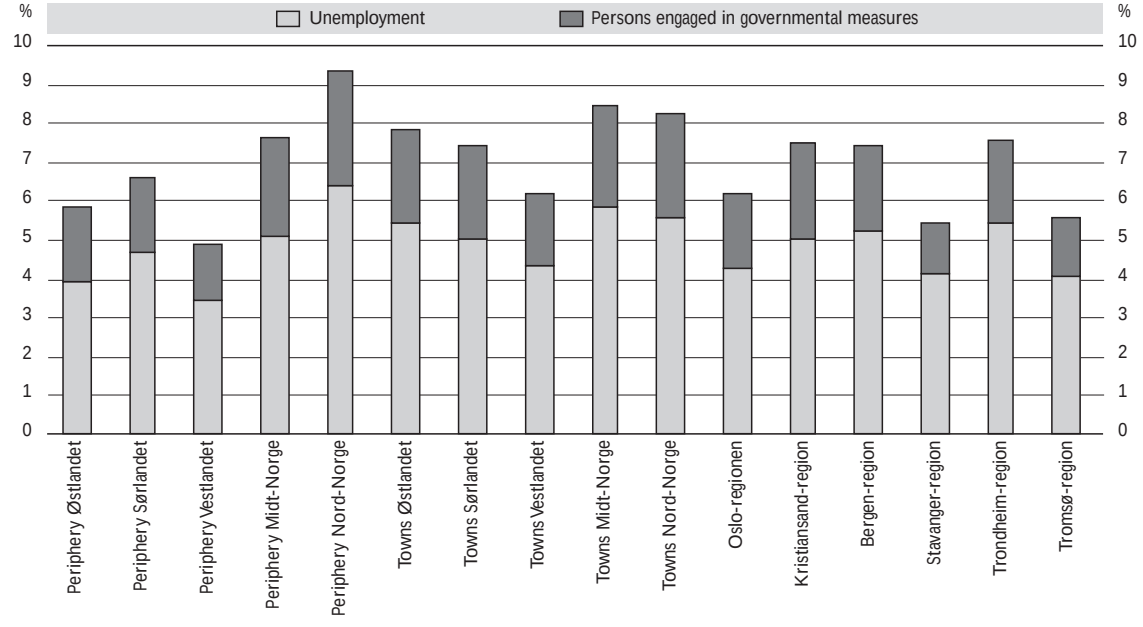
 Source: Statistics Norway.

◆ Annex Graph 3. ***Population changes by county, 1987-96***



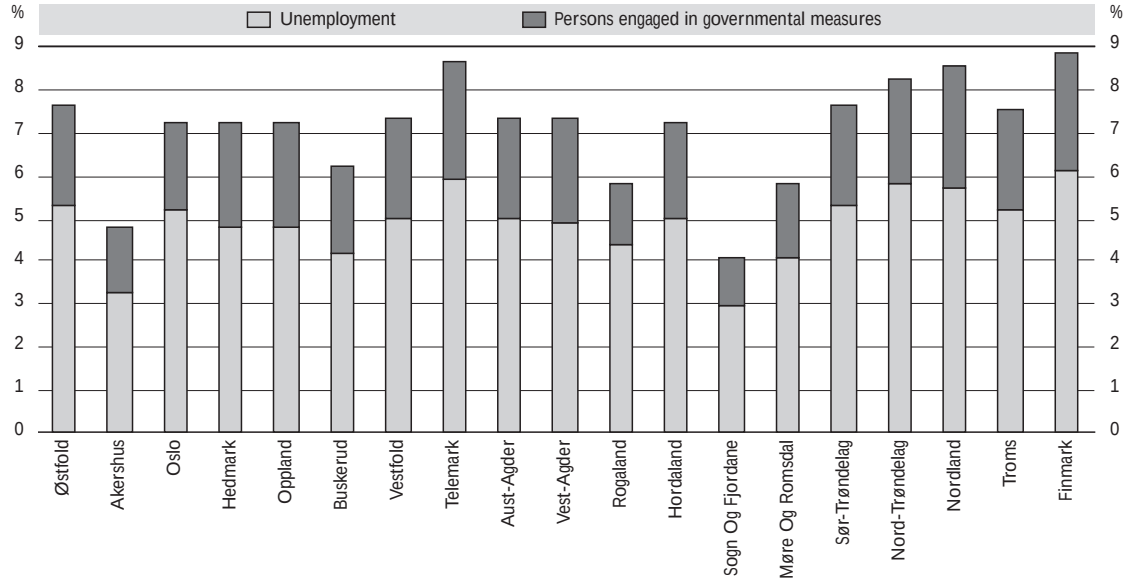
Source: Statistics Norway.

◆ Annex Graph 4. ***Registered work force unemployed or engaged in governmental measures to promote employment, by centrality, 1995***



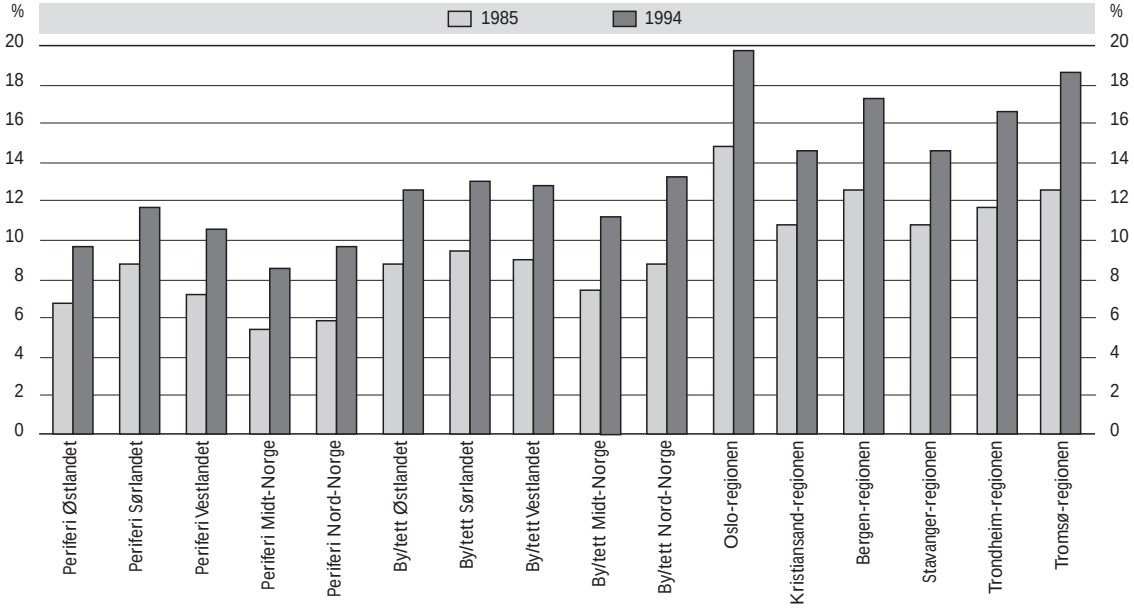
Source: Statistics Norway.

◆ Annex Graph 5. ***Registered work force unemployed or engaged in governmental measures to promote employment, by county, 1995***



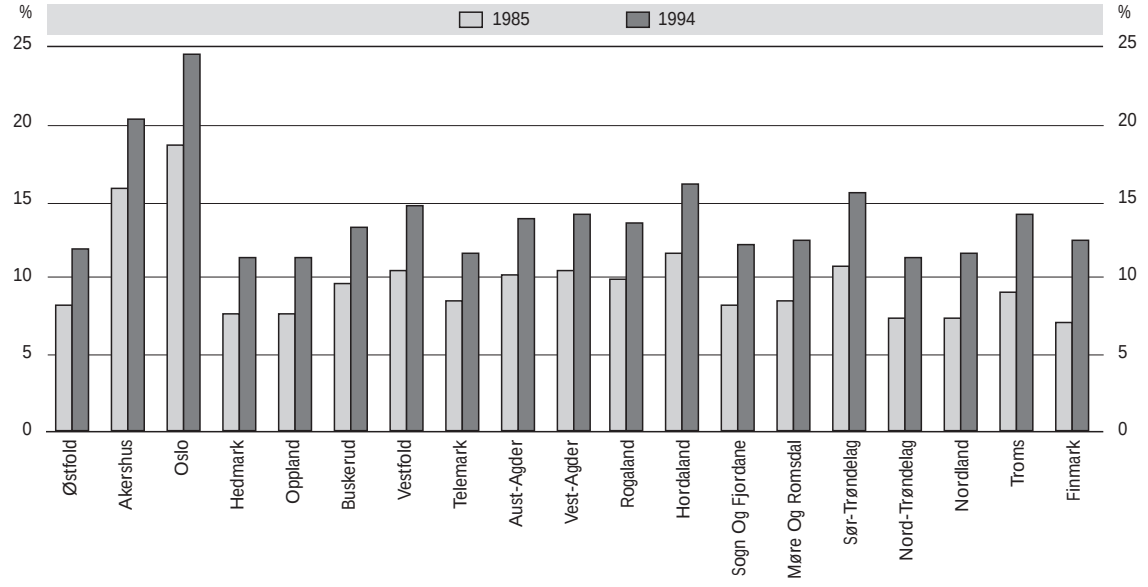
Source: Statistics Norway.

◆ Annex Graph 6. ***Persons with college or university degree, including doctor's degrees, by centrality***



 Source: Statistics Norway.

◆ Annex Graph 7. ***Persons with college or university degrees, including doctors degrees, by county***



Source: Statistics Norway.

Annex Table 1. **Average gross income per person, 17 years old or more, 1995**

Norway	172 745
Østfold	159 496
Akershus	204 752
Oslo	207 399
Hedmark	149 354
Oppland	150 526
Buskerud	172 829
Vestfold	170 600
Telemark	159 241
Aust-Agder	156 927
Vest-Agder	165 089
Rogaland	186 097
Hordaland	172 374
Sogn og Fjordane	159 531
Møre og Romsdal	160 353
Sør-Trøndelag	161 991
Nord-Trøndelag	147 420
Nordland	154 206
Troms	158 861
Finnmark	158 118

Source : Statistics Norway.

CASE STUDY – NEW ZEALAND*

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EXECUTIVE SUMMARY

Changes which have taken place in New Zealand's rural communities are as much the result of long-term socio-economic trends, as they are the result of the economic reforms. The profound reforms undertaken in the mid-1980's constitute a unique example of vigorous pursuit of agricultural policy reform. Reforms have brought about a dramatic turnaround in the New Zealand economy. Removal of agricultural support had widespread effects on rural areas. Adjustment was neither instantaneous nor painless. The immediate effects of reform were very painful for farmers and the rural community. Policy reform has led to a sequenced adjustment process in which adjustments occurring in one sector spill-over into other sectors. The general sequence has been the farming sector, rural communities, the financial sector and finally the processing sector. The rural hardship was compounded by low international prices for some agricultural products during the middle and late 1980s and increasing interest rates. Moreover, the slower pace of reform for the manufacturing sector and the ensuing appreciation of the real exchange rate made the adjustment process of rural households more acute than the withdrawal of agricultural support would have caused on its own. In addition, support policies in the pre-reform area shielded rural economy from adaptation and have undermined its capacity to adjust successfully and increased transition costs.

Agriculture has endured a rigorous period of adjustment since mid-1984. There have been shifts in the composition of agricultural employment and labour within the sector but this has not entailed an exodus from agriculture. Sub-sectors that were highly protected prior to economic reforms have faced the brunt of adjustment and have continued to rationalise, while sub-sectors with previously low levels of assistance are maintaining or expanding their operations. Adjustment was more pronounced in the downstream and upstream agricultural sectors rather than in the farming sector itself. Adjustment pressures on agriculture, including agricultural labour were, however, accentuated as the sector was placed at a disadvantage by the uneven and asymmetrical dismantling of assistance across other sectors in the economy. However, after the first three difficult years, the sector has responded to the changing economic environment and policy reform. Both agriculture and the rural economy have become more diversified, efficient and competitive. Rural population and farm households have proved remarkably resourceful in adapting to the dramatic changes that have swept the sector. Fears of rural collapse never materialised and only few farmers were forced to quit the land. Moreover, reforms were benign to the rural environment. The capacity of the agricultural sector to adjust to a changing policy environment has been greater than originally anticipated.

Notwithstanding successive governments' stance on market oriented policies, government still plays an important role in addressing rural development issues within a policy reform context. The thrust of government policies is to establish the policy framework and economic climate to encourage private sector and community initiatives. Although the focus in rural areas is on self-help, several policies are in place aiming at overcoming specific rural impediments and to ensure adequate access to basic services by rural people, especially education and social services. This is undertaken within an integrated approach in which government is working in partnership with local rural communities. Such an approach allows sufficient flexibility within the system to enable service delivery to match the differing needs of diverse rural communities.

I. PREAMBLE

New Zealand is an especially interesting case study within the overall analysis of agricultural adjustment and the rural economy primarily for two reasons. Firstly, New Zealand is a small, open-economy and despite its economic development stage, the agro-food sector continues to be of vital importance in the country. Secondly, in mid-1984 New Zealand launched a thorough economy-wide reform programme, with agricultural policy reform being a major element. Government assistance to agriculture was virtually abolished and the sector is fully exposed to world market signals.

New Zealand's experience of "farming without subsidies" could be very illuminating in providing insights into how the agricultural sectors in other countries might adjust to radical reforms.

The objective of this study is therefore to examine the implications of agricultural policy reform for the New Zealand's rural economy. The structure is as follows. Section 2 briefly outlines the socio-economic profile of rural New Zealand. Section 3 discusses the relative importance of the agro-food sector in the economy and the major structural features of the agricultural sector are presented. Section 4 discusses agricultural policy reform and its implications for the rural economy. Section 5 focuses on government's role in rural development, while Section 6 draws the wider implications arising from New Zealand's reform experience.

II. A PROFILE OF RURAL NEW ZEALAND

- *Stable rural population*
- *The nature of rural communities is undergoing significant change*
- *Distinct variation in the socio-economic structure between rural areas*
- *Agriculture is still the dominant sector, but non-farm activities are proliferating*

Depopulation of rural areas is a major concern in many OECD countries. In New Zealand, however, the total rural population has remained remarkably stable over the last 60 years at around half a million. As a corollary, nearly all of the net growth in the country's population has been experienced in urban areas. Accordingly, the proportion of people who live in rural areas has halved from 32 per cent in 1926 to 15 per cent by 1996.

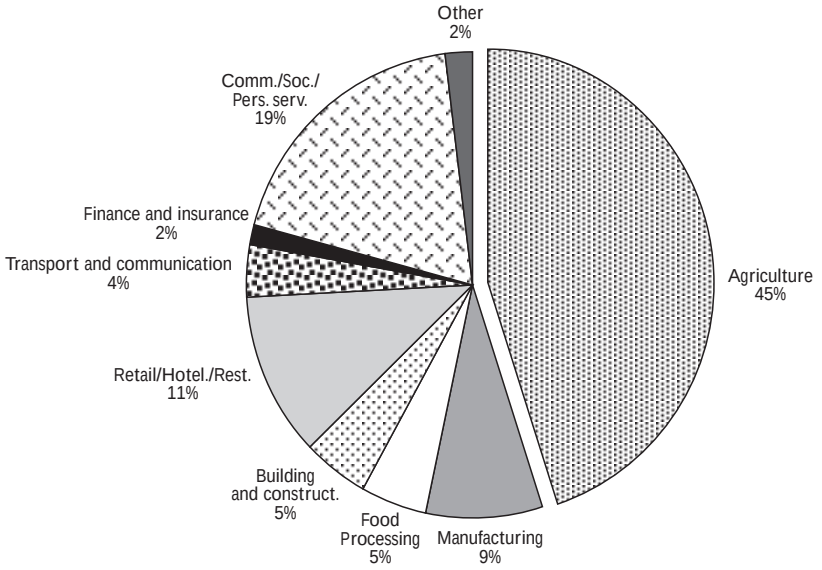
As at 1991, there were 515 000 people living in rural areas (outside centres of 1 000 or more people) and another 310 000 people living in minor urban areas (centres between 1 000 and 10 000 people). More than 80 per cent of rural people live outside rural centres (places with 300 to 1 000 people).[1] There has been considerable change in the social characteristics of rural communities largely as a result of urbanisation and the effects of the sweeping reforms implemented since the mid-80s.

Notwithstanding the stability of total rural population, there is a great inter-regional diversity as the population of many of the rural regions which declined between 1986 and 1991, grew between 1991 and 1996. Why some regions or sub-regions are growing, while others are not, is due to factors which differ between each area. In general, populations in rural areas in close proximity to major urban centres have grown steadily due to urbanisation, development of horticulture and life style farms. Other much less economically integrated rural areas are also experiencing relatively high population growth as a result of the demographic structure and ethnic composition. Population growth in most other pastoral farming regions is zero or is declining gradually. Exceptions are mainly related to areas where there are new development opportunities (*e.g.* tourism in Otago) or the growth of retirement communities.

A breakdown of the population employed in rural New Zealand shows that in 1991 about half is directly dependent on the agro-food sector for their incomes and employment (Graph 1). Farming is the predominant activity of rural men (50 per cent) and women (35 per cent).[2] The remainder are spread across processing, manufacturing, retailing and other service industries. Pastoral farming is becoming less important to the economy of many rural areas as other economic activities and lifestyles develop. Sheep and dairy farming are the predominant sources of employment and constituted more than 10 per cent of rural employment in 1991.

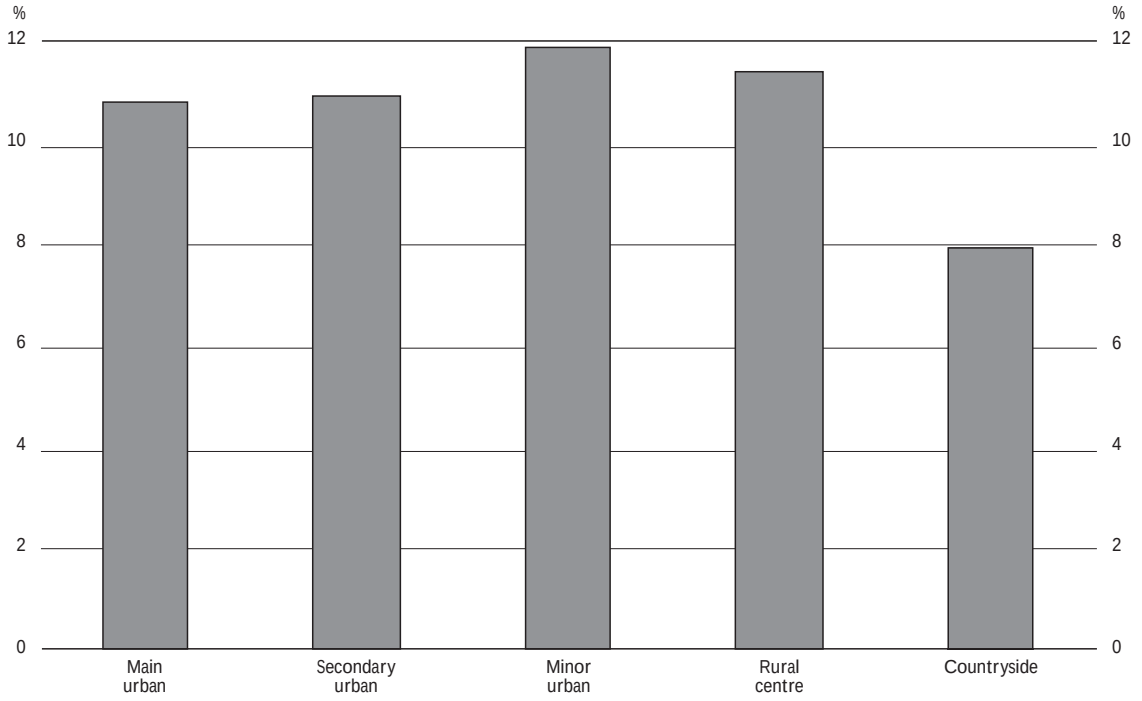
However, the prosperity of non-agricultural industries remains linked, in many cases, to the agro-food sector. Almost half of rural manufacturing activity involves processing and distribution of farm production. Evidence shows that 49 per cent of the 25 000 people engaged in manufacturing within rural

◆ Graph 1. ***Rural employment by sector, 1991***
Equivalent full-time



Source: OECD Secretariat calculations based on national sources.

◆ Graph 2. ***Unemployment rate by type of location, 1991***



Source: OECD Secretariat calculations based on national sources.

areas in 1990 were processing food and fibre products. Just over 18 per cent of New Zealand's food, beverage and tobacco processing is located in rural areas (Pomeroy, 1991).

Not only are there variations in the distribution of population and employment between rural areas, but the rate of development is very uneven. To a large extent, these different patterns of development reflect differences in the regions' share of the assets on which economic growth is based and changes in the value of these assets over time. While some rural areas are heavily dependent on the primary sectors, agriculture, fishing, forestry or mining, others also rely on manufacturing, or tourism and recreational activities. Consequently, there is a wide variation between and within rural areas in terms of the prosperity of rural households, including farm households. However, there are rural communities with particularly high proportions of people on low incomes. In particular, it is the more isolated rural regions which have the greatest proportion of people on income support (Northland, East Coast/Hawke's Bay and Otago/South island). The lowest levels of dependency on income support are in urban areas such as Auckland and Wellington (SONZA, 1996).

There is also a significant variation in the *unemployment* levels between and within rural areas. While minor urban areas have a higher rate of unemployment than urban areas, the proportion of the work-force which is unemployed is lowest in the countryside (rural areas outside centres of 300 people) (Graph 2). However, unemployment levels are highest in small rural towns and minor urban areas (SONZA, 1996). There are large regional variations with 39 per cent of Northland, 36 per cent of the East Coast and 36 of Westland's eligible rural workforce on income support.

The *age* structure of the rural population is somewhat younger than that of the total population, but there are substantial regional variations. Concerning *gender*, data that show there is a greater proportion of males in rural areas than in urban areas, albeit the proportion has been declining over the years. Males have lower levels of formal *education*. As many as half (49 per cent) of the males living in rural areas have no school qualifications compared to 38 per cent of rural women. Yet, 41 per cent of rural men earned over NZ$ 20 000 per year compared to only 19 per cent for rural females. This compares to 48 per cent of urban men and 23 per cent of urban women. Nevertheless, the purchasing power of people in rural areas is greater than their incomes would suggest as the number of self-employed people who can write off income against tax is greater in rural areas than in urban areas.

Over the 1980s, rural areas experienced continuous change associated with the long-term processes of urbanisation, economic and social development, changes in demographic structures and improved communication technologies and transportation. Moreover, economic policy reforms have had a profound impact on rural areas, especially on the agricultural sector.

III. AGRO-FOOD SECTOR

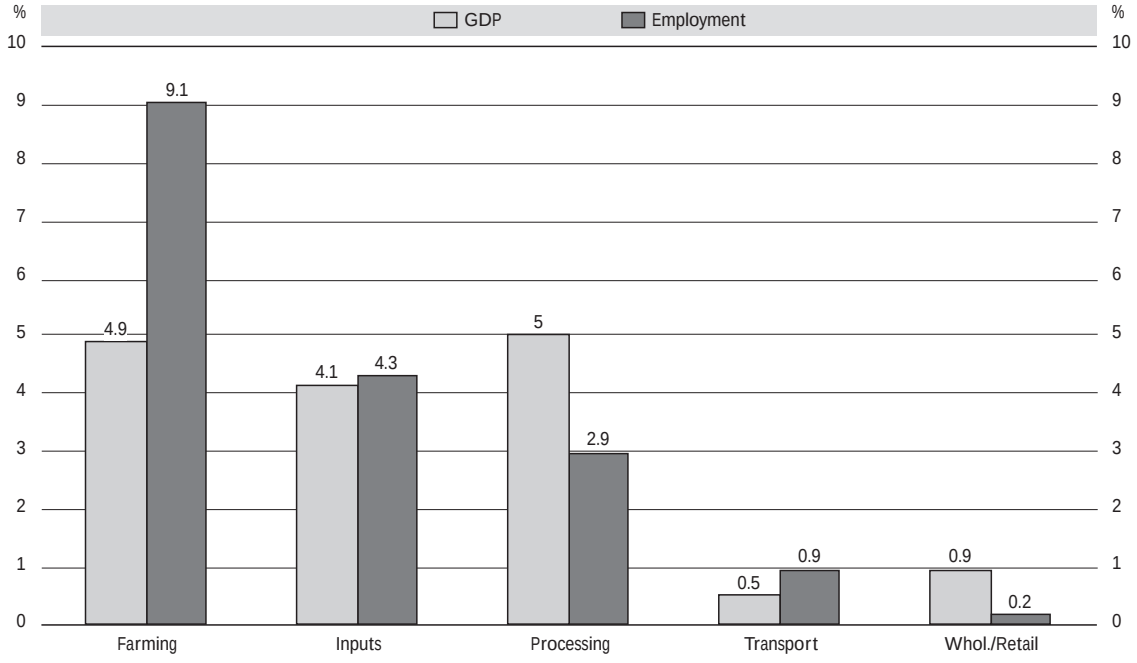
- *Agro-food is the single most important sector in the economy*

3.1. Agro-food sector's role in the economy

Farming and its adjacent downstream and upstream agro-food activities make up a large proportion of New Zealand's economy. The sector as a whole provided employment for around 17.4 per cent (254 677 people) of the country's work force and accounted for 15.4 per cent of GDP in 1996. Moreover, half of the country's land, 13.6 million hectares, is in agricultural use. Over two-thirds of New Zealand's agriculture and fisheries workers live in rural areas.

Farming and processing are the two main agro-food sub-sectors. They together account for over two-thirds of the sector's contribution to GDP and employment (Graph 3). The sheep and beef sectors provided most of the employment, 7.9 per cent of the total workforce, following by the dairy industry,

◆ Graph 3. ***Agro-food sector's contribution to the economy, 1996***



Source: OECD Secretariat calculations based on national sources.

4.6 per cent of the total work force (Narayan, 1996). Between 1987 and 1996, the percentage contribution of the total agro-food sector to the New Zealand economy has increased, despite lower world prices for many of New Zealand's major agricultural products. The rise in the contribution of the processing sub-sector is the main reason for the overall increase in GDP contribution by the agro-food sector. In contrast, the percentage contribution from the farming sub-sector declined somewhat from 5.9 per cent of total GDP to 5 per cent. Contributions to GDP from other sub-sectors have either increased slightly or have remained relatively stable.

Traditionally, agro-food has been New Zealand's major foreign exchange source, albeit the tradable sector has become more diversified over the years. Agricultural products, processed and unprocessed, make up 65 per cent of the nation's total merchandise exports. A high proportion of New Zealand's export earnings stem from farming and horticulture. The meat industry is the largest agro-food export income earner. The main meat exports include lamb, mutton and beef. Kiwifruit is the major horticultural export commodity. New Zealand is the world's largest exporter of sheep meat and dairy and the second largest exporter of wool.

3.2. Structural features of agriculture

- *Most farms have more than one owner*
- *Most farm households engage in a wide-range of on-farm and off-farm economic activities*
- *The average farm age is similar to national average, while the education level is lower*

Much of New Zealand is mountainous, and only two-thirds of the country can be farmed. The climate is suitable for pastoral and arable farming. The livestock sector is the single most important sector in New Zealand's agricultural industry. The composition of agricultural production in New Zealand has changed over time. The relative importance of meat production has declined, although in recent years there has been an expansion of new types of livestock, including deer and goats. Moreover, increasing use of coastal flat land for horticulture has been a major development over the last two decades and horticultural produce has become an important export source.

3.2.1. Farms and farm business ownership

There are around 70 000 farm holdings in New Zealand, ranging in size from less than 5 hectares to greater than 4 000 hectares. Average farm size is 240 hectares.[3] Farms are mechanised and the majority are owner-operated as family farms, but some are run as companies and partnerships. Share-farming, where the farmer owns the land and shares the stock and plant, is common for dairy farms. Contractors are used for tasks such as sheep shearing and fruit picking.

In 1994, 28 per cent of farm businesses had a sole proprietor, 60 per cent were owned by partnerships and the remaining 10 per cent were owned by private companies and trusts (SONZA, 1996).[4] Of farms with multiple ownership, the majority are in dual ownership. Sheep and beef farms remain the most common farm type (40 per cent), followed by dairy (24 per cent). Over one-third of all farms (23 167) are in absentee ownership. These are mainly holdings which have plantation forestry as the predominant land use, or are owned by institutions (education and research) or public agencies. Dairy farms are the least likely to have absentee owners.

3.2.2. Farm labour

In 1995, *employment* in farming was around 147 000 people. Of this, 60 per cent were working owners, lease-holders and share-milkers, 23 per cent permanent paid employees and 17 per cent paid casual employees. About 30 per cent of farm labour is female.

The *age* structure of the agricultural labour force is very similar to that of the total work force. The average age of farmers fell from 1971 to 1981 then rose between 1981 and 1991. In 1991, farmers were younger on average than farmers were in 1971, but older than farmers in 1981. The average age of farmers in 1991 was 43.4 years. There are variations in the average age of farmers depending on farm type, probably associated with varying capital investment requirements. Dairy farmers have the youngest age structure, a reflection of share-milking contracts enabling relatively early entry into farm business ownership. In contrast, the oldest group are beef farmers, probably due to the greater initial investment required for beef cattle. In 1991, there was no discernible difference between the age of part-time and full-time farmers. However, the average age of female farmers was lower than that of male farmers.

The level of *education* of farmers is lower than the nation's average. Half the male pastoral farmers living in rural areas have no formal school or tertiary qualifications. In this respect, they are similar to the general, rural male workforce, but have fewer qualifications than rural, self-employed males involved in other industries. Male horticultural farmers are more likely to have formal qualifications than male pastoral farmers. Most female farmers have some formal qualifications. Younger farmers (20-39 years) are better qualified than those over 40, while farmers in the 50-59 year group have the fewest qualifications.

3.2.3. Farm household diversity

The diversity of economic activity in rural areas is also reflected in farm household activities. Members of farm households frequently operate a range of non-farm businesses on the farm, such as farm contracting, veterinary services, processing and light manufacturing. These activities are sometimes located on the farm property, but are often run separately from the farm operation and land use. Other farm-based businesses such as agro-tourism are an attempt at farm diversification.

A recent survey showed that 46 per cent of farm households had income from off-farm work, 57 per cent of the sample had income from off-farm investments and 75 per cent had income from either off-farm work or off-farm investments or both (Rhodes and Journeaux, 1995). Off-farm work was common for husbands and wives. Within farm households, the social characteristics are changing with more women taking off-farm employment as well as greater involvement in farm decisions and voluntary community activities. Studies show that proximity to a major urban labour market does not appear to affect the uptake of off-farm work. Many people working off-farm do so outside of a major urban area. However, regardless of where they are employed, most do not travel more than an hour to work (Taylor and Little, 1995).

IV. AGRICULTURAL POLICIES

4.1. The seeds of change

- *Pervasive support was unsustainable*
- *Insulation from world markets led to inefficiency, loss of profitability and competitiveness of the agricultural sector*

Prior to the mid-1980s, the policies pursued were geared towards protecting the domestic economy, particularly manufacturing, from external market competition. An extensive set of stringent quantitative import restrictions were enforced to control the balance of payments; interest rates were controlled and the exchange rate fixed. The outcome was the creation of an insulated economy that proved to be poorly placed to cope with a changing economic environment.[5] The inward-looking orientation of general economic policies resulted in New Zealand having one of the highest levels of protection in OECD countries. Moreover, protection of industries producing import competing goods led to higher input costs for the agricultural sector. The long-run implications of this policy approach were to reduce pressures for adjustment and to retard structural change.

Since the 1960s, assistance to agriculture mirrored the assistance provided to the rest of the economy. Protection on many farm inputs was very high, the government maintained a fixed exchange rate, and the currency was overvalued. Largely to compensate farmers for the resulting deterioration of the domestic terms of trade for farmers, a complex support system to agriculture had emerged by 1984. Agricultural support has progressed through three major phases: 1960-76, 1976-80 and 1980-84 (Tyler and Lattimore, 1990). The policies in each of the phases were aimed at increasing livestock production to promote export earnings.

The 1960-76 phase focused on encouraging livestock production via increased investment in land. The support mechanisms employed consisted of tax concessions and input subsidies to increase livestock inventories on farms. During the 1976-80 phase, agricultural support was more oriented towards output as opposed to input assistance. Towards the end of the 1970s, a combination of events, including significant decline in world commodity prices, an increase in oil prices and interest rates, led to declining terms of trade for New Zealand agriculture and a fall in farm incomes. This led to the 1980-84 phase in which support was in the form of concessionary loans, directs payments and a Supplementary Minimum Price (SMP) scheme, specifically for sheep meat, beef, dairy products and wool. [6] By 1983, SMPs were 50 per cent of total annual assistance to sheep and beef production.

The government borrowed heavily from external sources to maintain its subsidies to the agricultural sector and to provide foreign exchange to the other sectors of the economy. Domestic protection resulted in a continuous deterioration in the relative competitiveness of the protected industries and compensation to the agricultural sector had to increase over time. By 1984, total government assistance was 40 per cent of the value of output. Over the period from 1979-83 assistance increased from 15 to 33 per cent of the value of output. Costs to the taxpayer in terms of income support, subsidies and revenue forgone were considerable, and the switch to output-related assistance was more distorting

than previous forms of support. With an estimated fiscal cost in 1984 of NZ$ 1 000 million or 3.2 per cent of GDP, the cost of the subsidies had become unsustainable. The importance of the agricultural sector in the New Zealand economy was such that the agricultural sector could not be sustained by the non-agricultural sector over time. In 1984, the Government announced a reform programme, including the termination of price support schemes among a plethora of macroeconomic reforms.

The main pressures for the economy-wide reforms of 1984 were unsustainable fiscal deficits and a significant decrease in New Zealand's agriculture exports. The early 1980s were especially difficult due to high inflation, spiralling deficit, declining terms of trade and a standard of living that dropped from third in the world to thirtieth. This resulted in a consensus that government's role in the economy should be curtailed.

4.2. Policy reforms

- *Reforms were comprehensive and embraced the whole economy*
- *Agricultural policy reform was a major component*

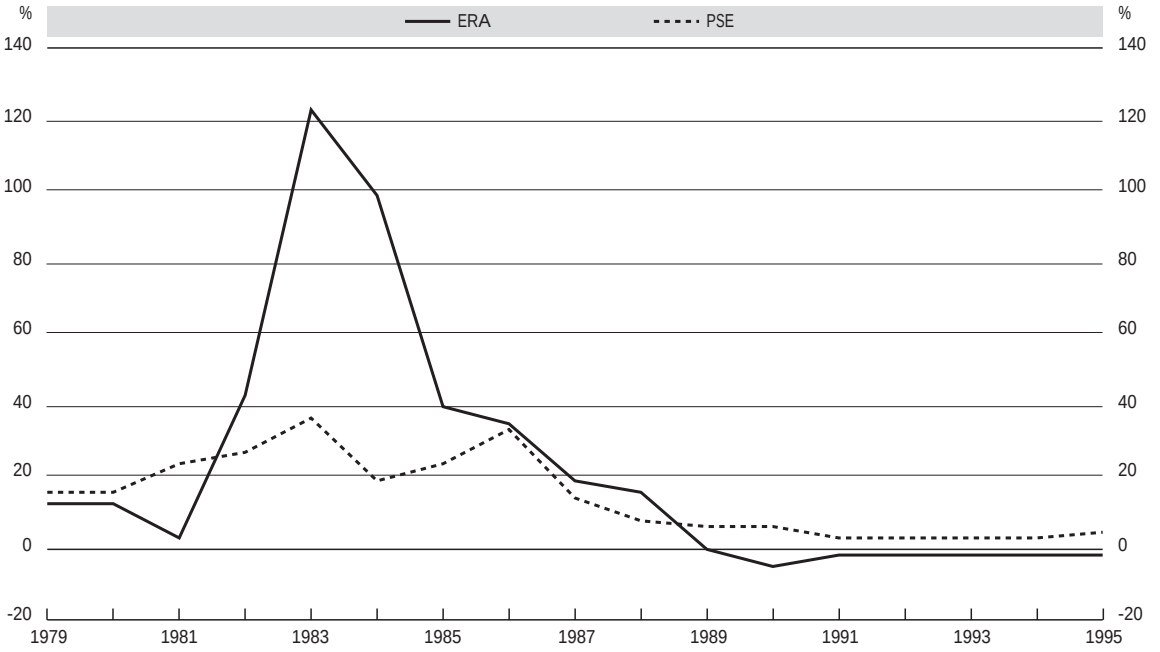
The thrust of the mid-1984 reforms was to restore New Zealand's competitiveness and reverse the decline in New Zealand's economic performance *vis-à-vis* other OECD countries by reducing product and factor market distortions, and by increasing efficiency in the public sector. Policy initiatives included the establishment of a new regulatory environment, the dismantling of controls, rapid reductions in subsidies and lower border protection, and the removal of the import substitution bias in trade policies.

Reforms addressed virtually every area of economic policy. At the macroeconomic level, reforms involved tight monetary policy, better targeting of government expenditures, extensive taxation reform, the floating of the exchange rate and removal of controls on interest rates and on international capital flows. Trade policy reform led to the abolition of import licensing and tariff reduction aimed at shifting the economy from import substitution. At the microeconomic level the reforms were numerous and rapid. The principal elements of structural policy measures, intended to enhance market forces in the economy, included, *inter alia*, deregulation of the financial sector, labour market, transport sectors, and research and development. Institutional reforms were also implemented. The drive to reduce direct implementation of policy led to devolution of many activities to regional governments. The most important was the responsibility for resource management under a new Act, aimed at individual responsibility for sustainable resource use.

Agriculture was among the first sectors to be reformed. In early 1984, the Government announced the termination of output price assistance for agricultural products. Subsequently, fertiliser subsidies, investment and land development concessions were abolished. Interest concessions on Producer Board accounts and farmers' loans were progressively removed and tax concessions were withdrawn. Capital development subsidies, input subsidies and free advisory services were eliminated and cost recovery was implemented for government inspection services. Producer boards had their access to concessionary Reserve Bank funding withdrawn. There are now no subsidies and no other forms of support to farmers except in the event of severe climatic disasters, or outbreaks of plant and animal disease, and general budgetary measures to support basic research. However, marketing boards have remained in place for the main export commodities and a new one has been created for kiwifruit.

Consequently, assistance to agriculture, fell sharply over the remainder of the 1980s. The percentage Producer Subsidy Equivalent (PSE) is estimated at 3 per cent in 1996, down from an average of 23 per cent for the period 1979-84 (Graph 4). Likewise, the Effective Rate of Assistance (ERA) is estimated at minus 2 per cent of agricultural production, down from an average of 38 per cent for the period 1979-83, implying that the sector is now taxed.[7]

◆ Graph 4. ***Assistance to agriculture, 1979-95***



Source: OECD Secretariat calculations based on national sources.

4.3. Consequences of reforms on agriculture and the rural economy

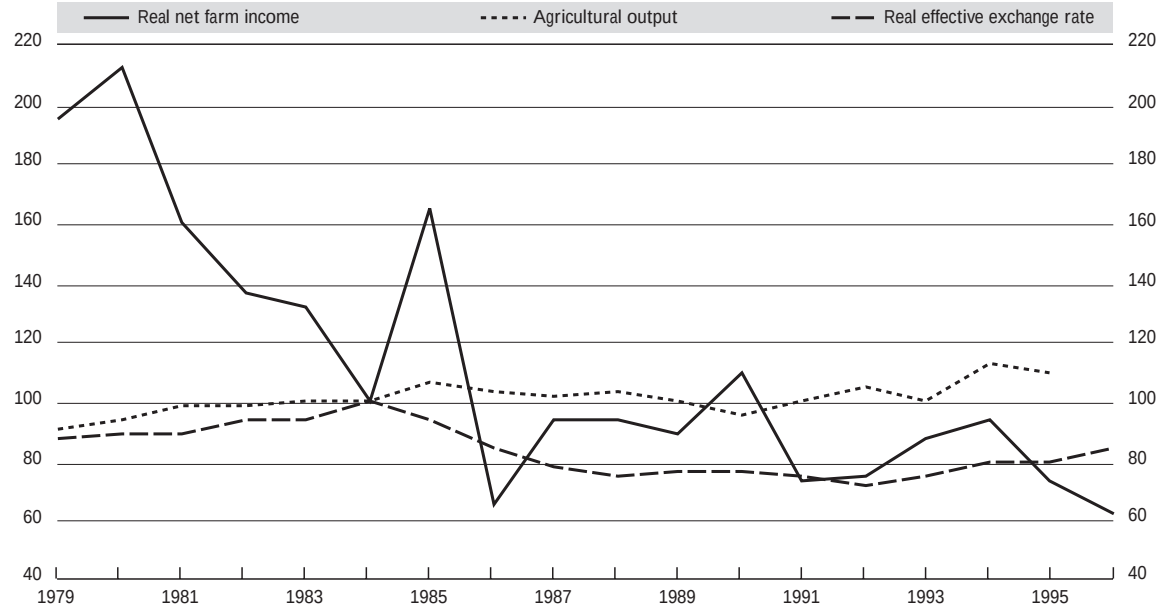
- *Reforms had profound impacts on the rural economy*
- *Immediate effects were very painful for farmers and the rural community*
- *The capacity of the agricultural sector and the rural economy to adjust to changing policy environment was higher than anticipated*

4.3.1. The impact of reforms on agricultural prices and incomes

The policy reforms had severe immediate effects and created resentment among farmers and rural communities (Graph 5 and Graph 8). Unemployment rose to an average of about 10 per cent from near zero. The withdrawal of farm subsidies created persistent hardship for many rural communities as farm incomes declined in the first years following reforms (Table 1). The evidence suggests that there were few, if any, predominantly pastoral rural areas that were not substantially affected by the decline in farm profitability (Walker and Bell, 1994). Domestic output prices did not keep pace with rising input costs, thereby pastoral farmers faced declining terms of trade; investment in agriculture curtailed, jeopardising future productivity gains and farm profits virtually halved; household consumption fell as incomes fell and interest rates rose; households "dis-saved" (Johnston and Frengley, 1994).

Nevertheless, the fall in farm income during 1985-89 has not resulted solely from the removal of government support to the sector. Unconducive macroeconomic environment such as appreciation of the real exchange rate, high inflation and interest rates, in tandem with low world prices for livestock

◆ Graph 5. ***Real net farm income, agricultural output and real exchange rate, 1979-95***
1984 = 100



Source: OECD Secretariat calculations based on national sources.

products all contributed to reducing farmers' incomes.[8] Notwithstanding sweeping reforms across the economy, the pace of reform varied across sectors, hence disparities in net assistance remained. Agriculture experienced a much faster rate of removal of assistance than manufacturing. Macro-economic reforms led to an appreciation of the domestic currency between 1985-88 and a sharp increase in interest rates, penalising exports, lowering returns to farmers and increasing adjustment costs to agriculture.

Nonetheless, the consequences of reforms for farm incomes should be contrasted with the pre-reform situation. In 1984, for example, at least a third of gross revenue for sheep and beef farmers (that is, all or more than net income), was accounted for by government support policies. By 1990, assistance was essentially zero. Yet the real net farm income of sheep and beef farms was no lower in 1990-92 than in 1984. This is in spite of low world prices, particularly for wool, in the early 1990s.

Furthermore, labour productivity in the agro-food sector improved at an annual rate of 3.8 per cent, between 1987 and 1996 (Narayan, 1996). The fastest growth was estimated in dairy processing, increasing at 20.9 per cent per annum.[9] Moreover, the "stress" on the average household consumption of sheep and beef farms has fallen in each year since 1986 through 1992. Nominal household consumption was 50 per cent greater in 1992 than for the worse year, 1986 (Johnston and Frengley, 1994). In addition, the agricultural trade balance grew steadily during the post-reform period.

Farmers rapidly adopted strategies to adjust to withdrawal of government support. Their immediate response was to curtail discretionary farm operating expenditure such as fertilisers, which halved to below maintenance levels, all non-essential repairs and maintenance, land development, and capital expenditure on new plant and equipment.

Reduction in farmers spending affected the wider rural economy, with direct implications for the viability of many rural services. For every dollar not spent by a farmer, there were approximately three dollars not available to be spent in rural communities (Walker and Bell, 1994, pp. 29-31). Consequently,

many small rural servicing businesses supplying living essentials, farm inputs and services to farmers went out of business. Many of these people moved out of rural communities to look for a job in urban areas. Initially this was possible, but as unemployment increased in urban areas as well, rural people found it difficult to leave rural areas. Despite these difficulties, the Government remained firmed in its commitment to economic reform as the best means to improve international competitiveness in farming.

In the early stages, farmers also looked at alternative ways to earn additional income. The adoption of various income generating strategies, both on and off-farm, by farm family members has been a survival strategy adopted by many farming families. These involved, *inter alia*, selling capital livestock (*i.e.* breeding stock), selling small blocks of land, generally to urban investors, selling surplus plant and equipment. In many areas, however, there were few jobs as farm workers had already been laid off, many servicing people were also looking for jobs, and there was a low demand for farm services anyway. Also selling surplus plant and equipment was not so successful as demand was low.

In addition to the curtailing expenditure, a major adaptation was the seeking of off-farm work amongst a range of farm families and types of farming. In some cases, this meant permanent changes to the social relations on the farms as women took on off-farm employment on a permanent basis, while in other cases employment was temporary (Fairweather, 1992). Family farms have shown flexibility in their labour use during times of financial pressure. Family social relations have adapted and developed with more female working owners and more women working part-time and full-time on their farms.

Table 1. **Selected adjustment and performance indicators: post-reform period over pre-reform five years**

Percentage change

Economic Variable	Source	1985-89/1979-83	1990-95/1979-83	1990-95/1985-89
PSE (%)	2	–30	–85	–79
ERA	1	–44	–108	–114
Real agricultural prices	1	–12	–14	–3
Real GDP growth	2	–1.6	–1.0	0.5
Real effective exchange rate[1]	2	–9.4	–14.5	–5.1
Competitiveness index[3]	2	+6	+6	+0
GVA (factor cost)	2	47	37	–7
Agricultural output	3	+7	+8	+1
Agric. multifactor productivity growth[2]	4	+0.8	n.a.	n.a.
Real net farm income	1	–39	–49	–16
Agro-food employment	1	–8	n.a.	n.a.
Farm employment	1	–6	0	+7
Working owners	*1*	*–5*	*–6*	*–1*
Paid permanent full-time	*1*	*–16*	*–3*	*+17*
Paid permanent part-time	*1*	*–19*	*–20*	*–2*
Paid casual	*1*	*+15*	*+85*	*+61*
Share of agriculture in GDP	1	–22	–31	–11
Share of agriculture in employment	1	–6	–7	–1
Agricultural area	1	–10	–19	–11
Number of holdings	1	11	6	–5
Average size	1	–19	–23	–6
Total stock units	1	1	–7	–9
Capital expenditure	1	–46	–49	–4
Total rural sale price index	1	220	407	59
Long-term debt to equity ratio	1	78	41	–21
Return on equity	1	36	15	–15
Agricultural trade balance	3	17	39	18

1. As measured by relative unit labour costs in manufacturing; a "+" entry means depreciation of the currency relative to US dollar.
2. Entry indicates the change in the annual percentage rate of growth, *e.g.* an increase from 2 per cent to 3 per cent gets an entry of +1.0.
3. Based on export price of main goods in common currency (3rd qtr).

Source: 1. MAF; 2. OECD; 3. FAO; 4. Gardner (1995).

Reforms had considerable implications for farm management practices and farmers had to adopt improved *risk management* practices. They diversified their farming operations, often adding alternative ventures such as deer, horticulture, forestry and goats to their base operation. They also adopted more flexible farm management practices to allow them to take advantage of market opportunities.

Recovery began only after three years, in late 1988. Further deregulation of the labour market resulted in efficiency gains for the agricultural processing and servicing sectors, thereby increasing returns to farmers. The financial sector and the servicing sector also began to become more efficient and effective. Farmers began to respond directly to international market signals by increasing farm business management efficiency, changing enterprise mix, and diversifying farming operations. Less profitable sheep began to be replaced with more profitable beef cattle.

4.3.2. Rural labour market adjustments

- *Rural employment fell, albeit less than the national average*
- *Changes in employment were not uniform throughout rural areas*
- *The brunt of employment losses was born by minor urban areas*
- *Minor urban areas suffered from large declines in employment in food processing industries*

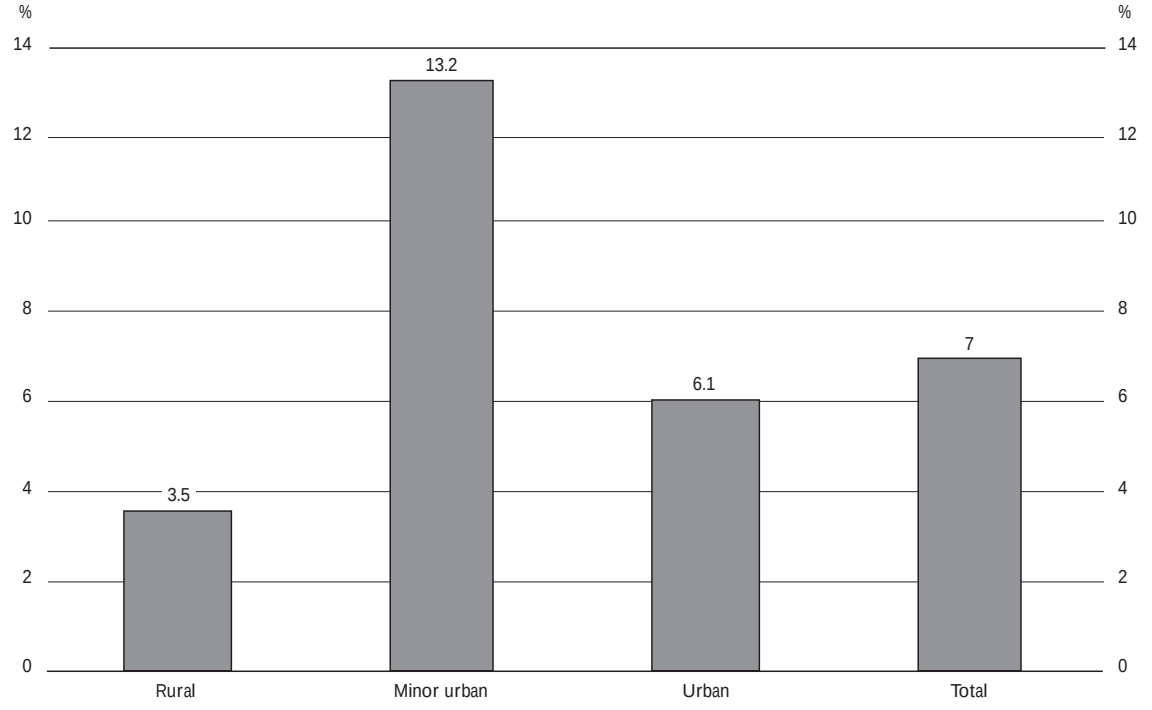
The extent of the adjustments which have taken place in the agricultural sector and the rural economy in the wake of reforms are also reflected in labour market responses. Labour market conditions in rural areas were tightened, with large employment losses in a number of sectors (Graph 6). Between 1986-91, employment fell in rural areas by 8 298 and in minor urban areas by 16 377. Compared with jobs lost in urban areas, however, rural areas lost proportionally fewer jobs between 1986-91, while minor urban areas lost proportionally twice as many (Press and Newell, 1994). The majority of jobs losses in minor urban and rural areas were in part-time employment. Regions containing large urban areas had increases in rural employment. While most industries in minor and rural areas witnessed declines in employment between 1986-91, this was not the case in the services sector which experienced increases.

The large proportional differences in job losses between minor urban and rural areas could be attributed to differences in the economic structure of these areas. Minor urban areas experienced larger declines than rural areas in the construction, transport, storage and communication, food processing and utility industries (Press and Newell, 1994). This reflects the fact that many industries servicing the primary sector located in minor urban areas were adversely affected by the economic downturn in the rural sector, but also experienced the effects of deregulation on the manufacturing sector as a whole. In contrast, rural areas experienced greater proportional declines in employment in the forestry and logging, hunting and trapping and agricultural services industries, although this was from a very low base.

Concerning the agro-food sector, employment declined during the 1985-89 period, both in absolute and relative terms, though this conceals some major regional variations. The adjustment impact was more pronounced in the upstream and downstream agro-food sectors than in the farming sector. Employment in the processing and inputs supply-sector, particularly fertilisers, agricultural machinery and meat and wool processing, had been declining since 1979, and this decline accelerated during the post-reform period. Only the fruit and vegetable processing industry experienced job growth from 1980-88.

Total agro-food employment, excluding farm employment, fell by approximately 22 per cent (17 500) between 1980 and 1988. The largest decline was in meat processing where nearly 9 000 jobs were lost, virtually all of them in the period from 1986, some in urban areas. Both dairy and wool

◆ Graph 6. ***Unemployment rate, 1986-90***



Source: OECD Secretariat calculations based on national sources.

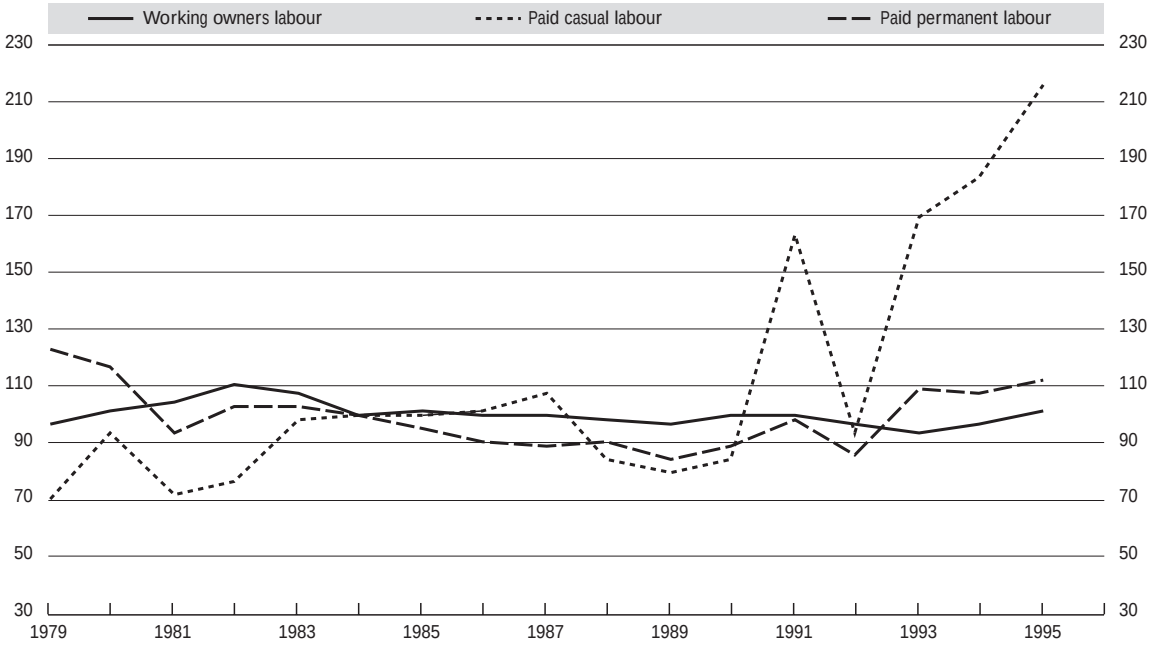
processing have so far experienced net job losses of up to 2 000, though it is possible that further rationalisation has yet to take place in these industries.

Although the fertiliser and agricultural machinery and equipment industries employ relatively small numbers, they tend to be located in rural areas and thus are important employers in rural communities. Both industries have shed approximately 50 per cent of their work force since 1985. The tight employment conditions prevailed in rural areas could be demonstrated by the fact that the combined on-farm and agricultural service sector employment fell between 1987 and 1988, on a full-time equivalent basis, by nearly 6 000 jobs or 4.3 per cent.[10]

Farm employment declined by about 2 per cent in the period 1985-89, while it had somewhat increased in the five pre-reform years (Graph 7). Although the farm sector's contribution to total civilian employment has remained relatively stable since 1979 at around 11 per cent, total employment declined by 8 496 people between 1979-83 and 1985-89, from 132 972 people employed, on average, to 124 476.[11] The largest decline in the 1985-89 period was among *paid* employees, *permanent* and *casual* labour. These results tend to suggest that the demand for hired labour is more responsive to changes in economic conditions than the demand for self-employed labour. Working owners are likely to remain in farming, even during downturns of economic activity. The overlap of place of work and place of residence may be one of the factors explaining the sluggish response of farm owners to changes in economic environment (OECD, 1994). While the total number employed in all farm categories between 1984-90 decreased, the number of women increased slightly. There has been a dramatic increase in female participation in production, especially as owners.

The decline in farm employment was unevenly distributed regionally and thus has impacted on the structure and viability of some regions and rural communities more than others. Traditional pastoral areas have generally experienced major falls in employment and profitability. Regions which have developed significant horticultural or viticultural industries, on the other hand, have generally experi-

◆ Graph 7. ***Farm employment by type, 1979-95***
1984 = 100



Source: OECD Secretariat calculations based on national sources.

enced rural population growth. This growth has tended to be greatest in rural areas reasonably adjacent to urban centres.

However, employment in the agricultural sector has recovered in the 1990s, with farm employment levels in 1995 reaching their highest level since 1979. The total number of farm owners and hired farm workers in the 1990-95 period was, on average, almost identical to that in the five pre-reform years. The increase in farm employment during the 1990-95 period is attributable to casual labour, which almost doubled between 1979-83 and 1990-95. Increasing numbers of casual workers is consistent with a decline in permanent workers during a recession since casual labour is cheaper and more flexible (OECD, 1994).

Box 1. **Rural labour adjustments: the case of Southland**

Southland provides an interesting example of rural adjustment since its economy is heavily dominated by the agro-food sector. In 1986, 20 per cent of the total labour force was employed in the primary sector, mainly in sheep farming and agricultural services, and a further 12 per cent were employed in food processing, almost exclusively in meat export jobs. Consequently, the employment impact of the reforms has been very apparent. There have been reductions in all types of paid, on-farm employment, especially among casual employees and, to a slightly lesser extent, among permanent workers during 1984-88. This implies that there has not been a net shift towards more casual employment. The evidence also suggests that there has been a larger reduction in part-time, as opposed to full-time, farming. This could indicate

(continued on next page)

(continued)

that there has not been a net increase in off-farm work and/or smaller part-time farms have been less able to cope with the changing economic environment. However, employment in processing has actually increase by 11 per cent, despite the rationalisation in the meat industry. This could be attributable to the fact that there was not much excess slaughtering capacity in the region, so rationalisation pressures have been weak. Furthermore, there has been a large fall in relative wages in processing from roughly twice the national average to about one and one third at the beginning of 1988.

The extent of labour supply adjustments is suggested by the sharp increase in unemployment rate, albeit from a low base, despite the rise of net migration outflows. However, evidence shows that this increase represented a worsening of the mismatch between available jobs and available workers rather than not enough jobs. This would suggest that labour supply adjustment to employment declines tend to be low in predominantly rural areas, because rural workers are less geographically mobile and typically posses a narrow range of skills or low skills. Consequently, unemployment and underemployment in such locations tend to be high. One response to lay-offs in the region was to register as unemployed and then engage in unpaid or low-paid farm work while waiting for more permanent employment (Fairweather, 1988).

Source: Savage, 1990, in Sandrey and Reynolds (eds.)

4.3.3. Adjustments in rural land and capital markets

- *Adjustment process was influenced by the previous regulatory environment*
- *Gradual change in land structure*

Prior to reform, the financial market was highly regulated and the predominant rural lenders were quasi government-owned financial institutions. These institutions held one third of farm debt. Their concessional lending policies had crowded out private lenders who could not compete on the same terms. Real interest rates had been negative from 1970 to 1983, and land prices had increased as support became capitalised into land values.

The removal of agricultural policy support produced a marked devaluation of rural assets, a corresponding reduction of lenders' security margins and of farmers' ability to service debt (Graph 8). *Rural debt* peaked in 1986 at around NZ$ 8 billion, double that of 1980, due to the combined effect of high levels of debt, high interest rates and low farm income.

The withdrawal of government support to agriculture virtually halved farm *land prices* and the number of *land sales*. Following large increases, farmland prices peaked in 1982, but fell sharply in real terms to around 50 per cent of their peak levels by 1988. This is an indication of the extent to which agricultural government support was capitalised into farmland values. Moreover, this average disguises even greater changes in some remote rural areas. In contrast, properties close to urban areas and coastal properties were less affected as they, in general, command premium prices. Although higher farmland prices are a barrier to the entry of young aspiring farmers, the decline in values had a major impact on the debt equity ratios of many farmers. Consequently, a large number of farm enterprises became non-viable in terms of their ability to service debt.

Nonetheless, a feature of the agricultural sector has been the very slow rate of exit of non-viable and technically bankrupt farmers, when estimates suggests that around 5-6 000 farms being under severe financial stress. A number of reasons have been advanced to explain this relatively slow

◆ Graph 8. ***Farmers financial indicators, 1979-96***
1984 = 100

Source: OECD Secretariat calculations based on national sources.

adjustment (Johnston and Sandrey, 1990). Firstly the sector has shown a great deal of resilience. Farmers liquidated dispensable assets such as standing timber and off-farm financial assets as a way of reducing debt and maintaining viability and ownership of the farm. In addition, many farmers and/or their spouses took secondary employment.

Since 1988, real farmland prices have recovered, and are now around 88 per cent of their 1982 level. Moreover, since 1988 the volume of sales has increased and is now slightly above the long term average. The average debt servicing capacity has consequently improved. It should be pointed out that farm debt problems had been accumulating well before the removal of agricultural support. Farmers, in general, had long been net borrowers with rising debt burdens. They had been able to borrow against increasing land values even though such lending was not always supported by farm income levels.

One of the key outcomes of farm finance rationalisation has been a major improvement in rural lending practices. Rural lending expertise has significantly improved, competition for farm business is fierce and some institutions have remarkably sophisticated client management and monitoring practices and systems (Walker and Bell, 1994). After an initial period of inertia, the New Zealand rural sector is now much better serviced by a larger number of expert rural financiers than it was at the beginning of the decade.

There has also been gradual change in *land-ownership* structures. Although the family farm is the predominant ownership structure in most rural communities, in recent years there appears to be an increasing trend in the number of partnerships. According to the 1995 Agricultural Census, 61 per cent of farms and 48 per cent of land are owned by partnerships. Much of the impetus for this change has come from economic factors affecting land use and economies of scale, increasing investment by urban dwellers or commercial partnerships in agriculture and horticultural property (Walker and Bell, 1994). There is also a growing trend toward the separation of land ownership and farming operations through a

variety of leasing, equity sharing and unit trust operations. The farmer, through these operations, is able to pursue a number of options, such as expanding or diversifying without further borrowing, reducing or eliminating existing debt and/or investing off-farm and retiring.

4.3.4. Adjustment in the agricultural service sector

- *The agricultural service sector has encountered the brunt of the on-farm adjustment process*

This sector has been affected in particular by reduced output, especially declining sheep numbers, and depressed demand resulting from deferred expenditure and low incomes. With significant downturn in farmers' incomes there were important effects on the agricultural servicing industries, such as stock and station agents, fertiliser manufacturers and rural contractors, which spilled over into the rural economy. With changing farm output levels, as was the case for sheep meat, processing industries have also been affected. These effects combined with reduced personal spending by farmers had a broader, more diffuse impact on economic activity in the rural areas.

Industries particularly affected most were those producing discretionary inputs such as production and application of fertiliser. Where inputs are less discretionary in nature – the animal health industry – the effects of the rural downturn on those industries was less severe. Nevertheless, the reduction in demand for fertiliser has not been uniform across farm types as many hill country sheep and beef farms do not apply fertilisers. The reduction occurred primarily on dairy and arable farms.

Nonetheless, the decrease in demand led to rationalisation of the agricultural servicing sector. Companies amalgamated, branches and depots were closed, levels of management and employment reduced. A study of the rural servicing infrastructure in a small central North Island township, Raethi, shows that the number of persons employed in rural servicing activities declined by more than 80 per cent, from 414 to 76 persons (Rabel, 1991). One positive result has been that there is now more competition for farmers' business and farmers are benefiting from a restructured, leaner and more efficient service sector.

4.3.5. Adjustment in the processing and marketing sector

- *The pace of adjustment of the processing and marketing sectors was slow*

The last sector to adjust was the processing and marketing sector. During the five pre-reform years, government support for farm development and subsidised farm incomes resulted in substantial increases in stock numbers available for slaughter. However, by overriding market signals to the industry, support permitted processors to increase costs and processing capacity without seriously disadvantaging farmers. It was not until the removal of assistance in 1985 that rationalisation began to be an issue.

Even then, while lamb slaughter numbers peaked in 1985 and subsequently fell steadily until 1990, significant rationalisation occurred slowly. While some meat companies restructured, and other concentrated on developing high technology plants to serve niche markets, most of the meat industry responded only slowly. However, despite the lagged response, the meat processing and transport sector have undertaken significant rationalisation, leading to productivity improvement, increasing the levels of further processing and reducing processing and transports costs.

4.3.6. Changes in farm size distribution

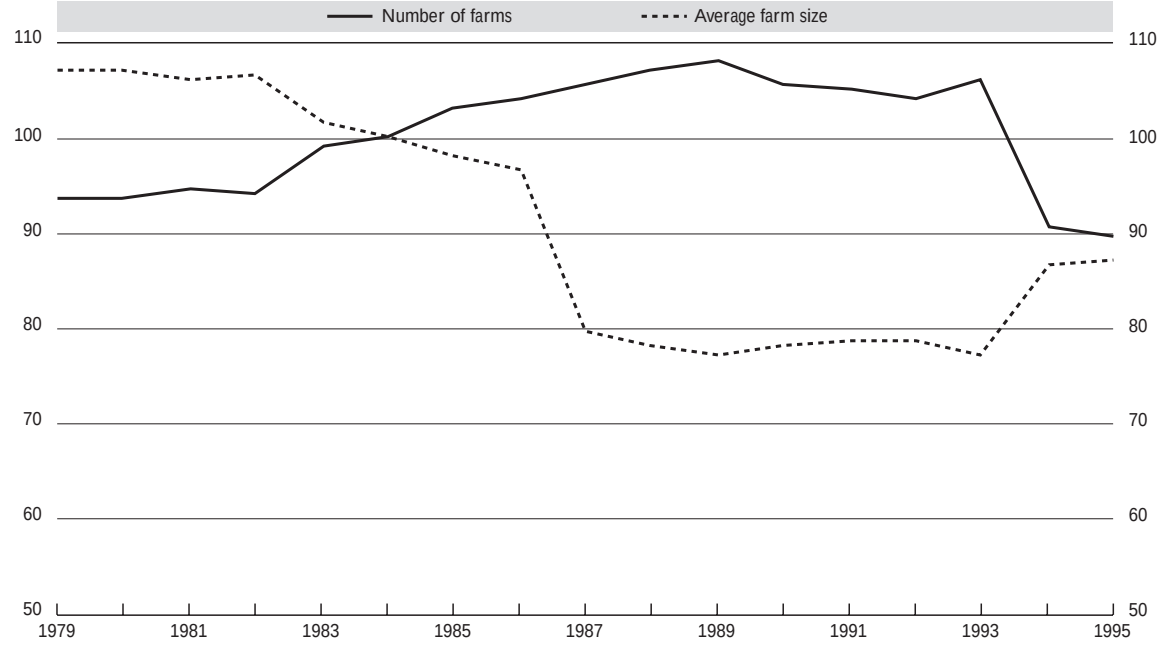
- *Average farm size decreased as agricultural land use declined and farm holdings increased*
- *Planted forest area increased*

Land use responds to changing economic circumstances and these changes could affect the economic and social structure of surrounding communities (Ward, Cairns and Anderson, 1996). Removal of agricultural support led to a gradual change in agricultural *land use* from pastoral agriculture to horticulture, viticulture, and non-traditional forms of pastoral farming, especially deer and goats, and forestry.

Total agricultural area declined by 4 per cent (0.6 million hectares), while the area of planted forest increased by 50 per cent (0.5 million hectares), between 1983 and 1995. The new forestry plantings are typically on hill land being taken out of sheep and beef production in locations with ready access to an export port and with soil and climate factors favouring tree growth. This is often undertaken by city-based investors, although some planting is by farmers seeking to diversify their operations. Forestry is increasingly seen by farmers as a sustainable complement to traditional pastoral farming.

Meanwhile, the increase in planted forest area has also continued, with a cumulative increase of 22 per cent over the 1985-92 period. The increase in afforested area has been driven by a number of factors, including the increased returns to forestry relatively to the declining returns to pastoral farming. The removal of agricultural subsidies allowed this divergence in returns to be fully reflected in farm

◆ Graph 9. ***Number of farms and average farm size, 1979-95***
1984 = 100



Source: OECD Secretariat calculations based on national sources.

profitability and land prices. This has contributed to the increased rate of forest plantings, with positive environmental implications (OECD, 1997, pp. 211-227).

The removal of land development grants has meant withdrawal of a small land area from marginal production activities. Sheep and beef farming have become less intensive. Thus, the decrease in livestock numbers has yielded environmental benefits. The benefits of reduced sheep numbers are particularly significant on some of the steeper and less productive "hard hill" areas in the North Island, some of which is being left to return to trees and other woody vegetation.

For many years in New Zealand, the number of *farm holdings* increased steadily, although during the 1990-95 period the number of farm holdings fell (Graph 9). Over the 1985-89 period, the average number of farm holdings was 80 836, an increase of 11 per cent compared with the 1979-83 average. The increase is mainly attributable to the working owners' holdings, which accounts for about three-fifths of the total number and to a lesser extent to permanent full-time farming, for which the number of farms have increased by more than 5 per cent. In contrast, for permanent part-time farming and unpaid family labour the number of farms fell noticeably, particularly in 1988 and 1989. In terms of farm type, the largest increases during the 1986-89 occurred in horticulture, deer goat and dairy farming, whereas the most significant falls were witnessed in sheep meat farming. The trend of increasing farm numbers can be attributed to growth in small holdings alongside growth in new types of production like deer and horticulture, which can occur on smaller properties.

Increasing farm holdings and decreasing agricultural land during the 1985-89 period led to decreasing *farm size*. The average size of farms declined from 293 hectares in the 1979-83 period to 224 hectares in 1990-95. While farm numbers, overall, have been increasing over the 1970s and 1980s there have been changes in the distribution of farm size. In earlier periods, increases in small holdings outweighed the declines in the mid-sized ranges and led to a steady increase in the number of farms. In the late 1980s, however, the reverse occurred and the declines in the mid-sized range outweighed the increases in the number of small holdings. To some extent the growth in the number of small farms is due to the development of horticultural, fruit-growing enterprises, but it is also due to an increase in "small-farming" where agriculture is not an important source of income (*e.g.* hobby farms).

4.3.7. Rural diversification

- *Reform fostered diversification of agricultural and rural areas*
- *Production mix altered*
- *Rural tourism offers opportunities*

In the years following reforms, farm households have diversified their sources of income. Farm families are increasingly carrying out a wide range of activities across several sectors, some adding value to agricultural production (food processing, rural tourism and agricultural services), while others are unrelated to farming (light manufacturing, art/handicrafts, etc.) (Taylor and Little, 1997). A notable development has been the growing importance of non-traditional activities in rural communities. While agriculture remains the cornerstone of the rural economy, people living in the countryside earn their livelihood from a wide range of activities, some located within the area, some made possible by information technology and others made accessible by improved transport technology which enables rural people to communicate with urban centres. They are working in tourism, small business, recreational activities and community services, adding to the diversity and strength of rural communities in New Zealand.

In 1991, almost 60 per cent of people living in rural areas were engaged in non-agricultural activities (SONZA, 1996). Losses in agricultural employment experienced in the aftermath of policy reforms have been offset in many cases by an increase in those employed in services such as community, social,

business and financial services, wholesale, retail, restaurants and hotels. This shift in employment patterns reflects to some extent the success of many local development initiatives in rural areas over the last five years (Pomeroy, 1994). A wide range of enterprise initiatives has been established in rural locations, including the manufacture of wool products, leather products, pottery and wood products.

Box 2. **Some regional examples**

Changes in agriculture, forestry and mining in rural Southland, and associated economic, technological and employment shifts, has resulted in population loss in the region since 1976 (Southland is the southern-most region in New Zealand). The changes are complex. While there has been a decline in the numbers of people involved in sheep production, there has been an increase in the numbers, both on- and off-farm, involved in dairy production in Southland. The change in land use to dairying has brought new dairy farm families into the area from the North Island, but has not been sufficient to offset losses from other trends. The nation-wide interest in environmental issues has seen a general ban on cutting indigenous timbers, and the placing of forest land into conservation use. This has had a major effect on the town of Tuatapere in Southland where half of all employment was in the forestry industry logging, milling, and timber processing. Tuatapere's population dropped from 873 in 1986, to 739 in 1996. Local enterprises which have been developed include a craft industry and tourism (reflected in new outlets for crafts, backpacker accommodation and an information centre). These new developments have meant that the population loss is not as high as it would otherwise have been.

Other areas have been less affected by changes within the agriculture industry *per se*, but have benefited from the reforms. For example, the service community of Methven in Canterbury (middle of the South Island, east of the Southern Alps) used to support up to six farm merchandise firms. Over time the district lost people, partly due to new technology which allowed fewer people to manage larger farms, and partly to declining returns from sheep meat, wool and arable crops. Recent improvements in communication and transportation in the post reform era have made a considerable difference to the operation of farms and other businesses in Methven and its surrounding district. Fifteen years ago the district depended solely on Methven for services. Improvements in the telephone system, reduction in calling charges, and improvements in road infrastructure (from a gravel to a sealed road) have brought Methven into close proximity to two service centres (the city of Christchurch is now 1.5 hours away and the town of Ashburton is now 20 minutes away). High-tech local businesses and farms can now easily obtain speciality services from Christchurch. This has strengthened the business environment of the district. The improved communication links have enabled Methven to capitalise on its close proximity to the Mount Hutt ski resort. As a consequence the town is now growing (from 922 people in 1986 to 1 073 in 1996). Its function is now as much a local service centre to the tourism sector as it is to the sheep sector.

The Marlborough district (at the north-east end of the South Island) has also grown as a consequence of a number of initiatives, particularly the viticulture industry, and the tourism sector which is developing as an offshoot of it (from 7 024 people in 1986 to 8 781 in 1996). The reforms led to a re-organisation of the banking sector. Because so many farmers were in debt when subsidies ceased, the banks introduced a new service to the farming industry. They brought in specialist bankers who had technical knowledge of farming. These people understood the key issues facing farmers, and farmers were no longer able to disguise their true financial position. By working closely with the farmers, the bankers have been able to help farmers to improve their understanding of financial matters, and consequently improve the financial management of their farms.

One industry which appears to offer considerable potential for broadening the economic base of rural areas is rural tourism. It consists of a variety of activities that their comparative advantage is associated with the provision of countryside amenities. New Zealand offers a broad range of rural tourism products. Agro-tourism products focus on aspects of farm production and farm tourism focuses on activities and accommodation on farms which may not necessarily be linked with agricultural production. Case studies indicate that in 1993, 8 per cent of farmers were engaged in a rural tourism activity and that gross returns from rural tourism activities vary considerably from NZ$ 3 500 to NZ$ 650 000 (SONZA, 1995). With rising demands for access to areas of unspoiled nature, rural tourism is likely to play an increasing role in broadening the economic base of rural areas and providing an alternative or complementary land-use to farming.

Although consistent information on business structure and location has only been collected since 1987, some indication of the scale of the changes which are occurring in rural industries can be discerned. Although the total number of business units (excluding farms and self-employed insurance, real estate and financial agents) increased by 4 per cent between 1987 and 1989, the distribution has changed considerably. Most of the non-metropolitan regions experienced decline in the number of business units since 1987. Data on rural-based industries, indicate that the central North Island regions, such as East Cape, Hawke's Bay, Wanganui, Manawatu and Wairapa have been hardest hit by business closures. The downturn also affected South Island regions, particularly the West Coast and Aorangi. A feature of these regions is the central role played by pastoral agriculture in the local economy. Regions which have seen the most growth in their primary-based industries were the metropolitan centres.

The pattern of *farm output* has also altered. There has been a marked shift away from the traditional pastoral farming activities, where most of the support was directed. Between 1985 and 1995, sheep production, the predominant beneficiary of agricultural assistance, declined by around 38 per cent, while dairy and beef production have trended upwards. The reforms have also led to a shift of resources into a wider range of activities. There has been an increase in the production of deer, ostriches, goat and forestry. Fruit and vegetable production has been expanding rapidly, albeit from a low base, and now accounts for around 14 per cent of the value of agricultural output. New Zealand's agricultural exports have also become more diversified, although wool, meat and dairy products, the traditional export commodities, still dominate. Reforms also encouraged diversification of trade towards new destinations.

4.4. Summary and conclusions

- *Policies which attempted to shield rural communities from change had actually thwarted their capacity to adjust successfully and accentuated costs*

New Zealand support policies led to high foreign debt and persistent fiscal deficits. Inward-oriented policies were unsustainable in the face of mounting external debt. By 1984, the small New Zealand economy could no longer shelter itself from forces beyond its control, including those of increased international interdependencies in commodity and capital markets.

Assistance to the agricultural sector in New Zealand was at low levels until the early 1970s, but reached a peak in 1984. It was then drastically reduced over the remainder of the 1980s, as an essential element of thorough economic reforms. Price supports, taxation and interest rate concessions, input subsidies and free government services for farmers were all removed. The ERA declined from 38 per cent in 1979-83 to minus 3 per cent in 1990-95.

Reforms included trade liberalisation, deregulation of financial, goods and labour markets as well as an overhaul of the public sector and the introduction of a medium-term macroeconomics policy framework aimed at reducing the fiscal deficit and curbing the rate of inflation. These policy changes generated quite high real interest rates in 1984-87. The government withdrew direct and some indirect interventions. In addition to the abolition of subsidies, services were centralised and some were removed. However, the pace of reform of import protection for manufacturing was slower than that of the agricultural sector. Both high interest rates and continuing protected prices of farm inputs made the adjustment process of agriculture more acute than it could otherwise have been.

Agricultural performance was poor immediately after the reforms, with direct implications for the viability of many rural communities. Three years after the initiation of reform, farm incomes had declined and domestic terms of trade for the sector had deteriorated. Land values fell in line with farm

incomes and higher interest rates, resulting in substantial farm indebtedness relative to equity, and farm bankruptcies rose sharply. Rural debt became an important reform issue. Within the agro-food sector, the sheep, beef and agricultural services sub-sectors bore the brunt of adjustment. Sheep numbers have fallen dramatically, from 70 million to 47.4 million, giving some indication of the resource misallocation that impaired agriculture's performance before the reform.

Despite the hardship, few farmers were obliged to leave the sector. The rural collapse predicted by some never materialised. The evidence suggests that there has not been widespread rural depopulation in response to economic restructuring. On the contrary, New Zealand's rural population rose slightly between the 1981 census and the 1991 census despite the removal of support. Efficiency has improved at all stages in the production chain. Reforms contributed to a more diversified and resilient rural economy. Land values have recovered significantly, farm financial structures are better and farmers have less debt. There is now considerable emphasis on farm business management, and the value-added and quality of farm produce has increased. Farmers have diversified as a means of reducing risk and have increased flexibility. The importance of new ventures such as forestry and rural tourism is increasing. Rural communities have become more self-reliant and adept at problem solving without recourse to government.

Economic recovery is gaining strength and New Zealand's economy is, currently, more solidly founded than at any time in the last thirty years. Over the last five years, economic performance has been impressive, with GDP growth outpacing that of other OECD countries. The government sees its role as providing a stable environment for long term decision making. The success of the macroeconomic policies has created an economic climate conducive for the rural economy. The sector is now more directly impacted by macroeconomic policies, such as exchange rates, inflation and interest rates, than by agricultural policy.

It is also true that not everyone has shared in the gains of the 1984 reforms. In many rural areas there is concern over the increasing costs of funding school transport, maintenance of roads and retention of health services. An emerging policy issue is on how to distribute the benefits of renewed prosperity to achieve social objectives without jeopardising economic efficiency. Finding ways to manage the social aspects of carrying through effective reforms is one of the most important challenges facing policy makers.

V. GOVERNMENT'S ROLE IN RURAL DEVELOPMENT

5.1. Responses to facilitate adjustment

- *Government had a role in facilitating the adjustment process in the agricultural sector*

Although adjustment assistance was not part of the reform strategy, the government facilitated the adjustment process through a number of adjustment measures and initiatives (Chadee, Horesh and Johnson, 1990). During the transition period, two programmes were introduced to assist farmers to cope with the immediate adjustment problems stemming from the dramatic change of policies and from the 1988-90 drought. The first programme was aimed at reducing the financial stress of those farmers who wanted to remain in farming (see Box 3). Government assisted in *farm debt* restructuring and encouraged private lenders to write-off loans. Government also wrote off some of the debt owned to the quasi-government financial institutions. About 20 per cent of the total debt owned by the farm sector was written-off and about 5 per cent of farms were sold, considerably fewer than had been predicted (Walker and Bell, 1994, pp. 29-31; Chamberlin, 1996).[12]

Box 3. **Rural Bank Discounting Scheme**

The scheme was introduced in July 1986 and lasted until 30 July 1987. Its objective was to facilitate debt restructuring for qualifying Rural Bank clients to enable qualifying farmers to continue farming on a viable basis. The programme reduced and/or suspended interest payments, capitalised interest into principal and in 1986-87 postponed and/or wrote off principal. The Scheme involved deducting the present value of the concessional interest benefit from the loan balance outstanding, and at the same time raising the interest rate on the adjusted loan to market rates. Although this did not, in itself, alter a farmer's cash-flow position, it was designed to offer a lever to farmers in obtaining cash flow concessions from subsequent lenders in exchange for increased security. Any Rural Bank concessions beyond the actual discounting were to be on a commercial basis. Discounting offers extra security to other lenders and in return, these lenders are expected to make some concessions to the farmer.

In total, 8 099 farmers applied for consideration under the scheme. Of these, 4 706 were approved and 2 724 were declined. Those declined were, in general, either considered to be in a better than eligible financial position or were unable to negotiate sufficient concessions from creditors to restore the prospect of viability.

It is unclear the extent to which the Scheme has been successful in resolving in resolving debt and restructuring problems. The Scheme has been criticised as impeding the restructuring process by delaying the exit of many non-viable farmers. Further, resolution of the rural debt situation largely hinges on movements in product prices and interest rates, which in turn, are reflected in land prices. Given that much of the problem was associated with capitalisation of support into high land prices, improvement of farm incomes was unlikely to be sufficient to solve the rural debt problem in the short-term. In addition, the process was very time-consuming and considerable delays occurred with individual applications.

Source: SONZA, various issues.

The second programme dealt with farm exits. A one-time payment was extended to farmers who wanted to abandon farming and pursue other economic activities. Families who were identified as non-viable in farming were supported through Department of Social Welfare benefits, not usually available to self-employed people. In two drought areas support of NZ$ 45 000, the New Start Grants (NSG) programme, was available to help farmers exit farming. Government support lasted until June 1990.

An evaluation of the drought package concluded that the Adverse Events Family Income Support Scheme had generally succeeded in providing needed income support and reducing hardship amongst many of the farmers worst affected by the drought; it had also provided a significant boost to the regional economy. In contrast, for the NSGs the evaluation concluded that they were ineffective (Webber and Rivers, 1992, pp. 61-62).

5.2. Initiatives to address rural development issues in a policy reform environment

- *The government's aim is to achieve viable rural development by facilitating the capacity of rural areas to adjust successfully*

Despite its consistent stance towards market oriented policies, government plays an important role. Although the focus of service delivery in rural areas in the 1990s is on self-help, the government has several policies in place to overcome specific rural impediments, for example, transport to ensure adequate access to basic services by rural people, especially education and social services. Such initiatives allow sufficient flexibility within the system to enable service delivery to match the differing needs of diverse rural communities. The main measures are described in Box 4 below.[13] The

government's role in the areas of information access, policy advice and direction such as the regulation of environmental matters, and the creation of an effective institutional and infrastructural framework.

To ensure profitable and viable rural economies, rural development policy advice focuses on the interaction between agricultural and non-agricultural sectors. This focus also recognises the requirement of agriculture for a strong rural infrastructure to ensure the maintenance of essential facilities and servicing support. Analysis of agricultural development concentrates on identifying matters affecting the ability of people involved in farming to improve their business viability, sustainability and profitability, with due attention to human capital.

Rural development is pursued through an integrated approach in which government is working in partnership with local rural communities. Government involvement comprises welfare support, cross-subsidies to ensure rural people can access education, health and other essential services equivalent to those available to urban people and, most important, assistance to rural people to access information which will enable them to participate in the decision-making process (Pomeroy, 1994).

Box 4. **Important initiatives to address rural development in a policy reform environment**

- holding an Agricultural Innovation Conference to identify how primary industries could restore confidence and raise the sector's productivity and profitability;
- establishing an Agricultural Strategy Council to undertake a comprehensive review of the New Zealand agricultural sector; particularly issues affecting profitability and identification of strategies and action needed to restore confidence;
- appointing a Strategic Planning Co-ordinator to the Office of the Minister of Agriculture with responsibilities to co-ordinate strategic planning in New Zealand agricultural and horticultural industries;
- sponsoring a national series of regional opportunity groups/regional strategy groups and workshops – to help local communities help themselves;
- funding Trade Development Board activities to develop and promote export opportunities for New Zealand primary industries;
- funding a national series of risk management seminars for New Zealand farmers and orchardists on *How to Farm Through Tough Times*;
- establishing a Rural Affairs Unit in MAF Policy with responsibility to monitor and assess the impact of issues and events on rural communities, and to improve the integration of marketing, production, land resources, management services, community and science, and help meet community goals;
- aiding information flows through a comprehensive information brokering system through a Rural Bulletin available freely to rural people;
- funding and producing a Rural Help Directory to advise people of locally available help.

Source: Walker and Bell, 1994, p. 32.

VI. THE BROADER IMPLICATIONS OF NEW ZEALAND'S EXPERIENCE

- *Policies should be designed in ways which assist rural communities to adjust more effectively to economic realities*

Much of the adjustment which occurred since the reforms was inevitable but delayed adjustment to economic change such as long term shifts in resource use, asset values, technology, and social and demographic trends. However, had the delay been longer, the economic cost would have been higher.

- *Agricultural market support does not lead to sustainable farm and rural incomes*
- *Insulating farmers from market signals leads to inefficiencies and loss of sector competitiveness over time*

Heavy reliance on government support prior to reforms had improved farm incomes in the short term, but because costs also increased it became necessary to review prices and input subsidies each year. This spiral was not sustainable. Most of the benefits were eroded by increases in the costs of processing and manufacturing and gains in profits were rapidly capitalised into the price of rural land.

- *Wide ranging and deep reforms are feasible*
- *Delaying reforms could increase transitional costs*
- *Rural areas can develop without output-related agricultural support*
- *Farmers and rural communities are more adaptable than conventional wisdom suggests*

The change in government philosophy in 1984 was profound. Policies shifted very rapidly from relatively high levels of government intervention in a highly regulated domestic environment, to a highly deregulated market oriented economy with an increasing emphasis on "user-pays" for services.

- *Synchronisation of economy-wide policies with sectoral and intersectoral policies would enhance the ability to adjust within the limits of social, political and economic tolerance of the population*

Although there was a perception that the burden of adjustment was shared and this general acceptance facilitated deregulation, the speed of reform was not uniform across sectors. The sequencing of reforms was not conducive to stimulating the tradable goods sector. Moreover, farmers were adversely affected by labour market rigidities and inefficiencies in the processing industries as the reform of the labour market was delayed until 1990. Removal of farm subsidies proceeded faster than reform of other rigidities in the economy. Consequently, more of the burden of adjustment fell on agriculture. The different pace of reform between sectors increased adjustment costs.

- *Credibility and sustainability are essential for successful reforms*
- *Uncertainty increases adjustment costs*

It takes time for farmers' expectations of government to change. Efforts to improve economic performance also require confidence building. Since the implementation of reforms, successive governments have resisted attempts to return to the previous policy environment. There is now no expectation of automatic entitlement to government assistance either in agriculture or in other sectors.

- *Adjustment costs need to be recognised as adjustment is neither costless nor instantaneous*
- *Implementation of well-targeted, safety-net programmes tailored to the specific needs of rural areas might be necessary to mitigate the transitional costs of adjustment*

Policy reforms have profoundly affected rural communities. The immediate effects of reform were acute for farmers and rural communities. The economic and social costs of adjustment preceded the benefits of reform and the latter did not begin to emerge for about five years. There is clearly a danger that prolongation of the costs could weaken the political will for reform. It is therefore important to acknowledge that there are costs involved, and that the government has a coherent strategy for dealing with them. Otherwise, public support and the viability of reforms may be undermined.

- *Rural areas should be seen as offering many opportunities, and not just problems*
- *Agriculture, albeit of paramount importance, is but one of the economic activities in rural areas*
- *Policy approaches to sustainable rural development should be within a well targeted, coherent framework encompassing sectoral and cross-sectoral policies*

Concerns about the viability and sustainability of rural communities have usually been associated with the fortunes of the agricultural sector. However, while agriculture remains the dominant sector in most rural areas, new trends are emerging. The socio-economic base of rural areas is increasingly diversified and there are industries, particularly tourism, which are of vital importance to their development. The interdependence of farming with the non-farming economy and with the local community, highlights the need for the development of policies that are not narrowly focused a particular sector.

- *Government's role in rural development within a policy reform environment is to help rural communities to help themselves*

The cumulative effect of policy reforms has spurred a major shift in the relationship between Government and the rural sector. Adjustment of the farming sector and the restructuring of state-funded agencies yielded major changes in the services and infrastructure of rural New Zealand. Private agencies now provide some of the services formerly funded by government.

NOTES

1. In New Zealand rural is defined on a geographical basis as those areas outside centres which have 1 000 or more people. Further, a distinction is made between ''minor urban'' and ''major urban'' areas. The former is referred to areas with population between 1 000 and 10 000 people and the latter with population more than 10 000 people. For policy and planning purposes, ''minor urban'' areas are also considered as part of ''rural'' New Zealand.

2. However, the proportion of women involved in community, personal and social services is much higher (29 per cent). Another 15 per cent of rural women work in the wholesale, retail, restaurant and hotel sector.

3. A typical sheep and beef farm is around 400 hectares in size and carries 2 300 sheep and 200 cattle; a typical dairy farm is about 70 hectares in size, milking about 170 cows; a typical apple or kiwifruit orchard is between 10 to 20 hectares in size.

4. In 1994, the official definition of a farm business was aligned with other businesses. This definitional change alters the apparent structural profile of New Zealand's farming structure. For example, farms less than 40 hectares accounted only for 39 per cent of all farm business in 1994 compared to 45 per cent with the previous definitions.

5. For a comprehensive discussion see Sandrey and Reynolds, (eds.) 1990.

6. The SMP was designed to support farm income while providing farmers with a basis for long-term planning when world prices for these commodities fell below the SMP, direct payments were paid to producers to make up the difference.

7. The ERA measures the assistance to the value-added in a sector and is defined as the percentage difference between the value added per unit of output measured by including assistance on all outputs and inputs (assisted value added) and the value added at world prices (unassisted value added). It takes into account both the assistance on the domestic production and the input used.

8. The Federal Farmers Organisation supported the reforms, provided they were implemented throughout the economy.

9. Only for sheep and beef farming labour productivity declined over time. This is primarily attributable to lower prices in recent years for meat and wool.

10. Hardest hit were central North Island regions including Tongariro, Bay of Plenty, Thames Valley and East Cape, plus West Coast. Most other non-metropolitan areas also experienced net job losses in these industries, with Marlborough the only significant exception.

11. This is because the total labour force has actually declined during this period.

12. Despite the adjustments to debt, aggregate sheep and beef farm debt levels have remained high, although the distribution is skewed and in 1990 15 per cent of farmers hold 40 per cent of the sector debt, while 50 per cent of farmers hold only 16 per cent.

13. There are also a number of initiatives which address agri-environmental issues (see, OECD, 1996, *ibid.*).

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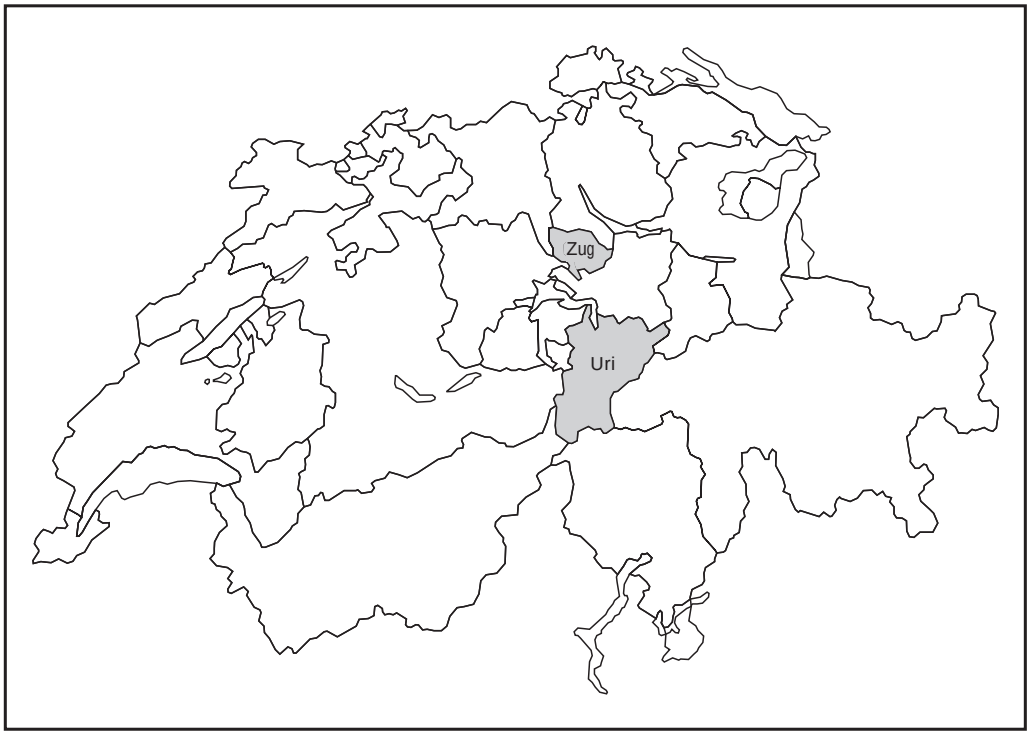
CASE STUDY – SWISS: CANTON URI AND CANTON ZUG*

* This study was prepared by the Swiss authorities.

◆ **SWITZERLAND** – ***Location of Zug and Uri***



EXECUTIVE SUMMARY

The orientation of Swiss agricultural policies, initiated in 1992, is towards the increasing importance of direct income payments and the progressive reduction of guaranteed prices. The reform, which is carried out in two phases, entails the separation of price and income policy. New direct payments were implemented in addition to the existing payment system. These programmes are voluntary and special grants are paid to those farmers who participate in an environmental programme such as integrated production, organic farming or ecological set-aside. The two most important programmes are *integrated production* and *organic farming*, which apply to the entire agricultural sector. The study examines the extent to which farmers have adjusted to those new programmes over the last few years. In particular, the main objective of the study is to analyse the evolution of these ecological programmes and participation by farmers, and to compare it between integrated and remote rural areas: canton Uri and canton of Zug. Canton Uri belongs to one of the 54 mountain regions constituted to implement the Act on investment in mountain regions. Geographical isolation and the topography are major factors inhibiting the labour market in the region. In contrast, the canton of Zug, is a very integrated rural area and the most prosperous canton in Switzerland.

The study argues that, overall, farmers have responded well to the ecological programmes. It is estimated that by the year 2001, 95 per cent of agriculturally viable land will be managed according to the rules of integrated production or organic farming. Participation rates in integrated production and organic farming programmes differ significantly between the two cantons for a number of reasons. First, through regional measures, the cantons determine the regional policy environment for conversion, especially through the use of special programmes, such as grants to farmers for conversion, and by encouraging training and extension in these areas. Second, technical requirements often tend to slow down the conversion process, especially when they require additional investment (adjustment or construction of stables). Imbalances in the environmental domain are raising public awareness of the issues, which in turn puts pressure on local agriculture and public authorities.

I. INTRODUCTION

The Seventh Report on Agriculture published in 1992 by the Swiss Government laid the groundwork for a shift in agricultural policy to reflect the profound changes sweeping through the agricultural sector in Switzerland and around the world. The magnitude of the reforms under way have necessitated a progressive approach. The first stage has mainly involved the introduction of direct payments to farmers in recognition of services provided which benefit the community as a whole, as well as for specific ecological activities. This step has paved the way for a reduction in state-guaranteed prices and the separation of income and pricing policies. As part of the first stage, the necessary changes have also been made to implement the results of the GATT Uruguay Round.

By introducing direct government payments for ecological farming, Switzerland has struck out into unknown territory. Farmers have a choice of several different programmes. These programmes are not imposed by the use of mandatory measures (prohibitions and directives). Instead, the government has opted for a strategy of economic incentives. The present study examines the evolution of these ecological programmes and participation by farmers. The two most important programmes are *integrated production* and *organic farming*, which apply to the entire agricultural sector.

In order to provide a more detailed analysis, the study is focused on two areas of central Switzerland, the cantons of Zug and Uri, which fall respectively into the ''predominantly urban'' and ''predominantly rural'' categories, using the criteria defined by the OECD. The study was carried out by

the Federal Office for Agriculture using statistics from Federal and canton sources. These were supplemented by interviews with experts from the various canton offices for agriculture.

II. THE ROLE OF DIRECT PAYMENTS IN AGRICULTURAL REFORM

An analysis carried out in the 1990s revealed the need for reform in the agricultural sector. A shift in agricultural policy had become necessary due to internal and external factors. The policies followed since the Second World War, which consisted of guaranteeing incomes by controlling product prices and replacing imports of basic foodstuffs by increasing Swiss domestic production, had reached their limits. In addition, commentators predicted that changes on the international level, in particular the GATT Uruguay Round and closer European integration, would bring about increased competition. The strategy developed to respond to these challenges can be broken down into three parts: increased separation of pricing and incomes policy, the granting of financial incentives to farmers to achieve ecological goals, and reduced State intervention in the market in order to increase competition in the agrofood sector.

On 9 October 1992, Parliament passed Sections 31*a* and 31*b* of the Agriculture Act, thereby creating the legal mechanism necessary for the distribution of direct payments not tied to production. This decision served to define the key objectives of the first stage of reforms. The existing system of direct payments was enlarged and restructured as described below:

Direct supplementary payments, Section 31*a*. Agr. Act, (new provision):	Compensation for services performed benefiting the entire community.
Direct ecological payments, Section 31*b*, Agr. Act, (new provision):	Compensation for specific ecological services performed.
Direct payments for difficult production conditions:	Compensation for the relative disadvantages of farming in hilly or mountainous regions.
Direct payments linked to production:	Designed to encourage higher quality and better choice of production.
Direct payments for welfare purposes:	Payments in the form of family allowances and child subsidies aimed at small farmers.

Following the introduction of direct payments, the structure of Government accounts and budget changed fundamentally in the area of spending on food and agriculture. Between 1992 and 1997, spending grew by some 30 per cent, reaching SF 4.1 billion. Over the same period, spending on measures aimed at guaranteeing prices and product distribution fell by approximately 16 per cent, shrinking to less than SF 1.3 billion. At the same time, the amount of funds allocated for direct payments grew by more than 100 per cent, reaching SF 2.4 billion in the current year. The share of direct payments in total spending on ''food and agriculture'' increased from 37 per cent in 1992 to nearly 60 per cent in 1997 (Table 1). The accompanying reduction in controlled prices has allowed consumers to reap approximately SF 800 million in savings. They have also benefited from a drop in prices in the sectors no longer under control, in particular meat, which has generated savings for consumers of around SF 500 million. The highest rate of growth has been recorded in relation to ecological contributions, which have been allocated since 1993. In fact, the amounts paid out have grown from SF 55 million in 1993 to SF 648 million in 1997, accounting for more than a quarter (28 per cent) of the total funds allocated for direct payments.

With the introduction of the new system of direct payments and the enactment legislation to comply with WTO directives, the first stage of reforms was complete. In recent years, several new proposals have been put forward, particularly by farmers and environmental and consumer organisations, calling for an amendment to the Constitution to change the direction of agricultural policy. Parliament recommended that these proposals be rejected, and formulated its own counter-proposals. On 12 March 1995, voters and the cantons jointly rejected the first of these proposals, complaining that it was not sufficiently ''ecology-'' or ''market-'' oriented. In contrast, voters and the cantons did give their approval to Parliament's second proposal, which was designed to address the shortcomings of its predecessor, with a large majority in favour of the inclusion of a new agricultural provision in the

Table 1. **Confederation expenditure in the agro-food sector, by type, 1992-97**

In SF 1 000s

	1992	1993	1994	1995	1996	1997*
Administration	38 608	39 049	38 537	37 694	40 052	41 841
Research and extension	173 527	173 526	173 981	173 263	176 278	175 501
Improvement of production base	231 817	240 431	227 418	178 152	173 956	205 444
Price and distribution guarantees	1 537 926	1 476 324	1 296 385	1 336 693	1 251 065	1 290 278
Direct payments (including associated social programmes)	1 180 688	1 486 688	1 760 039	1 821 219	2 089 108	2 396 232
Total	3 162 098	3 416 018	3 496 360	3 547 021	3 730 459	4 109 296

* Budget 1997.
Source: Budget, various issues.

Federal Constitution (see s. 31^{octies}, Ann. 1). This new provision is not limited to defining objectives for agriculture, but includes a description of the main policy tools to be used in the agricultural sector. For example, applicants must now prove that they are providing the ecological services required in order to receive direct payments. Following a transitional phase, integrated production is to be adopted as the standard approach. The new constitutional provision also forms the basis for a revised Agriculture Act, providing the legal framework for the second stage of reforms. The main goals of the new Act are to improve the overall competitiveness of the agrifood sector and to move agriculture as a whole towards sustainability. Parliamentary debate of this new Act commenced in autumn 1996 and will probably be completed in 1998.

III. ECOLOGICAL OBJECTIVES AND STRATEGIES

The ecological measures introduced are designed to achieve concrete environmental goals. Directives are formulated primarily so as to reduce pollution of groundwater and surface water by nitrates and phosphates respectively, and to cut down on the use of pesticides. In addition, the aim is to increase the diversity of animal species present on agricultural land and to encourage the adoption of humane animal housing systems.

A uniform strategy has been adopted for the implementation of ecological programs:

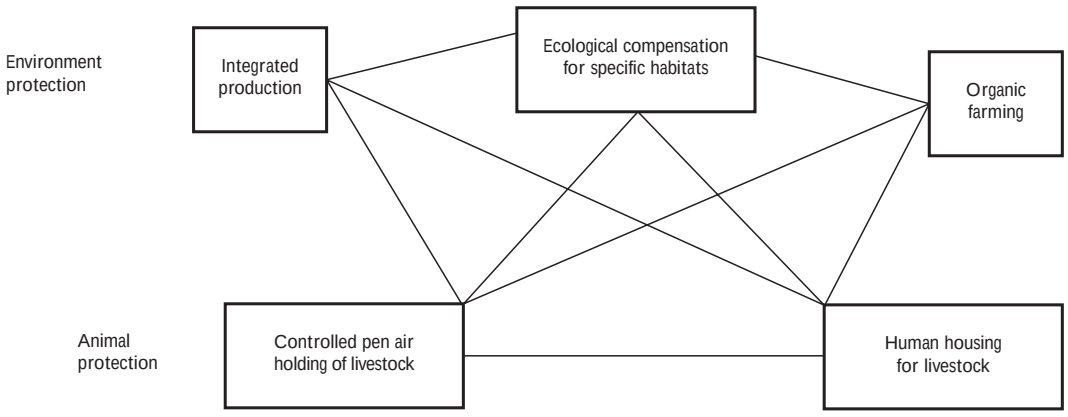
– *Study, training, extension:* the goal is to encourage farmers to respect the environment of their own volition.
– *Financial and other incentives:* protecting the environment must be made economically feasible (protection of the environment as part of a market economy).
– *Regulations (prohibitions, directives):* regulations are imposed only where necessary and if compliance is guaranteed.

The five ecological programmes

Under Section 31*b* of the Agricultural Act dealing with ecological contributions, the public authorities offer farmers a choice of five programmes (see Figure 1). It is possible to participate in several programmes at once and, in this way, accumulate government grants, with the exception of integrated production and organic farming. The Federal Government grants funding for:

– *Integrated production.*
– *Organic farming.*
– *Ecological compensation for specific habitats* (hedges, field copses, standard fruit trees and certain types of extensive and intensive meadows, pastures and fallow land).
– *Controlled pen air holding of livestock.*
– *Humane housing for livestock.*

◆ Graph 1. ***Ecological programmes and possible combinations***



Source: Swiss authorities.

IV. ORGANIC FARMING AND INTEGRATED PRODUCTION

These two approaches to farming techniques affect every aspect of an agricultural enterprise. Specific requirements relate to fertilisation, crop rotation, soil conservation and the use of pesticides. Farmers taking part in these programmes must turn at least 5 per cent of their viable agricultural land over for ecological compensation. In addition, they must agree to manage their enterprise in accordance with the published rules of a specialised organisation and to submit to verification procedures. The rules of these organisations must be presented to the government for approval.

The contributions paid for specific ecological practices such as organic farming and integrated production must be of sound economic interest for the farmers. Products resulting from these farming techniques are generally very high in quality and often command a better price than products from traditional farms. This fact is taken into account in calculating government contributions. The Tänikon Federal Institute for Research into Agricultural Economy and Technology regularly assesses the results

Table 2. **Federal contribution paid for organic farming and integrated production, 1993-97**

In SF

	1993	1994	1995	1996	1997
Organic farming					
Special crops/ha	600	750	1 300	1 800	1 800
Cropland/ha	600	750	1 300	1 400	1 400
Other agricult. viable land/ha	150	150	300	530	530
Contributions for operat. costs	1 000	1 500	2 000	2 000	2 000
Expenditure in SF millions	*3.9*	*5.7*	*14.1*	*40.5*	*45.9**
Integrated production					
Special crops/ha	400	400	700	1 200	1 200
Cropland/ha	400	400	700	800	800
Other agricult. viable land/ha	100	100	200	430	430
Contributions for operat. costs	1 000	1 500	2 000	2 000	2 000
Expenditure in SF millions	*41.5*	*69.7*	*156.4*	*422.9*	*486.5**

* Budget 1997.
Source: Budget, various issues.

of recording farms. The results of these assessments are used as a basis for decisions taken by the government in the area of agricultural policy. Most contributions are tied to surface area (a certain amount per hectare). The Federal Council has modified these awards on several occasions and has also differentiated between various classes of cultivated land (Table 2). Additional contributions are also made for the protection of habitats important to specific localities or regions. This expenditure is shared by the Confederation and the cantons. The funds used to compensate owners of protected areas listed as part of the national heritage are appropriated in a special budget chapter for the protection of nature and the countryside. Various cantons also supplement the Federal budget by granting short-term contributions of their own, particularly aimed at farmers wishing to convert their enterprise to organic farming methods. This allows them to better take local farming conditions into account.

V. FARMER PARTICIPATION IN ECOLOGICAL PROGRAMMES

Switzerland contains some 90 000 agricultural enterprises, of which 65 000 receive direct supplementary payments under s. 31*a* of the Agriculture Act. Given that farmers taking part in any particular ecological programme must also meet the requirements for the grant of direct supplementary payments, they are considered as potential beneficiaries of contributions promoting the adoption of integrated production and organic farming. Some 25 000 farmers do not qualify for contributions as they do not meet certain requirements. These include, in particular, enterprises managed by the public authorities, farm operations whose manager has already reached retirement age, enterprises employing more than 7 permanent labour units and mini-operations.

Overall, it seems that the strategy of incentives has produced the desired effect and that ecological programmes have been well-received by farmers. Indeed, the participation rate has exceeded all expectations. In 1997, 41 200 farmers had already switched to integrated production, representing almost 60 per cent of the potential recipients of ecological contributions. The enterprises in question account for 780 000 ha in total surface area, which represents approximately three quarters of the country's agriculturally viable land. We can also note the strong annual growth in the number of farmers engaging in organic farming, which currently stands at 3 000, representing 6 per cent of enterprises where conversion is a feasible option. The total surface area covered by this programme also stands at 6 per cent of agriculturally viable land. The participation rate in organic farming is particularly high in mountainous areas where more than 13 per cent of the agriculturally viable land is cultivated in this way.

The Tänikon Federal Institute regularly carries out studies and assessments of the ''traditional'', ''integrated production'' and ''organic farming'' approaches to production. An initial comparative study focusing on the years 1993-95 revealed that agricultural incomes had dropped by 25 per cent for farmers using traditional and integrated production methods, whereas the drop was only 5 per cent for those practising organic farming.

5.1. Analysis of farmer participation in two regions

The experiences of two different regions will be used to illustrate the changes in participation rates in the programmes over time. Explanations will also be offered for the differences between the two. The two cantons chosen are part of central Switzerland under the system of local political groupings. Despite their relative proximity, major differences in population, economy and geography can be noted. Some socio-economic indicators are set out in Table 3.

5.1.1. Zug Canton

Zug is the smallest canton in Switzerland, with a total surface area of just 239 km^2. Located on the border between the Mittelland plateau and the Pre-Alps, road and rail access is very well-developed. The canton's population stands at 92 000 residents. Population density (383 persons per km^2) is more than double the Swiss average (166 persons per km^2). This can be explained by the strong growth rate of the local economy, which has brought with it an increase in population. This population growth has

Table 3. **Socio-economic indicators: Zug and Uri Cantons**

	Zoug	Uri
Surface area in km^2	239	1 077
Population (permanent residents as of 31 December 1995)	92 400	35 900
Excess of births over deaths in 1 000s (1995)	0.5	0.2
Net migration in 1 000s (1995)	1.5	–0.2
Population density per km^2	383	33
Percentage of foreign residents	18.7	8.9
Active population (1990)	52 689	15 280
Broken down into (%) Primary sector	3.3	8.9
Secondary sector	30.1	40.1
Service sector	65.6	51
Unemployment rate (average annual rate 1995)	2.8	1.6
Per capita GDP (in 1995 SF, estimated value)	75 349	38 875
Per capita GDP (indexed to 100)	166.4	85.9
Financial capacity (indexed to 100, 1996/97)	228	49
Number of agricultural enterprises (1990):	851	1 013
Principal source of livelihood (%)	79.8	59.2
Viable agricultural land (ha):	11 440	7 078
Open land (%)	15.7	0.2
Labour units employed in agriculture:	2 184	2 633
Of which: full-time positions	56.6	34.5

Source: Zug and Uri Offices of Agriculture.

accelerated over the past few decades, in sharp contrast with other Swiss cantons. It is especially due to positive net migration figures, including a high proportion of young immigrant families. Another factor is an excess of births over deaths well above the Swiss average. This all contributes to give Zug Canton a relatively young population.

Over the past few decades, Zug Canton has generally been considered an economic growth region. The fiscal structure, which in Switzerland is generally favourable as compared with other countries, is even more advantageous in this canton where company tax, as well as rates for individuals, are low, giving Zug an enormous comparative advantage. As a result, the economic structure has changed markedly. There has been a very strong shift toward service provider companies: two thirds of the active population work in the trade and service sectors, 30 per cent in industry and the balance in primary production (agriculture and forestry). For decades, Zug Canton has recorded the highest per capita GDP in Switzerland (1995: 66 index points above the Swiss average). It should be noted that 45 per cent of the Canton's income is generated by business and private fortunes (Swiss average: 22.5 per cent).

Agriculture in Zug Canton

Nearly half the Canton's land area, or 115 km^2, is given over to agricultural production, not including forests. According to the agricultural production survey, two thirds of these agricultural lands are located in mountainous areas. Because of the terrain and rainfall, Zug farmers have always concentrated on dairy and livestock production. More than three fourths of agricultural income is generated from stabled livestock – roughly consistent with the national average.

There are currently 680 farm holdings in Zug Canton, most of which are the owners' principal livelihood. Farms on average occupy 17 ha and employ 1.8 labour units. 649 of these farms fulfil the necessary requirements for direct payments (s. 31*a* of the Agriculture Act). The Table 4 shows the numbers of farmers participating in the integrated production and organic farming programmes:

The debate on ecological farming had begun in Zug well before the Confederation introduced ecological programmes as part of its overhaul of the Agriculture Act. Discussion was sparked during the 1980s by the poor quality of water in Lake Zug. At that time, a group of experts recommended that

Table 4. **Number of farmers receiving payments in the Zug Canton, 1993-97**

Farming technique	1993	1994	1995	1996	1997e*
Integrated production	135	139	239	430	540
Organic farming	19	21	25	44	55
Traditional production	522	488	385	175	54
Total No. of farmers receiving payments	676	648	649	649	649

e*) Estimate based on data supplied by the Zug Office of Agriculture.
Source: Zug Office of Agriculture.

the Canton's entire agriculture industry switch over to organic farming. Although this proposal was rejected by farmers and politicians alike, it nevertheless paved the way for more extensive agriculture. In 1982, the Canton began jointly financing the construction of liquid manure trenches and dung-channel cleaners. At the beginning of the 1990s, the authorities began granting interest-free loans in order to encourage the alteration of farm buildings to bring them into line with the Protection of Animals Act. From 1992 onwards, contributions were paid out by the Canton to farmers switching to organic farming, creating an ideal environment for participation in the Confederation's programmes. From the administrative point of view, the relevant authorities were well prepared, and a monitoring system was put in place. The Canton covers the great majority of costs involved in monitoring compliance.

It was not possible to identify any uniform criteria to distinguish between farming concerns which decide to participate in the programmes and those which do not. What is certain, however, is that Zug farmers do possess an impressive pool of know-how. At the local agricultural college, which is located in Cham, the curriculum is based on integrated production, and organic farming is a compulsory subject. The annual continuing education classes organised for the rural population are well-attended. The Professional Organisation for Direct Farm Selling and weekly markets help establish contacts between farmers and consumers, and also strengthen awareness of Zug farming in the minds of the non-farming population.

5.1.2. Uri Canton

The geographical position of this canton, near Gotthard, has always had a strong influence on its economic structure. Indeed, the building, transport and tourist industries depend on this. Geographical isolation and the topography are powerful factors inhibiting the labour market in the region. Given the lack of available land and the relatively small size of the Uri economy, the Canton suffers from ''outward migration'' and ''seasonal worker'' phenomena which are fairly typical of mountainous regions. The resident population of 36 000 lives in an area of only 1 075 km^2, which results in a population density of only 33 persons per km^2. As a result, Uri is one of the least populous cantons in the country. Nevertheless, because most of the surface area is not inhabitable, the density is still significantly higher than in the Reuss Valley, the population centre.

From the point of view of regional Swiss policies, the entire canton is considered an area that falls squarely within the scope of legislation granting investment aid to mountainous regions. The aim of this legislation is to create a favourable climate for the creation of industry and craft enterprises and to persuade private individuals to settle in the area, particularly by improving infrastructure in economically weak regions. The division of the labour force between the various economic sectors is as follows: primary industry 9 per cent, secondary sector 40 per cent, service sector 51 per cent. Per capita income is estimated at SF 38 875 in 1995 which is lower than the Swiss average of SF 45 276.

Agriculture in Uri Canton

Approximately 7 per cent of the Canton's total surface area (71 km^2) is considered suitable for agricultural use (excluding forests and alpine meadows). Livestock breeding and grass farming are the

Table 5. **Number of farmers receiving payments in the Uri Canton, 1993-97**

Farming technique	1993	1994	1995	1996	1997e*)
Integrated production	3	31	92	188	300
Organic farming	4	7	7	17	30
Traditional production	767	691	624	508	370
Total No. of farmers receiving payments	774	729	723	713	700

e*) Estimate based on data supplied by the Canton Office of Agriculture.
Source: Uri Office of Agriculture.

main productive activities. Uri farmers produce milk, meat and livestock. The alpine economy plays a major part, with 20 per cent of the canton's area being used for summer grazing of livestock (the summer grazing season lasts approximately 90 days).

Farming in Uri Canton is carried out on an even smaller scale than in the other mountainous regions of Switzerland. There are approximately 1 000 agricultural enterprises, of which 60 per cent are the owner's principal source of livelihood and cover an average usable surface area of 11.5 ha. Some 700 of these enterprises qualify for direct payments under s. 31*a* of the Agriculture Act. Participation by farmers in the integrated production and organic farming programmes is set out in the Table 5.

In spite of the fact that throughout the country, the participation rate of mountain farmers in ecological programmes exceeds the national average, the conversion of farms in Uri Canton has been relatively slow. Three explanations can be found for this phenomenon:

– Overall structure: conversion is not really worthwhile for relatively small enterprises which are operated as a secondary source of income, especially when the enterprise is unlikely to be taken over by the next generation.

– Enterprise structure (particularly enclosed livestock breeding): stable facilities often do not comply with the requirements of regulations governing treatment of animals and/or water standards, which prevents them from participating in ecological programmes. The Canton has a fair amount of catching-up to do in this area.

– Local attitudes: many Uri farmers remain extremely wary of the new methods and approaches to production. They lack the necessary pioneering spirit and are unwilling to strike out on their own.

The only support given by the Canton to integrated production and organic farming is for the monitoring process, which it fully funds. At the local agricultural college, the curriculum is based on integrated production, although at the present time organic farming is only an elective subject.

Annex

Landwirtschaftsartikel in der Bundesverfassung vom 9. Juni 1996

Art. 31^octies^

1. Der Bund sorgt dafür, dass die Landwirtschaft durch eine nachhaltige und auf den Markt ausgerichtete Produktion einen wesentlichen Beitrag leistet zur:
   a. sicheren Versorgung der Bevölkerung;
   b. Erhaltung der natürlichen Lebensgrundlagen und Pflege der Kulturlandschaft;
   c. dezentralen Besiedlung des Landes.
2. Ergänzend zur zumutbaren Selbsthilfe der Land-wirtschaft und nötigenfalls abweichend von der Handels- und Gewerbefreiheit fördert der Bund die bodenbewirtschaftenden bäuerlichen Betriebe.
3. Er richtet die Massnahmen so aus, dass die Land-wirtschaft ihre multifunktionalen Aufgaben erfüllt. Er hat insbesondere folgende Befugnisse und Aufgaben:
   a. Er ergänzt das bäuerliche Einkommen durch Direktzahlungen zur Erzielung eines angemessenen Entgelts für die erbrachten Leistungen, unter der Voraussetzung eines oekologischen Leistungsnachweises.
   b. Er fördert mit wirtschaftlich lohnenden Anreizen Produktionsformen, die besonders naturnah, umwelt- und tierfreundlich sind.
   c. Er erlässt Vorschriften zur Deklaration von Herkunft, Qualität, Produktionsmethode und Verarbeitungs verfahren für Lebensmittel.

Constitutional Provision on Agriculture 9 June 1996

Section 31^octies^

1. The Confederation shall ensure that agriculture shall, through sustainable and market-oriented production, contribute meaningfully to:
   a. ensuring the supply of food to the population;
   b. preservation of the natural habitat and the countryside;
   c. the spreading out of the population throughout the territory;
2. In addition to such mutual assistance as can be required from the agricultural sector, and as an exception to the principles of free trade and industry where necessary, the Confederation shall support farm enterprises engaged in working the land.
3. The Confederation shall prepare measures to ensure that the agricultural sector accomplishes its various tasks. In particular, the Confederation's powers and duties shall include the following:
   a. It shall supplement farm incomes with direct payments so as to provide reasonable compensation for services rendered, provided that said services are duly justified and directed towards some ecological goal;
   b. It shall encourage, using economically viable incentives, approaches to production which are particularly suited dto and respectful of the natural environment and animal life;
   c. It shall issure regulations governing the labelling, quality, production and processing methods used in relation to foodstuffs;

d. Er schützt die Umwelt vor Beeinträchtigungen durch überhöhten Einsatz von Düngstoffen, Chemikalien und anderen Hilfsstoffen.

e. Er kann die landwirtschaftliche Forschung, Bera-tung und Ausbildung fördern sowie Investitionshilfen leisten.

f. Er kann Vorschriften zur Festigung des bäuer-lichen Grundbesitzes erlassen.

4. Er setzt dafür zweckgebundene Mittel aus dem Bereich der Landwirtschaft und allgemeine Bundesmittel ein.

Art. 31bis Abs. 3 Bst. b

aufgehoben

d. It shall protect the environment against damage excessive use of fertilisers, chemical products and any other substances;

e. It shall encourage agricultural research, extension to the population and training, and distribute grants to promote investment;

f. It shall issue regulations to consolidate rural land holdings.

4. To these ends, the Confederation shall use funds especially set aside for the agricultural sector as well as general Confederation funds.

Art 31bis, para. 3, let. b

repealed

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