



**TWG2 – Linkages between agriculture and the wider rural  
economy**  
**Final I/O analysis results and qualitative research in selected  
regions**

18 February 2010



*Connecting Rural Europe*

## THEMATIC WORKING GROUP No 2

### LINKAGES BETWEEN AGRICULTURE AND THE WIDER RURAL ECONOMY

Thematic Working Group (TWG) started its activity in March 2009.

The activities of the working group have aimed at identifying and describing the relationships and potential synergies and/or conflicts between agriculture and the rural economy in various types of EU rural areas. This work has involved:

- developing a better understanding of the economic relationships between agriculture and rural economy at the local level, including the multifunctional contribution of agriculture;
- identifying the key factors that determine the potential of regions and localities – economic, human resource, natural endowment, competition over resources – and classifying those where policy support can be most effective;
- screening policy programmes at national, regional and local level in order to assess their coherence and consistency regarding agriculture and rural development;
- assessing the contribution of current policies and institutional arrangements to successful outcomes – positive aspects, difficulties and obstacles;
- presenting the main findings that could be relevant for the development of current and future policy on agriculture and rural development.

The focus is on the current programming period (2007-2013), while taking account of relevant previous programming experience. Primary attention is given to EU Rural Development support (EAFRD) nevertheless the significance of other EU funded programmes, national, regional and local programmes and other private funding sources is also taken into account.

The activity of the group was undertaken in 4 steps.

**Step 1** involved the *selection of a set of 18 NUTS3 level rural areas* from across the EU, designed to ensure as representative and comprehensive as possible coverage of various types of rural areas, including those with various levels of agricultural activity and development, as well as differences in location, geography and economic development.

**Step 2** involved a study of *how agriculture contributes to the way rural economies work* through three separate, but coordinated, activities: comparisons of the available economic and social data on structures and trends for the selected NUTS3 regions; input-output analyses of the relationship between agriculture and other sectors within the local regions; the collection of more qualitative data about such factors as the nature and capacity of the regions under analysis through questionnaire-based surveys undertaken by national experts.

**Steps 3 and 4** involved an in-depth investigation of six of the 18 selected regions, particularly focused on the importance of the impact of various institutional and financial factors in enhancing or inhibiting the potential for local agriculture to assist and support economic development in the region.

An important part of this phase of the analysis has been the identification of relevant projects (when possible from the current programming period) that can demonstrate the synergies achieved between agriculture and the wider rural economy and how current RDP measures (and possibly other funding sources) have been able to promote and enhance such linkages. The case studies have been used to support the recommendations made in the final report and also to form part of the "EN RD project Database".

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## Executive summary

### Introduction

This summary report is based upon a more detailed analysis of the 18 case study regions originally selected by Thematic Working Group 2. The analysis is based upon a range of additional data and information sources (including measures of economic performance, accessibility, demographic change, education, and employment) that have strengthened previous working group findings. It is further supported by some preliminary findings from more detailed research conducted in six of the eighteen regions that has allowed greater disaggregation and qualitative assessment of the economic linkages in the six regions. These findings therefore build upon previous tentative conclusions and are summarised below, provided as working materials that will contribute to the final results and recommendations to be developed by Thematic Working Group 2 in Steps 3 and 4 of the overall work plan.

### Main Findings

The main findings from the initial analysis of the eighteen case study regions remain valid, namely that:

- *Links between agriculture and the rest of the local regional economy* are generally strong and positive (particularly related to forward linkages with trade and tourism), and more significant than might be inferred from statistics concerning agriculture's share of local GDP or employment.
- *Rural regions are generally highly heterogeneous*, within, as well as between one another, with respect to their patterns of economic activity, often related to geography, land quality and other related factors.
- *Development and diversification opportunities are highly varied* and depend on a complex and inter-linked number of factors, including geographical location and diversity, accessibility, alternative potential (afforestation, energy production, tourism), human resource capacity and institutional support.

Further analytical findings are presented in five broad clusters, namely: (i) Economic and agricultural development factors; (ii) Human resource factors; (iii) Institutional capacity factors; (iv) Natural endowment & infrastructure factors; (v) Resource conflict and competition factors.

### Economic and agriculture development factors

- Most of the case study regions appear to be experiencing a decline in agricultural employment and agricultural Gross Value Added (GVA), as a share of total activity, with current contributions ranging from 2% to more than 10%. A key determinant of the strength of the local rural economy appears to be the capacity and timeframe required to respond to structural changes. Generally, regions in the more developed Member State have tended to adapt and cope more rapidly with economic change than others.
- The structural challenges for the agricultural sector that exist in many New Member States (NMS) and some older Member States (MS) appear to be critical factors restricting or enhancing the ability of a region to build effective linkages between agriculture and the wider rural economy. In particular, case study analysis reveals that subsistence and semi

subsistence farming accounts for as much as 70-80% of agricultural activity in some regions. Despite 30-40% of farmers being engaged in other forms of gainful activity, average income levels in these areas is, on average, around 30-40% of the EU average, in purchasing power terms. In such areas a significant decline in agricultural activity has been experienced. This appears to have been accentuated, in some cases, by the way in which public land and farms were privatised.

- In addition, the evidence suggests that past and current CAP Pillar 1 (Agriculture) and Pillar 2 (Rural Development) support has tended to favour larger scale producers over traditional family-owned farms. This may be justified in terms of raising productivity, but may overlook the important role that agriculture has played, or may play, in these areas as a social shock-absorber in times of economic decline and, more importantly, the positive economic 'spill-over' effects that traditional agriculture may provide to a region, including the forward linkages to the wider rural economy for agri-processing, trade and tourism.
- In terms of diversification within agriculture, the case studies highlight numerous examples of successful new small-scale activities as, for example, in Corse-Sud and Gers (France), Trikala (Greece), which have been developed by both existing farmers and new arrivals. Most such success stories tend to involve a focus on niche markets, with many, but not all, linking their activities to local tourism, or building on the local region's wider name and reputation. While such activities are undoubtedly successful in helping revitalise areas, they are unlikely to replace large scale job losses in mainstream food production.

### Human resource factors

- Levels of education attainment vary greatly across all regions. Whilst the available data may suggest that education levels in the new Member State case study rural regions are relatively high, this is not necessarily reflected in labour market or business capabilities, which may be one of the main underlying factors determining the level of dynamism, entrepreneurial capacity and responsiveness of a region. This underlines the need to strengthen support for vocational education and training, technical support services to farmers and other rural entrepreneurs, in concrete terms, in the light of the challenges they face in their localities.
- The older (over 65 years) age groups account for around 19% of populations in rural areas in the case study regions, compared to national averages of around 17%, with the exception of New Member States (NMS), where they account for 14% in all areas. This suggests that aging rural populations is not a significant factor in the prosperity or decline of the case study regions, although evidence on migration suggests that the loss of young people from rural areas in the case study regions is often a significant factor that is contributing to the decline in human capital in most regions.
- Human resource capacity is likely to be linked to the level of agricultural employment which, as a share of total employment, ranges from 3% to well over 20%, with particularly high levels in some 'new' Member States, but with a wide spread across all areas. Statistics on unemployment (taken from 2006 before the current recession) suggest that rural areas tend to fare somewhat better than the national average, with some notable exceptions. However these figures do not take account of the under-employment and inactivity that tends to replace registered unemployment in rural areas.



## **Institutional capacity factors**

- Anecdotal evidence from some case study regions further confirms that, in those regions where administrative capacity is weak, poorly organised, overly bureaucratic, non-transparent and/or lacking service orientation, there is a strong negative correlation with the level of dynamism, diversity of economic activity and overall strength of links between agriculture and the wider economy within that region.
- Overall the previous conclusion has been confirmed through further case study evidence that the level of local capacity to respond to changes, to take initiative and/or provide leadership and coordinate actions appears to be a critical success factor in many regions. A lack of human dynamism in a region tends to be reflected in the level of economic dynamism.

## **Natural endowment and infrastructure factors:**

- Evidence from all case study regions confirms the importance of geography and natural endowment. Where the natural resource endowment is limited, the options for diversification within and outside agriculture remain limited. Clearly, the richness of the natural resource base and infrastructure are critical factors influencing the ability of a region to react to economic and structural change, retain human capital and/or diversify economic activities.
- The degree of peripherality of a region inevitably plays an important role in a region and its economic linkages, closely linked to the level of infrastructure development, allowing or preventing accessibility and connection of the region with the wider rural economy. The findings suggest that the more remote areas tend to have fewer opportunities for diversification outside of agriculture, with the exception of areas of high natural beauty, where alternative activities provide other benefits that create opportunities for enhanced linkages with tourism and trade.
- Closeness to larger urban centres appears to be one of various inter-linked factors that may influence the opportunities for a region to strengthen forward linkages, particularly with trade, providing more direct demand for agricultural products and other linked services where alternative employment and diversification opportunities may then be possible within a region. But other factors appear to be of equal significance in certain regions such as the presence or absence of larger scale agri-processing facilities, tourist centres or attractions etc.

## **Resource conflicts and competition factors:**

- Agricultural land accounts for between 15% to 70% of the land area in the case study regions, with an average share of around 40%. This makes agriculture the most significant user of rural land in all the regions. However, evidence of competition and /or conflict that may exist in alternative uses or demands upon the land have not been identified through current case study examples. In fact, no case studies revealed any compelling evidence of conflicts between the use of resources in any region. This is likely to reflect weaknesses in the methodology for the analysis rather than the lack of conflict in the use of resources in some regions where conflicts are known to exist for water, land, environment, energy, urban growth and other resources.

- However, there is some anecdotal evidence from some case study regions indicating that conflict over land use may be taking new forms, particularly in respect of forestry development and the development of renewable energy supplies.
- In terms of forestry, a number of case study findings suggest that there has been a gradual expansion of forest areas, with the sector currently occupying an average of more than 40% of the land areas in each region. As much as 50% of forest harvests are provided for fuel, which in turn accounts for 80% of bio-energy production. Given the future targets for renewable energy increases across Europe, this trend is likely to accelerate.
- In terms of renewable energies, the main focus appears to be on the development of wind farms, although there is evidence of an expansion in solar energy in some regions. With this expansion, conflicts between land owners, local inhabitants, energy producers and users, and forward linked rural stakeholders involved in tourism and cultural activities are likely to increase over time. However, more targeted research is needed to more fully substantiate this and/or other anecdotal findings related to resource use conflicts.

### Possible factors for success in strengthening linkages

Below are outlined some preliminary ideas on factors contributing to success in strengthening the linkages between agriculture and the wider rural economy. These factors will be further explored in Step 3 as other evidence becomes available and are provided for discussion purposes only at this stage:

- *Economic strength:* The economic baseline of a region is probably the most important underlying factor determining its ability to respond to economic and sectoral change/challenges. The higher the level of economic prosperity (which ranges from as low as 40% up to 100% of the EU average income levels, in purchasing power terms) the higher the degree of dynamism, the greater the strength of forward linkages between agriculture and the rest of the regional rural economy.
- *Structural base:* The structure and scale of the agriculture sector remains critical to the opportunities for enhancing economic links with the wider rural economy. Where small-scale farming dominates, the opportunities for diversification, both on and off farm, and for the development of improved links with agri-processing, trade and tourism sectors, are likely to be far more limited.
- *Natural endowment:* The level of natural beauty, landscape, agricultural potential, geographic location and proximity are critical factors in providing a region with a base from which to develop forward linkages. This natural endowment tends to dictate the degree of diversification that is possible within a region, both within and outside of agriculture
- *Demand capacity:* The development or strengthening of forward linkages in a region can only be sustainably achieved if there is an actual or quantifiable potential demand (e.g. strong agri-food industries, opportunities for the sale of traditional food products, vibrant landscapes and regional history, untapped tourist demand, land based activities that can be used to promote and support tourism and leisure pursuits etc).
- *Supply capacity:* Explicitly linked to demand, a region needs to have sufficient capacity to supply (or the possibility of developing such a capacity), in terms of the potential to produce for the food industry at a sufficient scale, quality and consistency; the availability of

accommodation, restaurants, leisure activities, etc.; as well as human resource capabilities in terms of skills, managerial and entrepreneurial 'know-how'.

- *Institutional capacity, experience and tradition/conservatism:* A positive and enabling institutional framework needs to be present or developed in order to provide support (and access to funds) that can directly encourage and promote the development of agricultural businesses and strengthen forward linkages with agri-food processing, trade and tourism. The level of regional tradition, conservatism, external contact and influence with others outside of the region etc. can be important factors in raising awareness, capacity and dynamism within a region, thereby promoting or inhibiting the development of new opportunities.
- *Other factors:* Other significant factors of relevance will be elaborated based upon subsequent analysis undertaken in Step 3 of the working group work plan.

### **Possible implications for policy design and implementation**

A number of areas are elaborated below that may have implications for current and future policy design and implementation, all of which will be further reviewed and refined in subsequent phases of the working groups activities:

- *Taking more account of the level of economic development in policy design:* There is a clear division between new and older Member States, in terms of their level of economic development. In the agriculture and rural sector this tends to be particularly reflected in the structure of agricultural holdings, the degree of connectivity within the region, and the level of human and institutional capacity to support and develop the region. The policy mix and the administrative complexity of the programmes that can be effectively used and supported in such regions is therefore likely to be quite different from that used in more developed regions. This may indicate the need for more short to medium term reliance on CAP Pillar 1 support (single farm payments) taking more direct account of the smaller scale of agriculture (and semi-subsistence) in many regions (particularly in NMS) which still need to undergo further structural and institutional transition, rather than the more sophisticated support (and administrative requirements) available under CAP Pillar 2.
- *The case for on-going direct payments (Pillar 1):* The loss of agriculture to a local economy can have far reaching negative consequences for a region and CAP support can play a significant role in maintaining some level of agricultural activity in many rural areas. The case for continued high levels of support to agriculture (and rural development) also needs to factor in the important indirect role, linkages and value-added that agriculture provides to other parts of the economy. Where agricultural production is considered only in isolation within a local economy, its economic importance is likely to be under-represented and hence undermine development possibilities in the future.
- *Promoting synergies between agriculture and the wider rural economy:* Findings suggest there may be real opportunities to more explicitly link investment and other support available through current and future rural development programmes to the development of synergies between primary agriculture and agri-processing, trade and tourism. The multiplier effects that can be achieved by actions that ensure forward linkages can have wide ranging and long

term sustainable benefits for a region and its economy, increasing the opportunities for creation of new employment, value added activities and income generation.

- *Strengthening of coordination and capacities of institutional support services:* Given the importance of local and regional authorities to the design and implementation of local and regional rural development programmes, it is critical that effective coordination is developed within and between responsible authorities and linked support services. Failure to achieve this is likely to undermine the opportunities for promoting greater synergies and integration of rural development actions in current and future programmes.
- *Promoting 'bottom-up' analysis:* For regional specificities to be properly taken account of in the policy process there is a need to strengthen the level, depth and frequency of analysis of rural areas at local and regional level, and to understand better the various inter-related relationships and their dynamics. Greater account needs to be taken of the different regional dimensions such as the potential for tourism, the scope for alternative energy development; the scope for agricultural and non-agricultural diversification, the access to educational or institutional support etc. in the planning and programming process. Analyses that allow for the exploration of the regional dynamics that combine both qualitative and quantitative techniques are most likely to produce meaningful insights to guide future programming.
- *Utilising relevant experience examples:* The value of relevant experience comparisons, using targeted case studies, can provide real insight into the dynamics of regions and their relative strengths, weaknesses, opportunities and threats. Such analyses can, when developed effectively, be used to guide improvements in the overall efficiency and effectiveness of current and future RD support.
- *Data availability:* There is a lack of sufficient and reliable data and/or indicators at NUTS III level for various factors such as skills levels, level of cooperation, resource use and conflicts etc that would provide greater insight into a region and its capacities (and/or deficiencies) and/or potential to develop linkages within and between agriculture and wider rural economy. Use of targeted rural surveys and other qualitative assessment techniques to overcome such data constraints would improve regional programming.
- *Data discrepancies:* Lack of consistency between data at the regional, national and European level can give misleading pictures of regional performance and of the potential impact or otherwise of current and future agriculture and rural development programmes. Addressing such inconsistency may be particularly important when developing or comparing Common Monitoring and Evaluation Framework (CMEF) indicators for rural development which rely on data collected in the frame of national statistics.
- *Other factors:* These will be identified and/or further elaborated and verified following completion of Step 3 of the work plan of Thematic Working Group 2.

## **Follow-up actions based upon findings from Step 2**

The working group has reviewed the available analysis and case study materials and broadly accepts the overall findings from Steps 1 and 2 of the work. It is agreed that this work has provided solid foundations for the next stages of the work planned by the group. Where certain gaps in statistics, knowledge and other relevant information remain, these will be taken into consideration in Step 3, as part of the completion of the more detailed case studies in six regions.

It is intended that whilst this next step in the work plan will primarily focus upon an assessment of the effectiveness of current RD Programmes in each region, it will also provide an opportunity for more detailed assessment of other factors identified by the working group including:

- The relative importance of local and regional organizations and leaders, particularly local action groups and other community organizations.
- An assessment of regional network services and capacities.
- Linkages with other regions and possible spill-over effects.
- Further evidence of resource conflicts and balances in particular regions.
- Other alternative measures/evidence of regional innovation, skills, experience and/or traditions, conservatism that may affect local human and institutional capacities and dynamism and general levels of entrepreneurship.
- An assessment of the impact of reconstruction, concentration / de-concentration of agro-processing operations and their effects on regional supply and demand.
- Other factors identified through regional expert insights and experience that may be of relevance.

Additional findings from all follow up analysis will be incorporated in the Step 3 draft summary report to be prepared by the ENRD Contact Point during February/March 2010. This will also allow incorporation of additional information, insights, comments and suggestions from all thematic working group members, linked to RD policy/programme implementation in their countries.

## 1 Introduction and context

There is longstanding and widespread concern about the future of rural areas in the EU which cover 90% of its territory and include half of its population. In response, the strengthening of EU rural development policy has become an overall EU priority, with a fundamental reform of rural development policy for the period 2007-2013 agreed in 2005.

Rural development policy has evolved in line with the development of the CAP – moving from dealing with the structural problems of the farm sector to a policy addressing the multiple roles of farming in the wider rural context. This has involved a range of measures, encompassing human resource as well as physical capital investment, focused on:

- Improving the competitiveness of the agricultural and forestry sectors
- Improving the environment and countryside
- Improving the quality of life in rural areas and encouraging diversification
- Building local capacity for employment and diversification
- As well as actions to develop synergies and complementarities concerning instruments and programmes.

## 2 Coverage of the report

In that light, this report focuses in particular on *the role that agriculture plays in maintaining economic, social and environmental well-being* in rural localities, with a view to identifying ways in which the positive direct and indirect relationships between agriculture and rural development can be strengthened through appropriate policy support.

An initial review of existing literature suggested that, while a considerable body of research results exists concerning the general situation in rural areas, and some on the impact of rural development policies<sup>1</sup>, there is relatively little quantitative or qualitative empirical analysis concerning the *relationship between agriculture and rural development* at the local level, which can be used in order to assess the likely impact and appropriateness of alternate actions.

A more general, longer-term, research exercise funded under the 7<sup>th</sup> Framework programme is in progress, involving some 11 case study regions in the EU. However, while surveys of farm household units have been carried out, the econometric analysis to accompany this descriptive analysis is still in progress.

Moreover, while other reports have been undertaken on the performance of national and regional rural development programmes, relatively little independent empirical evaluation is available concerning the impact of policy interventions at the local level.

In order to address this analytical deficit, the TWG2 has undertaken a limited programme of *in-depth local level research* in 18 selected NUTS3 regions – the lowest level at which comparable EU-wide data is available for most of the key economic and social characteristics of different areas - in order to identify:

- The *part that agricultural activity plays in economic and social development* of a variety of rural localities across the EU
- The *factors that appear to be most significant* in ensuring positive developments in different situations
- The extent to which challenges can be effectively addressed in practice through *various forms of public support* for agriculture – financial, institutional, etc
- The *policy instruments and systems* that seem to be most successful in producing positive outcomes

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<sup>1</sup> Reference to project or website report

### 3 Work programme

Work has proceeded in stages:

**Stage 1** involved the *selection of a set of 18 NUTS3 level rural areas* from across the EU, designed to ensure as representative and comprehensive as possible coverage of various types of rural areas, including those with various levels of agricultural activity and development, as well as differences in location, geography and economic development. This selection was made on the basis of a cluster analysis<sup>2</sup>

The selection of regions reflected the desire to analyse the extent of synergy and interdependence between agriculture and the rest of the rural economy, and was based on an analysis of all 1,303 EU NUTS3 level regions of the 27 Member States, classified on six criteria:

- Degree of importance of *agriculture*
- Importance of the *food industry*
- Importance of *tourism* (measured in terms of natural resources and accommodation)
- *Demographic* changes
- Competition for *water*
- Competition for *land*

This process enabled regions to be selected and categorised as non-dynamic, agriculturally-dependent, and diversified dynamic. Within these categories, areas were also selected in order to provide a balanced representation on the basis of the OECD categorisation of rural areas as rural peripheral areas (covering some 10% of all regions), rural accessible areas (20% of all regions) and intermediate open space areas (15% of all regions).

**Stage 2** involved a study of *how agriculture contributes to the way rural economies work* through three separate, but co-ordinated, activities:

- Comparisons of the available economic and social data on structures and trends for the selected NUTS3 regions
- Input-output analyses of the relationship between agriculture and other sectors within the local regions
- The collection of more qualitative data about such factors as the nature and capacity of the regions under analysis through questionnaire-based surveys undertaken by national experts.

**Stage 3** involved a *comparison of results* from these case study areas, drawing on these different strands of research, in order to distinguish:

- The impact and relative importance of the *physical, economic and social characteristics of the areas* for their economic and social development

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<sup>2</sup> A full description of the methodology used, and the results, is contained in Interim Working Paper "Analysis of the Link between the Agricultural Sector and the rest of the Rural Economy" 06/07/2009.



- The *nature and strength of the linkages* between agriculture and other activities between and within different types of local regions
- The *importance and impact of various institutional and financial factors* in enhancing or inhibiting the potential for local agriculture to assist and support economic development in the region

**Stage 4**, which is still in progress, has involved a further development of the Step 2 analysis within 6 of the original case study areas, with a particular focus on:

- A *deepening of our understanding of the nature and extent of the linkages* between agriculture and other local economic activities and sectors, notably food processing, hotels and catering, and trade
- An *assessment of the extent to which relatively small (NUTS3) regions can be treated as relatively homogeneous*, or whether heterogeneity is a more common characteristic, and both the determinants and consequences that follow
- An assessment of the extent to which the *skills and entrepreneurial capacity of local farmers and other actors* are important for ensuring progress and adaptability
- An appraisal of the *relative performance of programmes and projects* in different areas and contexts, with a view to identifying the key ingredients and conditions of success, including institutional support.

## 4 Methodology

In addressing the situation in NUTS3 level regions, some limitations in terms of data availability have to be recognised. Thus a variety of qualitative as well as quantitative sources and analytical techniques have to be used and combined, and some important data – for example on educational achievement – has to be based on what is only available at the higher NUTS2 level.

One important factor to bear in mind in such an analysis is the relative sizes of NUTS3 areas. In general the populations in these areas range in number from around 120,000 to 220,000 across the 'old' Member States but, in the case of the 'new' Member States, the average population size is often double (ranging from 330,000 to 660,000 in the case study areas covered).

**Table No 1: National and Regional population**

	Country	NUTs code	Region (NUTs 3 level)	National population	Regional Population
<b>Northern</b>	Austria	AT124	Waldviertel	8m	225,000
	Sweden	SE213	Kalmar län	9m	230,000
	Germany	DE22A	Rottal-Inn	82m	120,000
	Netherlands	NL342	Overig Zeeland	16m	270,000
	Germany	DE218	Ebersberg	82m	120,000
	United Kingdom	UKL12	Gwynedd	59m	120,000
<b>Southern</b>	Italy	ITF52	Matera	57m	200,000
	France	FR624	Gers	58m	170,000
	Italy	ITE31	Pesaro e Urbino	57m	350,000
	France	FR831	Corse-du-Sud	58m	120,000
	Spain	ES211	Álava	40m	220,000
	Greece	GR144	Trikala	11m	130,000
<b>New MSs</b>	Hungary	HU232	Somogy	10m	335,000
	Romania	RO422	Caras-Severin	22m	330,000
	Slovakia	SK032	Banskobystricky kraj	5m	660,000
	Latvia	LV007	Pieriga	n.a.	n.a.
	Czech Republic	CZ063	Vysocina	10m	520,000
	Poland	PL214	Krakowski	n.a.	n.a.

For much of the analysis this may not matter since the focus is on average indicators, but the overall size or population density of areas can be important in so far as this allows more or less diversity in economic activity, or in so far as it makes a region more or less accessible in relation to the wider economy.

This is important given that, when undertaking research into rural NUTS3 regions from a broad European perspective, there is a risk of believing them to be more homogeneous than they may be in reality.

That is not to say that rural regions do not, as a group, differ in kind from non-rural areas in certain important respects - as is shown later, virtually all the regions studied in this report are less accessible than their respective national average, and tend, in general, to have populations with somewhat lower education attainment levels, and lower incomes.

On the other hand, stereotypical classifications of rural areas do not generally capture the variety and mix of activities that commonly exists within different parts of these regions, and care should therefore be taken to avoid using simple categorisations of regions at NUTS3 level in the development of policy frameworks, or when comparing policy outcomes.

#### **4.1 Structuring the evidence**

In order to impose some form of structure on what could all too easily become a mass of assorted but indigestible evidence and data, we have assembled and presented the varied evidence about the nature and capacity of the regions under traditional 'economic factors of production' categories - land, labour, capital and enterprise.

This provides a broad but rigorous framework, at the same time allowing attention can be given to the special circumstances or features of the areas concerned (and of surrounding regions) that are likely to affect the way in which the evidence should be interpreted.

#### **4.2 Study areas selected**

The regions selected are set out in the following table and categorised in terms of:

*Cluster analysis:*

NDD Non dynamic region

ADD Agriculturally-dependent dynamic regions

DDR Diversified dynamic regions

*OECD categories:*

RPR Regional peripheral region

RAR Rural accessible region

IOR Intermediate open space region

## 5 Structure and trends in the case study regions

The clustering of the regions in terms of their internal dynamics was important for selecting an appropriate set of regions in order to develop input-output analyses used in the report. However, in order to present more general data and findings about structures and trends in the local NUTS3 regions, a simpler, conventional, approach has been adopted, namely a three-way grouping of the cases under three headings: Northern Member States, Southerly Member States, and new Member States.

**Table No 2: Classification of the 18 regions**

	Country	NUTSs code	Region (NUTs 3 level)	Cluster categorisation	OECD regional category
<b>Northern</b>	Austria	AT124	Waldviertel	NDR	RPR
	Sweden	SE213	Kalmar län	DDR	RPR
	Germany	DE22A	Rottal-Inn	ADD	RAR
	Netherlands	NL342	Overig Zeeland	DDR	IOS
	Germany	DE218	Ebersberg	NDR	IOS
	United Kingdom	UKL12	Gwynedd	DDR	RAR
<b>Southern</b>	Italy	ITF52	Matera	ADD	RPR
	France	FR624	Gers	ADD	RPR
	Italy	ITE31	Pesaro e Urbino	NDR	IOS
	France	FR831	Corse-du-Sud	DDR	IOS
	Spain	ES211	Álava	ADD	IOS
	Greece	GR144	Trikala	NDR	RAR
<b>New MSs</b>	Hungary	HU232	Somogy	NDR	RPR
	Romania	RO422	Caras-Severin	DDR	RPR
	Slovakia	SK032	Banskobystricky kraj	NDR	RAR
	Latvia	LV007	Pieriga	DDR	RAR
	Czech Republic	CZ063	Vysocina	ADD	RAR
	Poland	PL214	Krakowski	ADD	IOS

Obviously this breakdown also has its disadvantages, containing many exceptions on various criteria, but it does reflect some of the more basic economic data – such as average living standards/productivity in the regions concerned compared with the EU average, rates of GDP growth (which are, of course, higher in the 'new' Member States than in the 'old' as they catch-up), the extent of subsistence farming, or a predominance or otherwise of older age groups in the regions.

Such a simple structuring of the cases also serves to highlight characteristics which do not coincide with conventional expectations of results from such groupings, and which illustrate the

rich and complex diversity of situations that characterize rural areas and agricultural activity across the Union.

The traditional economic factors of production categories may seem, at first sight, to be rather basic but they actually contain a rich body of information:

- **Land:** covering all aspects of an area's physical endowment from land quality to environmental beauty;
- **Labour:** covering all aspects of human resource capacity and potential;
- **Capital:** covering all aspects of investment and development across all sectors, including public sector facilities
- **Enterprise:** covering private sector entrepreneurial capacity and innovation, plus public and semi-public institutional and administrative capacity in the regions concerned.

**Table No 3: Agricultural land at national and regional level**

	Country	NUTs code	Region (NUTs 3 level)	National agricultural land %	Regional Agricultural land %
Northern	Austria	AT124	Waldviertel	40	48
	Sweden	SE213	Kalmar län	7	17
	Germany	DE22A	Rottal-Inn	n.a.	n.a.
	Netherlands	NL342	Overig Zeeland	46	34
	Germany	DE218	Ebersberg	n.a.	n.a.
	United Kingdom	UKL12	Gwynedd	66	70
Southern	Italy	ITF52	Matera	42	48
	France	FR624	Gers	43	73
	Italy	ITE31	Pesaro e Urbino	42	47
	France	FR831	Corse-du-Sud	43	13
	Spain	ES211	Álava	49	40
	Greece	GR144	Trikala	31	19
New MSs	Hungary	HU232	Somogy	45	39
	Romania	RO422	Caras-Severin	58	49
	Slovakia	SK032	Banskobystricky kraj	39	33
	Latvia	LV007	Pieriga	27	23
	Czech Republic	CZ063	Vysocina	45	55
	Poland	PL214	Krakowski	n.a.	n.a.

## 5.1 Land

### 5.1.1 General characteristics

Case study regions are typically varied geographically, with mountainous areas in some regions; a mixture of high ground, plains, valleys and forests in most; and important coastal areas in others (coasts featuring in nearly half our case studies).

The distribution of types of activity also vary across these regions, with agriculture obviously tending to be in plains and valleys, but also in high ground areas (generally semi-subsistence farming), as well as in some coastal areas.

In general, the NUTS2 regions covered are surprisingly heterogeneous. For example, the Hungarian region of Somogy, albeit relatively large, is described as being 'characterised by economic diversity' with some areas having favourable conditions for agricultural production, others being dependent on seasonal Lake Balaton tourism, and many areas of subsistence agriculture where local populations face considerable difficulties.

In Trikala (Greece) agricultural and other economic activities are likewise strongly influenced by land characteristics – notably the mountainous nature of much of the area, matched by rich fertile land, but with nearly a third of the area covered by forest.

**Table No 4: Regional income and value - added**

	Country	NUTs code	Region (NUTs 3 level)	Regional incomes % EU pps 2003-05	Agriculture share of regional value-added
Northern	Austria	AT124	Waldviertel	90%	5%
	Sweden	SE213	Kalmar län	100%	3%
	Germany	DE22A	Rottal-Inn	100%	4%
	Netherlands	NL342	Overig Zeeland	100%	4%
	Germany	DE218	Ebersberg	90%	2%
	United Kingdom	UKL12	Gwynedd	85%	n.a.
Southern	Italy	ITF52	Matera	70%	8%
	France	FR624	Gers	80%	13%
	Italy	ITE31	Pesaro e Urbino	100%	2%
	France	FR831	Corse-du-Sud	95%	1%
	Spain	ES211	Álava	130%	2%
	Greece	GR144	Trikala	60%	9%
New MSs	Hungary	HU232	Somogy	40%	10%
	Romania	RO422	Caras-Severin	30%	16%
	Slovakia	SK032	Banskobystricky kraj	45%	5%
	Latvia	LV007	Pieriga	30%	5%
	Czech Republic	CZ063	Vysocina	80%	9%
	Poland	PL214	Krakowski	n.a.	n.a.

Such contracts within relatively small areas of population are equally reflected in regions with coastal areas, including both the Italian regions, where, in addition to the mixture of mountains, high land, and more fertile plains, there can be competition in coastal areas with manufacturing or extraction industries.

In short, NUTS3 regions where large scale agricultural activity covers a significantly large part of the territory, and generate a significant proportion of overall employment, as in Gers (France), tend to be the exception rather than the rule in the European Union. However, there are parts, or sub-sections, of many of the regions surveyed in this report where this is clearly the case, as in Matera (Italy) or Waldviertel (Austria).

### **5.1.2 Agriculture's contribution to regional GDP**

The contribution of agricultural output to regional GDP is quite low in many of the 'old' Member State regions, being typically between 2-5%, with the exception of areas such as Matera (Italy) at 8%, Trikala (Greece) at 9% and, most notably, Gers (France) at 13%.

This aggregate data can, however, give a misleading impression, and the issue of the full contribution of agriculture to rural activity and living standards is addressed in much greater detail through the input-output analyses of flows of expenditure within rural areas that has been undertaken for this study, and which are currently being pursued further, notably in relation to specific food and service sectors.

### **5.1.3 Land productivity**

Average land productivity is measured in terms of euro per hectare, and shows significant differences across the regions covered. The highest rate by far is the Overig Zeeland area in the Netherlands, recording over 3000 euro per hectare in 2005, followed by Trikala (Greece) with 2000 euro per hectare. Most regions manage around 1000 euros per hectare, except for the Romania, Latvian and Welsh (UK) regions which record less than 500 euros per hectare.

### **5.1.4 Afforestation and nature parks**

Forests and other wooded lands covers some 42% of the EU's surface area and, despite urban encroachment, they are expanding slowly into former agricultural land as well as along the tree margin in mountainous areas. Half of the forestry harvest in the EU is currently used for energy purposes, with wood burning accounting for 80% of biomass production.

While 60% of forestry is in private hands, it is shared between 16 million owners, who, it is said, are increasingly urban dwellers and who are presumably not reliant on the forests for their livelihood. Public ownership of woodlands dominates in most of the eastern and south-eastern Member States, however, and includes areas owned by local municipalities and communes. In both Germany and the Netherlands, public and private ownership are roughly equal in importance.

In relation to afforestation, it is also notably how many of the case-study regions contain extensive nature parks or protected areas – these include Pesaro e Urbino and Matera in Italy, Kalmar Lan in Sweden, Caras-Severin in Romania, Gwynedd in Wales UK, Overig Zeeland in the Netherlands, and Corse du Sud in France.

**Table No 5: Forest land at national and regional level**

	Country	NUTs code	Region (NUTs 3 level)	National % forest and other wooded land	Regional % forest and other wooded land
Northern	Austria	AT124	Waldviertel	48	42
	Sweden	SE213	Kalmar län	75	68
	Germany	DE22A	Rottal-Inn	32	21
	Netherlands	NL342	Overig Zeeland	11	2
	Germany	DE218	Ebersberg	32	35
	United Kingdom	UKL12	Gwynedd	12	14
Southern	Italy	ITF52	Matera	37	17
	France	FR624	Gers	31	9
	Italy	ITE31	Pesaro e Urbino	37	24
	France	FR831	Corse-du-Sud	31	35
	Spain	ES211	Álava	56	39
	Greece	GR144	Trikala	51	27
New MSs	Hungary	HU232	Somogy	21	28
	Romania	RO422	Caras-Severin	29	56
	Slovakia	SK032	Banskobystricky kraj	40	49
	Latvia	LV007	Pieriga	49	46
	Czech Republic	CZ063	Vysocina	34	29
	Poland	PL214	Krakowski	30	18

### 5.1.5 Economic history of localities

While most rural areas have been agricultural for a long time, some areas have experienced extensive industrial activity in the past – Gwynedd in Wales, UK, Waldviertel in Austria, Banskobystricky kraj in Slovakia – and which may well to influence expectations and attitudes to change, sometimes positively, sometimes less so.

Regions in which agricultural activity dominates the landscape and economic life – such as Gers, France and Caras-Sevrin in Romania - are closer to the conventional, US-style, notion of an agricultural area, but they are relatively untypical in Europe as indicated above.

### 5.1.6 Peripherality and accessibility

The issue of accessibility is not easy to measure unambiguously, but a 'multi-modal' travel model has been used in this study and confirms that almost all the case study areas covered are less accessible than the average EU area, the only exception being the area of Ebersberg, Germany. The least accessible region is Trikala, Greece, followed by Somogy, Hungary, and Banskobystricky kraj, Slovakia.



Importantly, all areas are seen to have become more accessible over the period 2001 to 2006, with the possible exception of the Kalmar Ian region of Sweden, with the greatest progress having been achieved in the Romanian and Latvian NUTS3 regions.

#### **5.1.7 Conflict between agriculture and other resource users**

Conflict over the use of water resources, or concern about nitrate pollution, can be an issue in rural areas although, where they are mentioned in the regions covered – as in Trikala (Greece); Gers (France); and Matera (Italy) – these are not seen as major issues. There can be conflicts of interest over water in other circumstances, however, for example in coastal areas, with conflicts between the use of coastal waters for fishing as against marinas for leisure craft (Gwynedd, Wales UK).

Direct conflict over land use has not been identified in the case study areas as significant, although this may be relevant where rural areas border on urban areas that are growing and seeking building land at the same time as the use of land is changing rapidly in some rural areas.

For example, areas like Ebersberg in Germany and Kalmar Lan in Sweden are more likely to be seen as dormitories (permanent or weekend) with leisure facilities (not least, horse riding) serving adjacent urban areas, rather than centres of food production, even though much of their appearance and tourist appeal depends on continuing agricultural activity.

#### **5.1.8 Conflicts between energy and tourism**

The growth of tourism in many rural areas does not seem to have given rise to major conflicts, except perhaps where there is a shortage of rural properties, provoking conflicts between local residents and second-home owners. However, tourism concerns may, in time, inhibit new developments such as wind-farms if unsightly wind farms and bio-energy production plants put environmental and economic concerns in opposition.

At the same time, there is a general unease among institutions, organisations and the general public in many of the case study areas, concerning the potential longer-term consequences of declining or changing agricultural activity in terms of loss of cultural rural heritage and depopulation in the regions concerned. This may explain, in part, the support for new policy initiatives, even though the more potentially wide-ranging and deep-seated economic and social consequences for the region of such changes – as revealed in the input-output analyses – may not yet be realised.

On the other hand, the main concerns in many of the poorest regional localities, notably but not exclusively in the new Member States, are often more immediate and mundane – loss of employment and incomes, and lack of alternative prospects.

## 5.2 Labour

### 5.2.1 Population growth and decline

There have some significant population changes within the case study regions, even over the relatively short period measured, namely 2001 to 2006, Overall declines of around 3% have occurred in Pieriga (Latvia) and Somogy (Hungary) with an even greater decline, of some 6%, in Caras-Severin (Romania).

On the other hand, several regions have seen population growth over this period, most notably Corse-du-Sud (France) with a striking increase of 12%, and around 4% in Ebersberg (Germany); Alava (Spain); as well as in the Pesaro e Urbino region of Italy, and Gers in France.

Such differences are important in relation to pessimistic concerns about farm succession, which tend to be widespread, although Trikala (Greece) reports some modest increase in the middle age group in the area, and the report from Corse-du-Sud (France) notes an increase in young farmers entering the region, a third being women.

A particular issue for farmers concerns land ownership with, for example, owner-occupation of farms in Gers (France) having fallen from 75% to 55% between 1980 and 2000, although this is not seen as an entirely negative factor in that young people can more easily enter farming by renting.

**Table No 6: Population aged over 65 at national and regional level**

	Country	NUTs code	Region (NUTs3 level)	National % population over 65	Regional % population over 65
<b>Northern</b>	Austria	AT124	Waldviertel	15	18
	Sweden	SE213	Kalmar län	17	20
	Germany	DE22A	Rottal-Inn	17	17
	Netherlands	NL342	Overig Zeeland	14	16
	Germany	DE218	Ebersberg	17	14
	United Kingdom	UKL12	Gwynedd	16	19
<b>Southern</b>	Italy	ITF52	Matera	19	17
	France	FR624	Gers	16	24
	Italy	ITE31	Pesaro e Urbino	19	21
	France	FR831	Corse-du-Sud	16	19
	Spain	ES211	Álava	17	16
	Greece	GR144	Trikala	17	21
<b>New MSs</b>	Hungary	HU232	Somogy	15	15
	Romania	RO422	Caras-Severin	14	14
	Slovakia	SK032	Banskobystricky kraj	12	12
	Latvia	LV007	Pieriga	n.a.	n.a.
	Czech Republic	CZ063	Vysocina	14	14
	Poland	PL214	Krakowski	n.a.	n.a.

## 5.2.2 Demographics: Proportions of the population aged over 65

Rural areas are often seen as having ageing populations. As an indication of the relative age distribution in the areas covered, data has been presented concerning the share of the total population aged 65 or more in both the study areas and the Member States in which they are located.

One obvious distinction between 'old' and 'new' Member States is that, in the 'new' Member States, the average size of this older population is smaller – averaging around 14% of the total population in the countries as a whole, as well as in the regions concerned – with such a distinction being explainable essentially due to different birth and death rates related to wider social phenomena.

With regards to the 'old' Member States, the sizes of the older population group in the rural regions covered tend to be somewhat greater than in their respective national economies, but not to any great extent. The notable exceptions are Gers, where 24% of the rural population is aged 65 or over compared with only 16% nationally; Trikala where 21% is in the older age group compared with 17% nationally; and Kalmar Lan, Sweden, where the proportions are 20% against 17%.

An exception in the opposite sense is the Ebersberg region of Germany, with only 14% of the population aged over 65 compared with 17% nationally, Matera, Italy (17% against 19%) and Alava, Spain (16% against 17%).

**Table No 7: Agricultural employment – national and regional level**

	Country	NUTs code	Region (NUTs3 level)	National agricultural employment %	Regional agricultural employment %
Northern	Austria	AT124	Waldviertel	7	19
	Sweden	SE213	Kalmar län	2	5
	Germany	DE22A	Rottal-Inn	2	8
	Netherlands	NL342	Overig Zeeland	3	5
	Germany	DE218	Ebersberg	2	4
	United Kingdom	UKL12	Gwynedd		
Southern	Italy	ITF52	Matera		15
	France	FR624	Gers	3	16
	Italy	ITE31	Pesaro e Urbino		3
	France	FR831	Corse-du-Sud	3	3
	Spain	ES211	Álava	5	3
	Greece	GR144	Trikala		26
New MSs	Hungary	HU232	Somogy		10
	Romania	RO422	Caras-Severin	33	21
	Slovakia	SK032	Banskobystricky kraj		6
	Latvia	LV007	Pieriga	12	16
	Czech Republic	CZ063	Vysocina	4	9
	Poland	PL214	Krakowski		34

### 5.2.3 Employment in agriculture

In virtually all the regions studied, regional employment in agriculture is higher than the national average but by differing amounts – more than twice the national level in Waldviertel, Austria, in both the Rottal-Inn and Ebersberg regions of Germany, the Kalmar Lan area of Sweden, and the Vysocina area of the Czech Republic, and more than five times the level in Gers as in France as a whole.

While some regions have seen some positive developments in terms of increasing value-added in agriculture, virtually all have seen a decline in agricultural employment over the past decade or more, often but not always in line with national trends.

While employment in agriculture as a proportion of total employment is currently at its highest in regions of the new Member States (Krakowski, Poland at 34%; Caras-Severin in Romania at 21%; Pieriga in Latvia at 16%), these levels are more or less matched in some Southern Member States (26% in Trikala, Greece; 16% in Gers, France; 15% in Matera, Italy), with the region of Waldviertel in the northern part of Austria also having 19% of its employment in agriculture.

At the other extreme, however, other case study areas in Southern Member States (Pesaro e Urbino, Italy; Corse-du-Sud, France; and Alava, Spain) report levels of agricultural employment of only 3% - below the rates in the rural case study areas in the Northern Member States of Sweden, Germany, the Netherlands and the UK.

### 5.2.4 Part-time work and farm succession

Part-time agricultural activity is widespread in most rural areas, with close to 50% of farmers working on this basis in many of the regions covered, and with up to half of the farms in many areas run on a part-time basis.

**Table No 8: % of semi-subsistence farming and additional income – regional level**

	Country	NUTs code	Region (NUTs3 level)	Subsistence farming	Other gainful employment
Northern	Austria	AT124	Waldviertel		
	Sweden	SE213	Kalmar län	10%	55%
	Germany	DE22A	Rottal-Inn		
	Netherlands	NL342	Overig Zeeland	0%	30%
	Germany	DE218	Ebersberg		
	United Kingdom	UKL12	Gwynedd	45%	
Southern	Italy	ITF52	Matera	25%	30%
	France	FR624	Gers		
	Italy	ITE31	Pesaro e Urbino		
	France	FR831	Corse-du-Sud		
	Spain	ES211	Álava		
	Greece	GR144	Trikala	20%	30%
New MSs	Hungary	HU232	Somogy	85%	40%
	Romania	RO422	Caras-Severin	70%	40%
	Slovakia	SK032	Banskobystricky kraj	80%	35%
	Latvia	LV007	Pieriga	70%	40%
	Czech Republic	CZ063	Vysocina		
	Poland	PL214	Krakowski	70%	40%

In the new Member States case study regions, 70-80% of agricultural activity is typically classified as subsistence farming (mainly for self-consumption or exchange, rather than production for sale) with 40% of farmers engaged in other forms of gainful employment. In areas such as Matera, Italy, or Trikala, Greece, levels of subsistence farming are much lower – 20-25% - but some 30% of farmers still engage in other forms of gainful employment.

In the northern Member State case study areas, Gwynedd, Wales UK, stands out with 45% subsistence farming (hill farming of sheep) compared with very limited subsistence farming (10% or less) in the Kalmar Lan region of Sweden and the Overig Zeeland region of the Netherlands, although in both cases, significant numbers of farmers (30-50%) undertake other gainful employment.

### 5.2.5 Unemployment rates

Rates of unemployment in the case study regions in the new Member States are, in general, both higher than in other EU regions and, in some cases (Somogy in Hungary; Banskobystricky kraj in Slovakia) higher than their respective national averages. However, in general unemployment rates in the case study areas are reported as being somewhat lower than the national average, most notably in Alava, Spain, where the regional rate is 5% as against a national rate of 11%.

This is not, of course, an unexpected finding given the more informal patterns of work and work relationships that tend to exist outside of industrial areas and cities, and which produces under-employment and un-recorded inactivity rather than recorded unemployment as such. Hence this particular statistic is not generally seen as offering too much comfort for these regions, with attention being focused more on rates of employment, both full and part-time, rather than on unemployment for which, unfortunately, NUTS3 data is not generally available.

**Table No 9: Unemployment data – national and regional data**

	Country	NUTs code	Region (NUTs 3 level)	National unemployment 2008 %	Regional Unemployment 2008 %
Northern	Austria	AT124	Waldviertel	4	4
	Sweden	SE213	Kalmar län	6	6
	Germany	DE22A	Rottal-Inn	n.a.	n.a.
	Netherlands	NL342	Overig Zeeland	3	2
	Germany	DE218	Ebersberg	n.a.	n.a.
	United Kingdom	UKL12	Gwynedd	n.a.	n.a.
Southern	Italy	ITF52	Matera	7	11
	France	FR624	Gers	8	4
	Italy	ITE31	Pesaro e Urbino	7	5
	France	FR831	Corse-du-Sud	8	8
	Spain	ES211	Álava	5	11
	Greece	GR144	Trikala	8	7
New MSs	Hungary	HU232	Somogy	8	10
	Romania	RO422	Caras-Severin	6	7
	Slovakia	SK032	Banskobystricky kraj	9	18
	Latvia	LV007	Pieriga	7	6
	Czech Republic	CZ063	Vysocina	4	3
	Poland	PL214	Krakowski	7	6

### 5.2.6 Labour productivity in agriculture

Average labour productivity in the case study areas varies significantly but broadly in line with general economic performance. The highest rates are found in Overig Zeeland in the Netherlands – almost three times the level of the average case study area (20,000 euro per AWU in 2005) – followed by Kalma Lan in Sweden, Gers in France and Alava, Spain.

Labour productivity rates are, not unexpectedly, particularly low in the new Member State regions, notably in Caras-Severin in Romania, and Pieriga in Latvia, but with rates in Somogy, Hungary and Banskobystricky kraj, Slovakia, less than half the average level of the regions covered.

At the same time, the two regions of Germany, the Avala region of Spain, the Kalmar Lan region of Sweden, as well as the rural case study regions of the Czech Republic and Latvia both

performed slightly better than their respective national averages in terms of rates of land productivity.

## 5.3 Capital

### 5.3.1 Rates of economic growth

There are significant differences between rates of economic growth between many of the rural case study areas and their equivalent national performances, as well as between rural areas in different Member States.

**Table No 10: GDP growth – national and regional level**

	Country	NUTS code	REGION (NUTs 3 level)	National growth 2006 %	Regional Growth 2006 %
Northern	Austria	AT124	Waldviertel	5	4
	Sweden	SE213	Kalmar län	6	4
	Germany	DE22A	Rottal-Inn	3	2
	Netherlands	NL342	Overig Zeeland	5	5
	Germany	DE218	Ebersberg	3	5
	United Kingdom	UKL12	Gwynedd	6	5
Southern	Italy	ITF52	Matera	4	5
	France	FR624	Gers	5	4
	Italy	ITE31	Pesaro e Urbino	4	3
	France	FR831	Corse-du-Sud	5	8
	Spain	ES211	Álava	8	9
	Greece	GR144	Trikala	8	4
New MSs	Hungary	HU232	Somogy	15	-4
	Romania	RO422	Caras-Severin	22	22
	Slovakia	SK032	Banskobystricky kraj	16	19
	Latvia	LV007	Pieriga	23	45
	Czech Republic	CZ063	Vysocina	13	13
	Poland	PL214	Krakowski	11	16

At one level, the most notable differences in rates of economic growth are between the 'new' and the 'old' Member States, with the case study areas in the 'new' Member States having achieved growth rates of 10-20% or more in 2006, with one notable exception, Somogy, Hungary, where regional GDP actually fell by 4% while the national economy grew by 15%.

Rates of growth in the 'old' Member States have, of course, been more modest than in the 'new' Member States, but the growth rates in the case study areas in 2006 were more-or-less in line with national developments, averaging a reasonably strong 6% that year.

Over the period 1995 to 2006 as a whole, moreover, growth rates in both of the Italian case study regions, the Ebersberg region of Germany, the Corse region of France, as well as the Pieriga region of Latvia, were faster than in their respective national economies.

On the other hand, the growth rates in some other case study areas failed to keep pace. This was the case notably in Trikala, Greece, but also in Somogy, Hungary, and Gwynedd, UK, as well as in the case study regions of Slovakia and Sweden to a lesser extent.

### **5.3.2 Overall productivity and living standards**

Regional income levels tend to reflect the general prosperity of the countries in which the areas are located – with the average incomes in the two German regions, the Austrian, the Dutch, and the Swedish ones all being at, or within 10%, of the EU average.

With the exception of the Trikala area of Greece (where average incomes are only around 60% of the EU average) and to a lesser extent Matera (70%) and Gers, France and Gwynedd, Wales, UK (80%), however, living standards in the bulk of both southern and northern European rural case study regions tend to be around the EU average.

The major gap in living standards (reflecting, in the main, lower levels of average productivity, and measured in purchasing power terms) is, of course, between the EU average performance and that in the 'new' Member State regions where, with the exception of Vysocina in the Czech Republic (where living standards are reported at 80% of the EU average), the average rate is a mere 30-40%.

### **5.3.3 Enterprise**

Robust indicators of dynamism are hard to find, but substitutes include measures of innovation (based usually on patent applications) and, inversely, on the relative age of local populations or the age of local heads of Farm businesses.

### **5.3.4 Rates of innovation**

Quantitative or non-subjective indicators of innovation and creativity are difficult to establish in general, but also in relation to rural and agricultural activities. A commonly used measure is patent registrations or acceptances coming from specific areas or sectors.

NUTS3 data is not available, but NUTS2 data for the period 1995-2006 shows major differences between areas with the counter-part NUTS2 areas in Germany, Holland, Austria and Sweden, together with Corse, showing patent rates above their respective national average rates – by a factor of over 3 and 4 in the case of Sweden and Holland, and by a factor of 2 in the case of the German regions. The Midi-Pyrenees region of France (encompassing Gers) and the Basilicata region of Italy (encompassing Matera) have rates in line with their national averages.

Data on patents in the food industry (including baking and meat processing) in these regions for the same period is also interesting in that it shows a particularly high rate of registration in the respective NUTS2 areas of Greece (Thessalia) and the equivalent area of Hungary (Del-Dunantul).



### 5.3.5 Economic modernisation and diversification

Although a conceptual distinction is commonly made, it is not always easy or appropriate to disassociate agricultural diversification from non-agricultural diversification (on or off farm).

Most farmers have had to cope with major changes in market conditions for their products, and are no strangers to social or environmental change. Whether, and how, they can diversify depends on many factors, however. In some cases there may be continuing strong links between agriculture and diversity (as in Trikala, Greece and others areas, with strong links to local food and drink) while a concentration of farming activity may be seen as a condition for long-term survival in others (Matera, Italy).

Diversification out of farming poses new challenges, but these depend on the particular circumstances (whether the farms or large or small, their financial resources, their capacity to manage anything new) the potential market in doing other things (whether the area has tourist potential, the proximity of urban areas) as well as the quality and extent of support available from public bodies, local development agencies, local associations etc.

In this context, limited diversification in an areas should not necessarily be judged negatively: it may be a rational response to the fact that the possibilities for maintaining existing activities in the region are in decline, that alternative prospects are not economically viable, and that there is consequently relatively little that those affected can do about it, at least during their lifetime – a prospect faced by populations in many manufacturing areas in the past, and which now threaten many areas of subsistence farming in the 'new' Member States in particular .

Where non-agricultural diversification appears feasible, its scale and focus tends, in most circumstances, to predominantly reflect the tourism potential of the area. However, in many cases, such a potential only appears to exist in specific parts of a region, rather than the whole, and it is also, in general, a very seasonal activity.

In areas with actual or perceived tourist potential, the first emphasis is generally on the provision of accommodation and the development of family-friendly attractions, some of which are associated with farming. However, the form that this takes depends partly on whether these are long-term stays in self-catering facilities (Gwynedd, UK) - when hotels and restaurants are less in demand - or short-term, weekend, visits (Banskobystricky, Slovakia) - where such facilities are more important.

As an indication of examples of this type of tourism related diversification of this kind, neither the Somogy region of Hungary or the Trikala region of Greece reported much interest or activity whereas the Swedish region of Kalmar Lan reports significant activity in various forms of diversification (but not food processing), while the provision of accommodation and recreation, as well as in on-farm food processing, are seen as 'very important' in Gers.

### 5.3.6 Educational capacity of the labour force

Education data is notoriously difficult to compare because of significant differences between national systems, and the stages at which broad education develops into more specific application. One particular characteristic stand out overall, however, namely that while the new Member States generally have much higher proportions of their populations who have undergone

secondary education compared with the 'old' Member States, the reverse is true in terms of the number of farm managers who have received agricultural training.

In general it should be noted that educational background is best seen as indicating the potential of the population and workforce, but that it is specific training (on and off the job) – on which data is even less reliable and comparable – that is more likely to reflect operational capacity on the ground.

**Table No 11: Education and training – regional level**

Country	NUTs code	Region (NUTs 3 level)	Secondary education 2001 %	Managers with agri training 2005 %	
<b>Northern</b>	Austria	AT124	Waldviertel	58	n.a.
	Sweden	SE213	Kalmar län	n.a.	40
	Germany	DE22A	Rottal-Inn	n.a.	n.a.
	Netherlands	NL342	Overig Zeeland	45	70
	Germany	DE218	Ebersberg	n.a.	n.a.
	United Kingdom	UKL12	Gwynedd	31	20
<b>Southern</b>	Italy	ITF52	Matera	41	10
	France	FR624	Gers	50	n.a.
	Italy	ITE31	Pesaro e Urbino	40	10
	France	FR831	Corse-du-Sud	42	35
	Spain	ES211	Álava	25	15
	Greece	GR144	Trikala	25	10
<b>New MSs</b>	Hungary	HU232	Somogy	62	10
	Romania	RO422	Caras-Severin	51	2
	Slovakia	SK032	Banskobystricky kraj	42	20
	Latvia	LV007	Pieriga	n.a.	35
	Czech Republic	CZ063	Vysocina	78	n.a.
	Poland	PL214	Krakowski	n.a.	35

### **5.3.7 Leadership - age structure of the heads of agricultural holdings**

The age structure of the agricultural population is measured by the ratio of the labour force in agriculture aged less than 35 compared with the numbers who are aged over 65, meaning that the higher the ratio, the lower is the average age. The four case study areas that stand out as having relative lower average ages of heads of agricultural holdings are the two regions of Germany, the Austrian region of Waldviertel, and the Corse-sud region of France.

The most notable case by far with regard to comparisons between the regions studied and the national average situation concerns the Welsh region in the United Kingdom, where the ratio of less than 35 year olds to 65 years old or more in Gwynedd was 2 to 3 times higher than in any other regional-national country comparison.

### **5.3.8 Entrepreneurship and development capacity**

The entrepreneurial capacity of regions – the ability of local people or new entrants to identify market opportunities and to combine labour and capital resources to meet them – is a key element in their development, but it is an element that is commonly overlooked because the concept is difficult to quantify, and often believed to be difficult to influence.

This study throws some light on the capacity of regions to respond to challenges and opportunities. In this respect, a contrast can be drawn with regard to individual attitudes (perceived as positive in Waldviertel, Austria against negative in Somogy, Hungary) as well as in relation to collective spirit and co-operation (seen, again, as positive in Matera and Pesaro and Urbino in Italy, and Gers in France, as against many other areas).

There is no simple correlation, however, between entrepreneurial spirit and the economic situation in region. While such 'spirit' may appear weakest in case study regions of the new Member States, it can be strong in relatively disadvantaged areas of 'old' Member States with strong regional identities, as in Gwynedd, UK Wales or the northern region of Austria. On the other hand, the spirit in the sector is reported as weak in the Basque country of Spain, despite a strong regional identity, possibly because agricultural activity has declined so rapidly recently, and the farm community has not had time to adjust.

A commonly reported view is that farmers tend to be relatively conservative in outlook, seeing their activities in lifestyle, rather than economic, terms, with a natural resistance to change, including diversification. This appears to be the case in areas such as Trikala, Greece and also among farmers in Gwynedd, Wales.

On the other hand, Gers, France is seen as having a very positive, entrepreneurial climate, which is actively supported by a range of local institutions, including farmers unions, other collective groups, and national and regional marketing programmes related to local production. Even here, however, newcomers to the area are judged to be the more professional and better organised, often setting up their new businesses in a specific market niche – a characteristic matched also in Corse-du-Sud.

The capacity to respond to challenges may depend on both human and institutional factors. Human characteristics include general attitudes, which are perceived as positive in a region such as Waldviertel, Austria (against negative in Somogy, Hungary), and the presence of a positive

spirit of co-operation, as in both Matera and Pesaro and Urbino in Italy, and particularly in Gers, France.

And, while the balance between top-down and bottom-up development initiatives has, in general been addressed reasonably well in most EU Member States, this remains a particular complaint in some new Member States (notably Somogy in Hungary and Caras-Severin in Romania) and is seen to be making it particularly difficult to encourage and support positive local attitudes to change.

This is not always the only problem, however. Placing a nuclear power station in an area of outstanding natural beauty (as happened in Gwynedd, UK) or removing tax advantages for farmers if their incomes from non-farming sources exceed a certain limit (as reported in Trikala, Greece) can be equally effective ways of stifling rural development activity and discouraging entrepreneurial initiative.

## **5.4 Institutional capacity**

New information is being collected regarding the institutional capacity and performance of a sub-group of the original 18 case study regions. For the moment it can be noted, as in the previous draft report, that this requires the identification of the practical measures that can and have been taken to bring about improvements such as: education and training courses organised in different ways by different types of bodies for different age groups; the potential from joint action by local groups, whether these be established producer groups, co-operatives, associations or action groups; co-operation and exchanges with regions with similar challenges, and which have addressed and resolved them in different ways; successful and unsuccessful funding experiences and methods; removal of potential obstacles to new activities in administrative, fiscal or legal arrangements, particularly those that effectively discourage self-employment or the pursuit of incomes from more than one source.

It was also noted in the previous report that public subsidy support for diversification can, in some cases, be positive or a 'mixed blessing', developing the administrative skills needed in order to apply successfully for subsidies but potentially substituting one form of subsidy for another (see the Banska Bystrica experience in Slovakia). At the same time, other areas (notably Somogy, Hungary) report that smaller farmers are effectively excluded from even applying for support by the administrative procedures that have been put in place.

## 6 ECONOMIC DYNAMICS WITHIN LOCAL REGIONS – INPUT-OUTPUT ANALYSES

While the previous sections described the structures and trends taking place across the diverse rural regions, this section presents the findings from analyses of economic relationship *within* rural areas, using input-output techniques to link agricultural activity to other sectors, both as consumers and suppliers.

Study-region-specific Input-output tables were constructed through the GRIT (Generation of Input Output Tables) technique, combining national Input-output tables and sectoral employment data at national and regional level. The links between agriculture and the rest of the rural economy were investigated through the estimation of several interdependence indicators (see below).

### 6.1 Regional Input-output models

Input-output models essentially document flows of money (transactions) relating to different economic activities in a given area over a given period of time. In relation to this regional level analysis, it is important to note that the smaller the economic area that is studied, the more dependent its economy is seen to be on sales to other regions (exports) and purchases from outside the region (imports).

(At the other end of the economic scale e.g. in the relationship between the EU as a whole and the World economy, extra-EU trade accounts for little more than 10% of EU GDP since most trade takes place *within* the EU. Individual Member States are in an intermediate position – in large ones, external trade accounts for around 25% of national GDP, and much more in smaller ones.)

Once these relationships are identified, it is possible, not only to compare the situation across types of regions, but to simulate the possible effects of changes in the different elements or relationships on which the analysis is based, and to consider the likely impact of policy changes.

Such 'sector linkages' – covering 'backward' linkages (where the sector is a buyer), and 'forward' linkages (where the sector is a seller) – can be used to identify leading sectors. The stronger such linkages are, the greater the likelihood of achieving positive productivity gains, although positive economic outcomes do not just depend on the strength of linkages, but on other factors such as the relative size of different activities, and their impact on local value added and employment.

### 6.2 Indicators used to study and classify areas

To address these various issues in the analysis, data was assembled/analysed in respect of the following economic indicators:

- Backward and forward linkages – to measure *demand and supply between different sectors*

- Industry 'interconnectedness' – to indicate the *degree of outsourcing and diversification* by measuring transactions (direct and indirect) between industries
- Input-output elasticities - to take account of the *relative size of sectors* and to identify *key sectors* in the regional economy
- Value added and multipliers - to estimate the impact of *changes in final demand on value-added*
- Employee compensation/incomes - to estimate the importance of each sector in terms of *employment*
- Supply-driven multipliers - to estimate the *capacity of supply to respond* to changes in final demand

Where possible 2005 data was used (avoiding the effects of NUTS3 changes in 2007/8) and making appropriate estimates, or using appropriate proxies, where data was not available, including for GDP or agriculture at NUTS3 level<sup>3</sup>.

### 6.3 Rural characteristics investigated through Input-output analyses

In order to investigate the extent of synergy and interdependence between agriculture and the rest of the rural economy, all 1303 EU NUTS3 level regions of the 27 Member States were classified on six criteria:

- Degree of importance of *agriculture*
- Importance of the *food industry*
- Importance of *tourism* (measured in terms of natural resources and accommodation)
- *Demographic* changes
- Competition for *water*
- Competition for *land*

### 6.4 Characteristics of the economies in 3 types of NUTS3 rural areas

The analysis focused on 3 types of rural areas (out of the 6 available under the refined OECD typology) covering 45% of all NUTS3 regions, sub-divided as follows:

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<sup>3</sup> Indications of the proxies and estimation methods used are set out in detail in pages 29-35 of the Interim Working Paper on Tasks 1.1 and 1.2.

Rural peripheral areas – 10% of regions

Rural accessible areas – 20% of regions

Intermediate open space areas – 15% of regions

## 6.5 Clustering regions in the 3 types of NUTS3 areas

A pragmatic, two-stage, approach was adopted in clustering the 583 regions (45% of the original 1303) covered by the 3 OECD categories, through a processes of iteration with respect to data on the first 4 elements, followed by procedures to incorporate information on the remaining 2 issues, namely conflicting demands for water and land resources (where data was not available for all regions).

As a result three clusters of area were identified:

### 1) *Non-dynamic (ND) areas*

- Low to average importance of agriculture
- Low contribution of the food industry
- Medium availability/proximity of resources for tourism development
- Stagnant population

### 2) *Agriculturally-dependent dynamic areas with low internal links (ADD)*

- Important contribution of agriculture to total regional value-added
- Medium importance of the food sector
- Medium importance in terms of availability and proximity of resources for tourism development
- High population changes

### 3) *Diversified dynamic areas with high linkages (DDA)*

- Medium importance of agriculture
- Very high importance of the food industry
- High importance of tourism
- Medium to high population growth

18 areas from 15 different Member States were then selected, included regions from large and small and 'new' and 'old' Member States, 2 regions with pressure on water resources, 2 with pressure on agricultural land, 1 with pressure on water and land, and 2 selected as mountainous.

These 18 regions include 2 examples in each of the 3x3 cluster grouping/OECD category grouping cells.

In effect, this cross-grouping demonstrates that, while the OECD categorisation may be relevant in highlighting certain features of rural areas, it does *not* provide unambiguous insights into the relationship between agriculture and rural development in the areas concerned.

## 6.6 The main findings from the Input-output analysis

In terms of the *provision of non-agricultural goods to the farm sector*, all types of estimated linkages are found to be generally low. Agriculture is not a key sector in terms of backward linkages, while the level of out-sourcing by agriculture is mixed.

In terms of the *use of farm output in the rest of the economy*, however, estimated linkages are generally quite significant. Agriculture is a key sector in many areas in terms of forward linkages, notably with Food Processing and/or Trade and/or Hotels and Catering.

There is also a strong correlation between high forward links of Agriculture with Food Processing/Trade/Hotels and Catering and high backward and forward links of these three sectors with the rest of the economy. This is a clear indication of win-win situations.

In terms of *supply and demand for production factors*, links between Agriculture and demand for capital and labour are rather low. On the other hand, taking the relative size of agriculture into account, employment elasticities are satisfactory in several areas. The economy-wide effects of agricultural labour supply seem to be very high.

Direct and indirect water consumption fluctuates considerably amongst areas and is very high in one study area. The same can be argued about land consumption. Finally, farm activity diversification is generally quite satisfactory.

## 6.7 Summary of the results of the cluster analysis and OECD categorisation

A comparison of the results *within* the clusters originally used to identify the regions to be studied reveal the following:

In the **'non-dynamic'** areas, the backward effects are very low in Rural Peripheral Areas (RPR), improve in Rural Accessible Areas (RAR) and especially in Intermediate Open Space Regions (IOR). This is due to the narrow economic base of stagnant RPR due to locational disadvantages. In turn, RAR and IOR, despite being non-dynamic seem to have developed the economic base which can "serve" the input-needs of the farming sector.

In terms of forward effects, linkages are comparatively lower in RPR, improve in IOR, and especially in RAR. This is due to the high supply-side linkages which seem to occur in the rather closed but not remote RAR. On the other hand, farm output in more open IOR and remote IOR leaks towards other regions and home consumption, respectively. It seems that supply-side linkages are simultaneously affected by location and the adequacy of production to sustain downstream activities.

With regards to the links between agriculture and production factors, these are found to be weaker in RPR, improve in IOR and are quite satisfactory in RAR. Here, farming in RPR and (in a less extent) IOR is less important (compared to RAR) in terms of employment, while lower sectoral inter-dependence leads to comparatively low capital and labour effects.

In the **'agriculturally-dependent dynamic'** areas, the backward effects are very low in RPR and IOR, but become satisfactory in RAR. This seems due to the fact that the economic base in



agriculturally-dependent RAR is structured in a way that it can serve part of the input-needs of local farming. On the other hand, leakages are higher in both RPR and IOR, due to their lower and higher level, respectively, of integration with the rest of the world.

Forward effects are high in IOR and secondarily, in RPR and lower in RAR. An interpretation of these findings could centre on the higher supply-side linkages which seem to occur due to the development of a competitive agri-food complex in this agriculturally-dependent IOR.

Remoteness and the development of tourism in the two agriculturally-dependent RPR seem to have promoted a rather "internalized" economic system, something that does not hold for the two more accessible RAR. In this sense, peripherality supports localized economies and offsets locational disadvantages. With regards to the links between agriculture and production factors, the picture is quite similar in the three categories of regions.

Finally, in the '**diversified dynamic**' areas, the highest backward effects are found in RAR, followed by those in RPR. Backward effects in IOR are considerably low. Here again the economic base in diversified RAR is structured in a way that it can serve the input-needs of local farming. On the other hand, leakages are higher in both RPR and IOR, due to their lower and higher level, respectively, of integration with the other areas.

The highest forward effects are observed in IOR. These are marginally higher than forward effects in RPR. Forward effects in RAR are comparatively low. Again, the development of a competitive agri-food complex in these two IOR is associated with high supply-side linkages between farming and the rest of the economy. Remoteness and the development of tourism in the two RPR seem to have promoted a rather "internalized" economic system, indicating the operation of a localized cluster (farm-tourism) economy; on the other hand, leakages are higher in the two more accessible RAR.

With regards to the links between agriculture and production factors, these are found to be higher in RAR, followed (quite closely) by RPR. These links seem to be quite low in IOR. Here, the importance of farming in the Latvian and Romanian areas plays a major role, something that does not hold for the two IOR.

## 6.8 Linkages between regional economic indicators and agricultural activity

A large number of possible relationships were studied in order to see whether activity in the local farming sector was affected by such factors as regional or national deviations in rates of annual GDP growth, differences in the age structure of the population, differing rates of population growth, differing levels of labour productivity, differences in the relative accessibility of the area.

In this analysis, three statistically-significant relationships were found:

- Firstly, in areas where high forward linkages between Agriculture and the Hotels and Catering Industry are observed, the *average GDP growth rates of the region are higher* than the respective average GDP growth for the country as a whole.

- Secondly, in areas where there are high forward linkages between Agriculture and the Hotels and Catering Industry are observed, the *unemployment rates of the region are lower* than those in the respective NUTS 2 areas
- In areas with *higher average land productivity* than the respective average land productivity in the country, the forward linkages that Agriculture has with the Trade and Hotels sectors are comparatively lower.

## 7 OVERALL FINDINGS

The *most important broad findings from the preliminary analysis* of the relationship between agriculture and rural development are that:

- **Links between agriculture and the rest of the local regional economy are generally strong and positive**, and more significant than might be inferred from statistics of the agricultural sector's share of local GDP or employment
- **Rural regions are generally heterogeneous**, within as well as between one another, with respect to their patterns of economic activity, often related to geography, land quality etc., than appears to be commonly assumed
- **Development and diversification prospects are highly varied** and depend on a complex of factors – geographical location and diversity, accessibility, alternative potential (afforestation, energy production, tourism), human resource capacity, institutional support
- **Differences in experiences and prospects between 'new' and 'old' Member States** are deep and wide-ranging, and this distinction is a necessary one to make in terms of both the analysis of situations and reflections on policy implications

### 7.1 Value-added in agriculture

Figures for value-added and employment in agriculture at regional level, including those at NUTS3 level, can give a misleading impression of the sector's importance for local economies.

Firstly, agricultural activity is not evenly spread, even in regions classified as rural, and rarely covers the entire territory. In reality, agricultural activity is generally varied, with different activities concentrated in different parts of the region, determined by geography and land user. As a consequence, in those areas of rural regions where most agricultural activity takes places, its importance can be very high.

Secondly, given that the bulk of the EU territory is classified as rural (is the 90% OECD figure appropriate/accurate – how measured exactly), then agricultural activity has a far greater impact on the visual environment and on the economic life of the EU's territory than most manufacturing and service activities, which are highly concentrated geographically.

Thirdly, the input-output analyses demonstrate that, in rural areas, agricultural activity is generally linked to the local as well as the wider economy in a variety of ways, partly as consumers of other local production but particularly as suppliers to other sectors, notably food processing, hotels and restaurants and trade activities. These linkages are complex, but they are significant to the extent that agricultural sectors often appear to take a lead role in local economic life, in that other sectors are significantly dependent upon them for their economic health. Whether this means that agriculture's contribution to an area's economic activity is significantly greater than is indicated by estimates of value-added based on agricultural output remains unclear, however.

At the same time, though, public authorities, analysts and interest groups are increasingly recognising that, apart from the technical challenges involved in calculating GDP (such as the difficulty of taking account of changes in product and service quality over time), current systems of measurement both under-estimate and over-estimate the economic benefits and costs of current arrangements in various respects<sup>4</sup>.

This is partly due to the fact that systems of GDP measurement take little account of factors that are not measured by the market, such as the costs and benefits of pollution or its absence, or the costs and benefits of the renewal or depletion of natural resources. Moreover, the focus in many assessments is on average outcomes, rather than the distribution of outcomes, including the impact on those with below-average incomes.

In the absence of comparable quantitative information on all such concerns, they cannot always be as fully addressed as they merit. Nevertheless, given that many such issues are particularly relevant in rural areas – where the environmental benefits and contribution of agriculture are generally under-estimated, but where the scale of rural poverty among many of the less skilled workforce are also often overlooked – further study is clearly merited.

In these respects, there is some growing recognition that agriculture contributes *social and environmental benefits* than are not reflected in conventional national income accounting because those who benefit from clean air or a well-tended countryside – whether they are local residents or visitors – are not normally charged for them. However, unless such benefits are taken directly into account, overall perceptions change very little.

A further and very important aspect of the analysis reflects the fact that conventional economic accounting frameworks, such as those used in estimating GDP (and which are based on measures of production, incomes and expenditure, adjusted for exports and imports from outside the locality, with further adjustments for capital replacement) tell us little about the relationship between different areas or sectors of activity within a locality, given that the main objective in such an accounting framework is to avoid double-counting (for example, summing only the value added at each stage of a complex production chain to produce the final product value).

In this project, therefore, we have used input-output techniques to study the inter-dependence between sectors of activity within a selection of NUTS3 regions, with a particular focus on the relationship between agriculture and other sectors in terms of both sales and purchases. This enables us to assess the extent and importance of agriculture within the total local rural economy, and even to consider to what extent agriculture can be seen as a 'driver' or 'lead sector' in terms of local rural development. In these ways, we are able to present more of a multi-dimensional picture of the contribution of agriculture in a variety of regional situations and circumstances.

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<sup>4</sup> [http://www.stiglitz-sen-fitoussi.fr/documents/rapport\\_anglais.pdf](http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf)  
<http://www.stiglitz-sen-fitoussi.fr/documents/overview-eng.pdf>

## 7.2 Employment in agriculture

In terms of employment, it is recognised that, as agricultural productivity rises across much/most of the agricultural sector (not necessarily all in so far as high value niche market agricultural products contain higher labour inputs) and as the living standards in the agriculturally-intensive 'new' Member States converge towards average EU levels as they benefit from membership of the EU market and EU market reforms and financial support, it is inevitable that the overall level of employment in agriculture will continue to decline.

However, the extent of such changes will vary between regions. Employment will continue to remain high in areas with considerable natural endowments (such as Gers, France or parts of Matera, Italy) as well as in areas where subsistence farming persists, albeit at a fast declining rate, in so far as this is seen as a better social and environmental response to providing income and activity for ageing populations who are unable to adapt to alternative economic activities, and who would otherwise become conventionally unemployed, and hence a heavy charge on State social security systems.

At the same time, it should be recognised that the notion that all rural areas are populated by ageing populations compared with the rest of the economy is inaccurate. The only area studied where the population aged over 65 was very significantly higher than the national average was the agriculturally successful French region of Gers. Outside of that, those aged over 65 were no more numerous than at national level in almost half the regions (including all the rural areas in new Member States) and half of the remaining regions had populations over 65 that were no higher, or lower, than the national average.

What is recognised is that average levels of education tend to be lower in rural areas than in urban areas, as well as in southern as opposed to northern regions of the EU, although it is important to note that inequalities within regions are far more significant than inequalities between them. However, it is also well established that education levels and income and poverty levels are highly correlated. Some educational data is available – covering both schooling and the training of farm managers – but this provides only a general summary of the situation – with secondary levels of education higher in the 'new' Member States than in the 'old', but with the reverse situation with regard to managerial training. Research in this area is limited, but some progress is being made<sup>5</sup>

## 7.3 Diversification

The potential for economic development and diversification varies considerably between rural areas, and depends on a combination of factors. The first factor is the viability of existing agriculture, which is liable to discourage any extensive diversification outside of agriculture in so far as agricultural activity is seen as more viable and rewarding than possible alternatives.

Whatever the extent of the desire to diversify, whether this is a realistic option depends on the opportunities for alternative development - existing or potential tourist attractions, an appropriate

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<sup>5</sup> <http://ideas.repec.org/p/imd/wpaper/wp2007-18.html>

climate, proximity to centres of population and the ease of access, suitable land for alternative activities such as forestry or energy generation. Without these conditions, even in areas where agriculture is in serious decline, diversification may not be a viable alternative

Diversification within agriculture is addressed within the case studies, but with the emphasis on the development of niche market products, generally related to tourism or to the wider promotion of the gastronomy of the area. While these activities tend to be relatively small scale, they are growing in number and can be relatively important in developing areas, and are proving particularly popular with younger farmers or new entrants to the areas.

The remaining important factors for diversification related to buildings and people. Without existing buildings capable of conversion, or a willingness and ability to erect purpose-built structures, it is difficult, if not impossible, to undertake the most common forms of diversification, namely those associated with tourism development. In this respect, the available of surplus farm building suitable for conversion is a key factor in many areas, particular those that are more remote and will need to attract visitors who will remain in the area for one or more nights.

The final, and crucial factor, is the entrepreneurial willingness and organisational capability of local populations, or occasionally incomers, to manage the development of new activities. This is particularly challenging in areas with little prior experience, where living standards are low and capital resources are limited, and where populations are both aged and disillusioned as a result of history or political developments. Such situations are not easy to 'turn around' and public or private investments that fail to take account of the above factors risk failing.

## **7.4 Agriculture and regional development**

The evidence from this study – based on the analysis of expenditure flows between different sectors within different local economies - shows that, despite the relatively small size of the agricultural sector in many rural regions, the economic linkages between agricultural activity and the rest of the local economy are rather strong, and integrated with other areas of economic activity within the same region - notably those concerned with food-processing, tourism, and trade.

Indeed, the case study evidence may even be suggesting, not only that the importance of agriculture for the well-being of the local region does not necessarily depend on the scale of its agricultural activities, but that in areas with the highest degree of specialisation in agriculture – i.e. those with higher levels of employment and value-added in agriculture relative to GDP and value-added as a whole – agriculture may actually have a smaller relative impact on other activities within the region than is the case in regions where economic activities are more diverse and inter-related with other sectors.

This may throw new light on the issue of the potential extent of economic and social losses in local economies if local agricultural activity goes into decline, and the extent to which diversification associated with agriculture – either within agriculture itself, through for example the development of niche market products, or diversification into other activities, notably tourism-related - can help to contain or reverse any such trends.

The case study results are generally consistent with, and complementary to, the findings from the Input-output analysis, although it should be remembered that the case studies pick up on the diversity of situation *between* different parts of a regions, as well as between them – with many of the areas containing mountainous areas, plains, urban sites, nature reserves, coastal regions – whilst the Input-output analysis focuses on the impact of agricultural activity on the local economy as a whole.

All the case studies concern NUTS3 areas. Since this is the lowest level of region for which EU harmonised data is available (although not always reported in EU data bases) there is a danger, when looking from an EU perspective, in thinking of these regions as being reasonably homogeneous. This not usually the case, whether seen in terms of geography, or economic performance and structure of activity.

The multi-dimensional character of many regions (noting that the Gers, France type of region is as untypical for the EU as it is in France) means that different parts of a region can perform differently on different dimensions. This implies that policy interventions may need to be judged in relation to the potential for different activities - potential for tourism, scope for energy development, scope for agricultural diversification, etc – in different sub-sectors of regions, with institutional support of varying kinds (planning, educational or institutional support, etc) appropriately related and targeted.

## **7.5 Policy responses to local strengths and weaknesses**

In terms of development potential, the general capacity of the locality in terms of physical endowment, human resources, capital and infrastructure, and institutional structures are the key ingredients, although overlaid to some extent by the general level of development of the country as a whole, and the general economic climate – growth or recession, on an upward development path etc. In other words, the supply side is as important as the demand side, and generally requires a combination of positive, and mutually re-enforcing factors, backed by strong entrepreneurial capacity and intentions, although private associations, partnerships, co-operatives may substitute for absence of individual activity or even more formal, public, support structures

## **7.6 Longer-run perspectives**

This research is focused on the present and the recent past. However, it does throw some light on possible future developments. In this light, a broad and varied approach to rural development may be increasingly called for in which, for example, energy generation may become much more important, and a more open acceptance of rural areas as temporary weekend/holiday leisure retreats for urban dwellers, as opposed to the current emphasis on urban and rural living viewed as alternative rather than complementary lifestyles.

In this respect of the future, a recent interim report from a Seventh Framework programme report<sup>6</sup> offers some general propositions for the future. It suggests that the meaningfulness of

the delineation/definition of rural areas is weakening in the face of the increasing interaction between farm and rural households and areas, on the one hand, and urban areas and the global economy, on the other. It also suggests that the shift from household-run farms to legal entities is becoming more pronounced, creating 'grey areas' in terms of farm and rural governance, and that, following the 2003 CAP reform (which it reports as having increased volatility of market prices, and encouraged more entrepreneurship oriented farm structures), the focus is shifting away from multi-functionality and sustainability towards increasing the productivity of agriculture in many areas. The report also comments, however, that while this focus on competitiveness could become a key feature in some areas over the medium-term, it may be much less relevant in less favoured areas.

No detailed results are available, but the authors report that, on the basis of survey results from over 2000 farm-households, the trend of farm abandonment is confirmed for the next decade, with about 25% of the households abandoning farming in the foreseeable future. The report also suggests that the abandonment of agricultural activity would double without the CAP. On the other hand, big differences are foreseen between different areas.

On this basis the report suggests that more attention be given to innovation-oriented and entrepreneurship-supporting measures, rather than income support; that the links between productive agriculture and the environmental/social dimension of agriculture need to be improved; and that more account needs to be taken of off-farm employment and on-farm diversification activities, and of social factors/indicators in rural areas, such as labour in farming and off-farm activities; long-term unemployment, and low education levels in some areas. This work is based on a mixture of survey work and modelling, including analyses of 11 case study regions in 9 EU countries, with surveys of farm-household using in-depth face-to-face questionnaire and postal and other surveys. An econometric analysis of the determinants of farm-household reactions to the scenarios is foreseen, but no results are currently available.

In this scenario context, traditional concerns about competition over resources – notably water – may or may not abate, but it would seem likely that competition for land for agriculture or housing and related development in border areas between rural and urban areas would increase. There is also the issue of energy production – from wind turbines to bio-mass – where current tourism priorities and future energy needs could come into conflict. Overall there may be a need to cease treating rural areas as protected areas, and look more for long-run development rather than short-run protection. In this, agriculture is more likely to be seen as a crucial part of the mix, but as a leading partner rather than a privileged one.

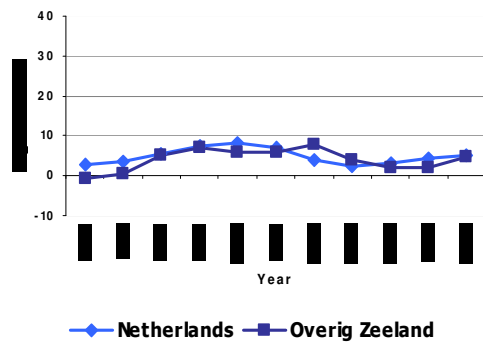


## 8 ANNEX 1: Case study GDP trends

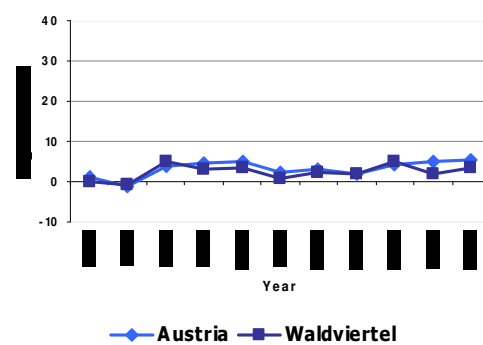
Please note that the charts refer to the period 1995 -2006.

### Northern countries

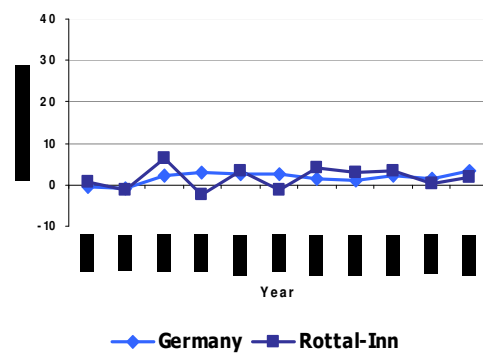
**Figure No 1.1: GDP annual growth rate, Netherlands – Overig Zeeland**



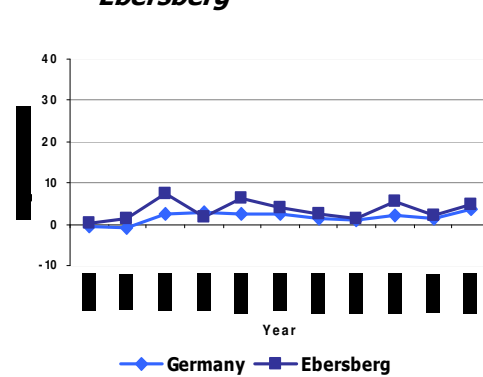
**Figure No 1.2: % GDP annual growth rate, Austria – Waldviertel**



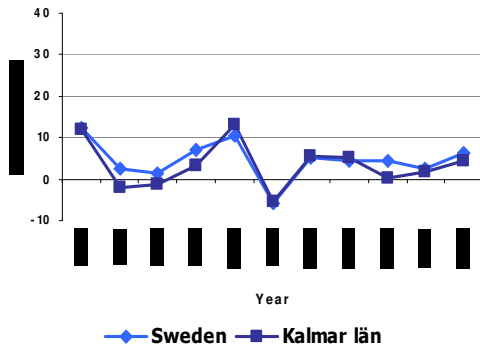
**Figure No 1.3: GDP annual growth rate, Germany – Rottal Inn**



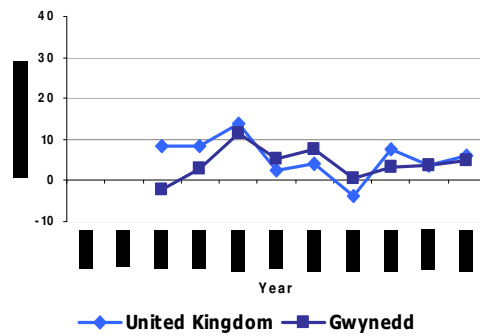
**Figure No 1.4: GDP annual growth rate, Germany - Ebersberg**



**Figure No 1.5: GDP annual growth rate, Sweden – Kalmar län**

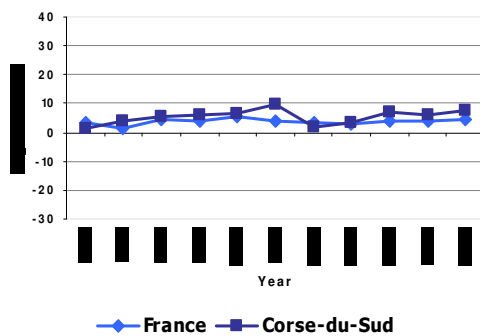


**Figure No 1.6: GDP annual growth rate, United Kingdom – Gwynedd**

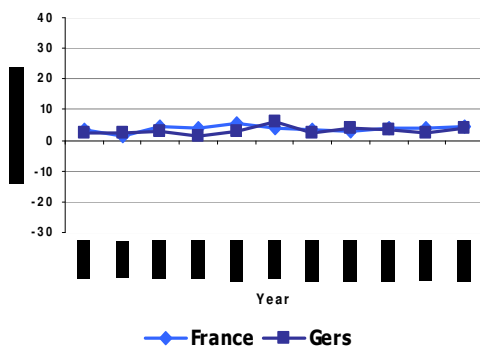


**Southern countries**

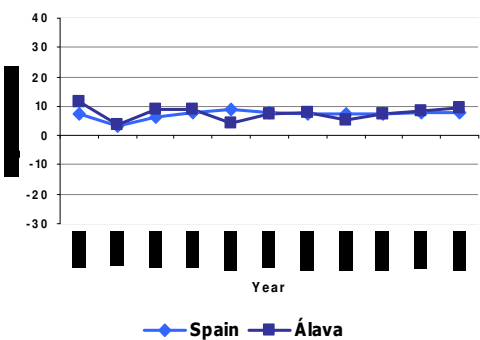
**Figure No 1.7: GDP annual growth rate, France – Corse du Sud**



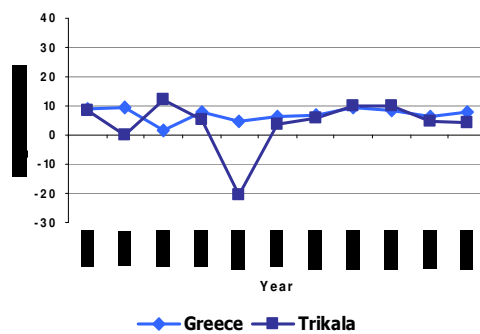
**Figure No 1.8: GDP annual growth rate, France – Gers**



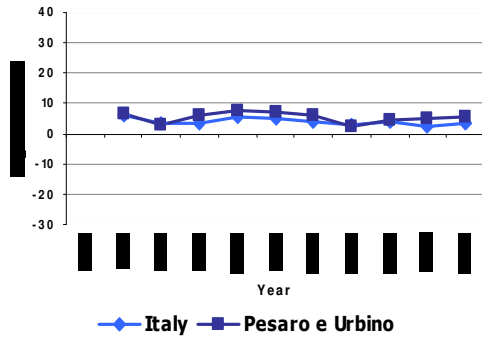
**Figure No 1.9: GDP annual growth rate, Spain - Álava**



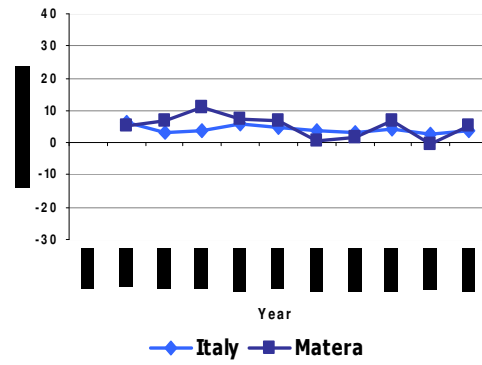
**Figure No 1.10: GDP annual growth rate, Greece - Trikala**



**Figure No 1.11: GDP annual growth rate, Italy – Pesaro-Urbino**

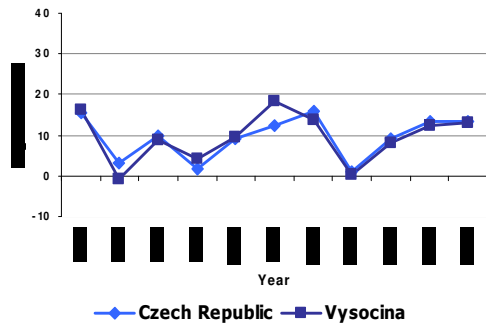


**Figure No 1.12: GDP annual growth rate, Italy – Matera**

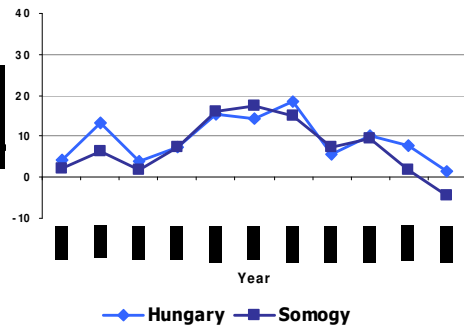


**New Member States**

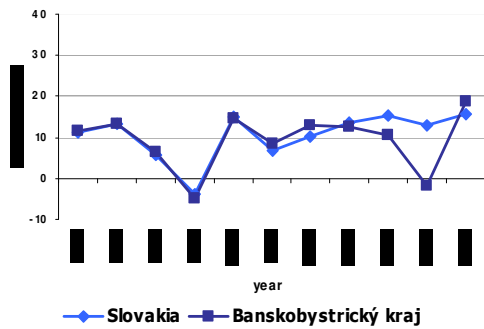
**Figure No 1.13: GDP annual growth rate, Czech Republic – Vysocina**



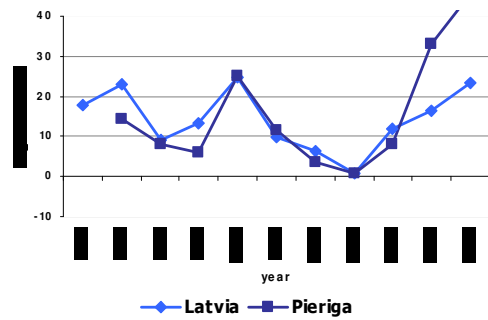
**Figure No 1.14: GDP annual growth rate, Hungary – Somogy**



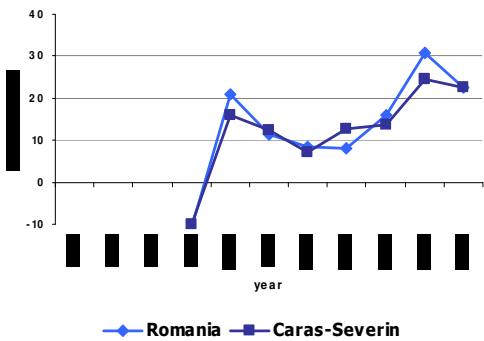
**Figure No 1.15: GDP annual growth rate, Slovakia – Banskobystrický kraj**



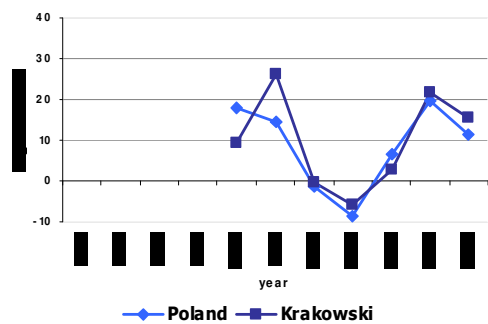
**Figure No 1.16: GDP annual growth rate, Latvia – Pierīga**



**Figure No 1.17: GDP annual growth rate, Romania – Caras-Severin**



**Figure No 1.18: GDP annual growth rate, Poland – Krakowski**

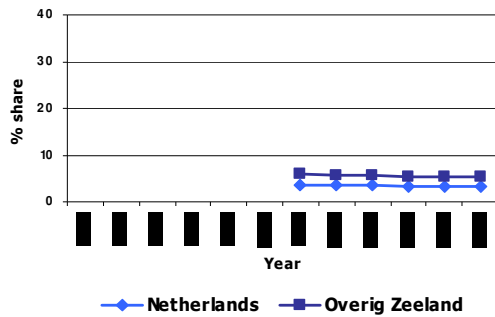


## 9 ANNEX 2: % Share of agriculture in total employment

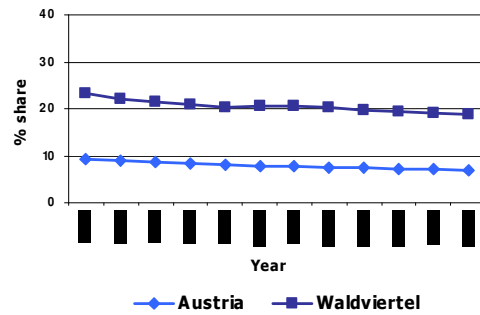
Please note that the figures refer to the period 1995 to 2006.

**Northern countries:**

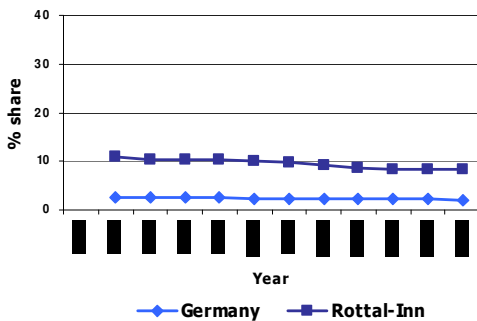
**Figure No 2.1: % share of agriculture in total employment, Netherlands – Overig Zeeland**



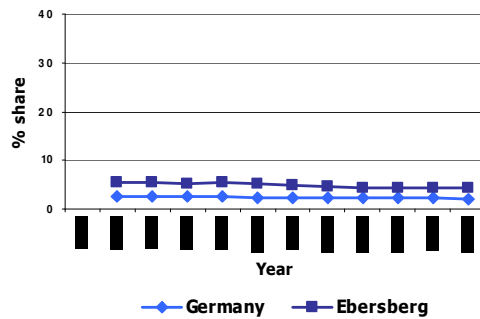
**Figure No 2.2: % share of agriculture in total employment, Austria – Waldviertel**



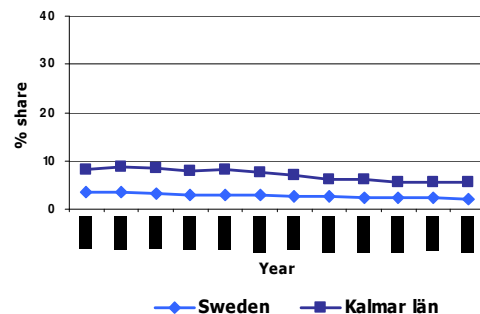
**Figure No 2.3: % share of agriculture in total employment, Germany – Rottal Inn**



**Figure No 2.4: % share of agriculture in total employment, Germany – Ebersberg**

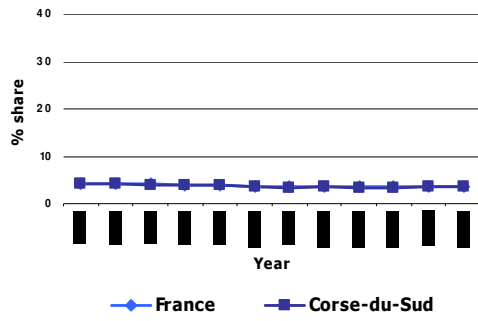


**Figure No 2.5: % share of agriculture in total employment, Sweden – Kalmar län**

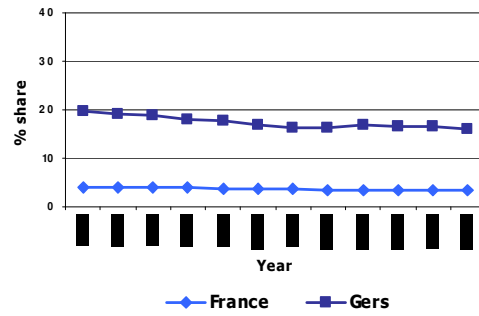


**Southern countries**

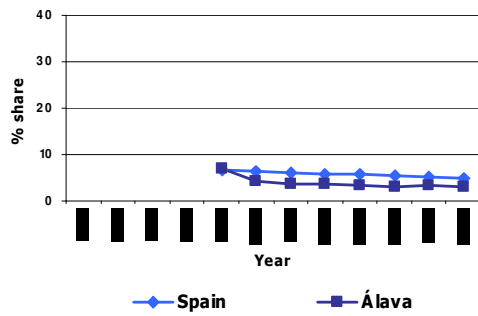
**Figure No 2.6: % share of agriculture in total employment, France – Corse du Sud**



**Figure No 2.7: % share of agriculture in total employment, France – Gers**

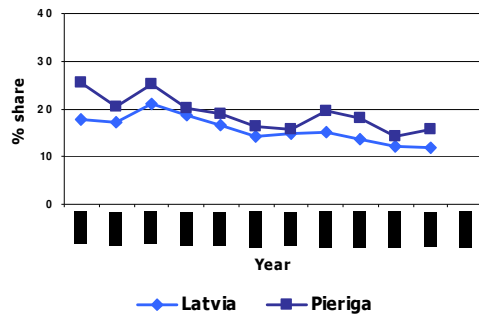


**Figure No 2.8: % share of agriculture in total employment, Spain - Álava**

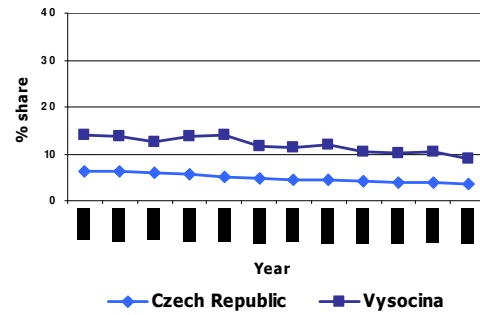


## New Member States

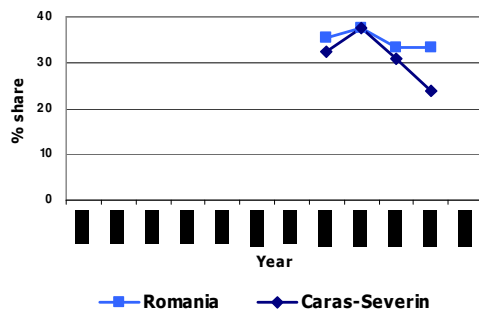
**Figure No 2.9: % share of agriculture in total employment, Latvia – Pieriga**



**Figure No 2.10: % share of agriculture in total employment, Czech Republic - Vysocina**

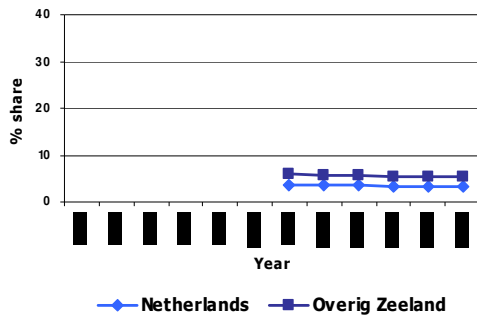


**Figure No 2.11: % share of agriculture in total employment, Romania – Caras-Severin**

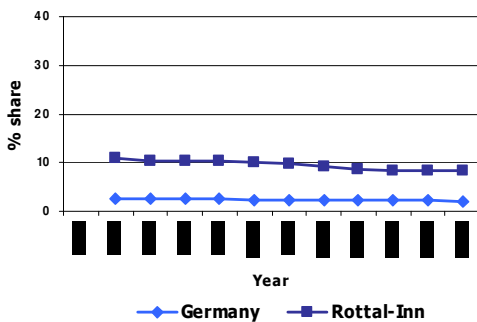


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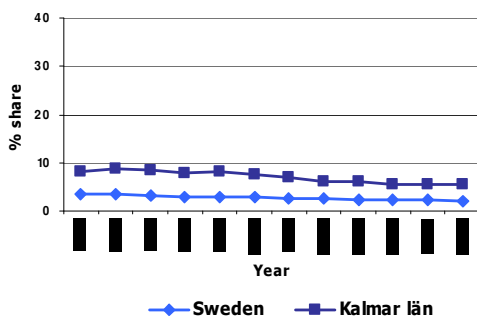
**Figure No 2.12: % share of agriculture in total employment, Netherlands – Overig Zeeland**



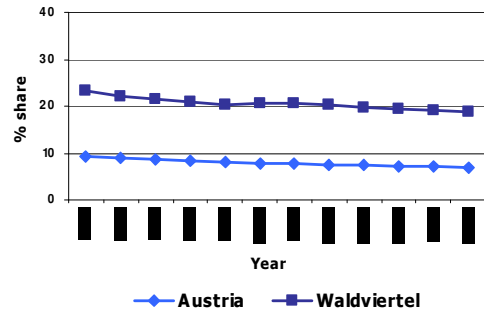
**Figure No 2.14: % share of agriculture in total employment, Germany – Rottal inn**



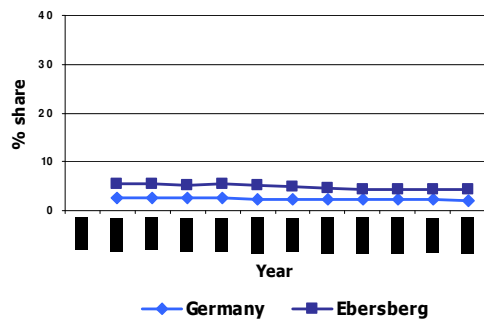
**Figure No 2.16: % share of agriculture in total employment, Sweden – Kalmar lan**



**Figure No 2.13: % share of agriculture in total employment, Austria – Waldviertel**



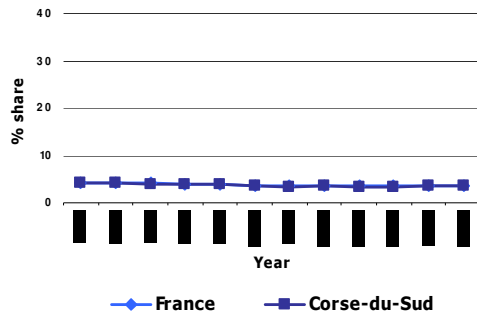
**Figure No 2.15: % share of agriculture in total employment, Germany – Ebersberg**



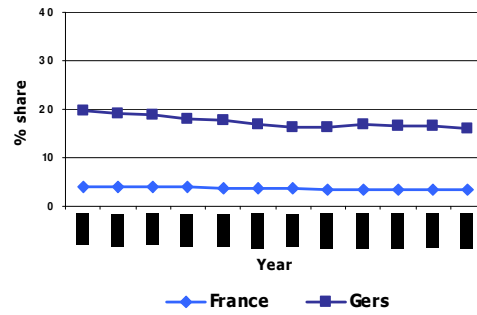


**Southern countries**

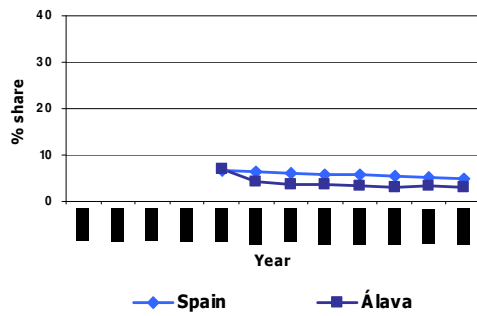
**Figure No 2.17: % share of agriculture in total employment, France – Corse du Sud**



**Figure No 2.18: % share of agriculture in total employment, France – Gers**



**Figure No 2.19: % share of agriculture in total employment, Spain - Álava**



## **10 ANNEX 3: Step 2/3 Contributory Report - Further analysis of the Relationship between Case Study Area Characteristics and Input-Output Linkages**

### **10.1 Introduction**

The aim of this working document is to contribute to the further analysis and elaboration of case study findings from 17 NUTS III regions utilising additional data made available following the last Thematic Working Group meeting held on 19<sup>th</sup> October 2009. Specifically, the working document examines whether the estimated linkages and especially the forward linkages of Agriculture with the Food, Trade and Hotels sectors are related to various economic characteristics of the areas. Additional variables considered include GDP growth, employment, accessibility, peripherality, population changes (migration), innovation, sector productivity variables and structure. Findings from this contributory working paper will be incorporated within a revised and extended summary report.

### **10.2 Data and Methods**

#### **10.2.1 Recording and Recoding the Linkages**

The linkages between agriculture and various sectors in the case study areas have been revealed as an important finding of the Input-Output (I/O) analysis. More analytically, in several study areas, it was found that agriculture is characterized by its strong forward links with Food Processing and/or Trade and/or Hotels and Catering. In these particular areas, there is a clear correlation between high forward links of Agriculture with Food Processing/Trade/Hotels and Catering and high backward and forward links of these three sectors with the rest of the economy. As forward linkages we use the relevant coefficients estimated by the IO analysis. Their estimates are as follows:

**Table No 1: Forward Linkages between Agriculture and the three sectors in the case study areas (NUTs III level) – Food manufacturing / Trade / Hotels and Catering**

Regions	Food Manufacturing	Trade	Hotels and Catering
<b>Cluster 1</b>			
AT124	0.0180	0.0750	0.0370
HU232	0.0380	0.0300	0.0130
GR144	0.2720	0.2010	0.1180
SK032	0.0590	0.1340	0.0180
DE218	0.0020	0.0320	0.0420
ITE31	0.0300	0.3680	0.3680
<b>Cluster 2</b>			
ITF52	0.0400	0.3180	0.3180
FR624	0.3070	0.1470	0.0660
DE22A	0.0400	0.0100	0.0160
CZ063	0.0160	0.0410	0.0170
ES211	0.0680	0.0610	0.0610
<b>Cluster 3</b>			
SE213	0.1910	0.1100	0.0350
RO422	0.0570	0.1190	0.0560
UKL12	0.0460	0.2720	0.2720
LV007	0.0030	0.0100	0.0020
NL342	0.3540	0.0040	0.0260
FR831	0.5160	0.1420	0.1600

From these estimates we may proceed to the abstraction of significant linkages without great loss of precision. Thus we consider an impact of 1 if the sector has significant backward linkages with Agriculture in an area (i.e. Agriculture has significant forward linkages with this sector) and 0 if not. This generalization, allows us to reveal areas where none, only one, two, or all three sectors have significant linkages with local farming. Furthermore, we can divide our case study areas in areas where two or three sectors have significant linkages with Agriculture or only one or none of the sectors have significant linkages. This produces the following table.

**Table No 2: Forward Linkages between Agriculture and the three sectors in the case study areas (NUTs III) – Food manufacturing / Trade / Hotels andCatering**

Region	Food Manufacturing	Trade	Hotels and Catering	Cumulative Impact	Dummy Variable Impact
<b>Cluster 1</b>					
AT124	0	1	0	1.00	0.00
HU232	0	0	0	0.00	0.00
GR144	1	1	1	3.00	1.00
SK032	0	1	0	1.00	0.00
DE218	0	0	0	0.00	0.00
ITE31	0	1	1	2.00	1.00
<b>Cluster 2</b>					
ITF52	0	1	1	2.00	1.00
FR624	1	1	0	2.00	1.00
DE22A	1	0	0	1.00	0.00
CZ063	0	0	0	0.00	0.00
ES211	1	1	1	3.00	1.00
<b>Cluster 3</b>					
SE213	1	1	0	2.00	1.00
RO422	0	0	0	0.00	0.00
UKL12	0	1	1	2.00	1.00
LV007	0	1	0	1.00	0.00
NL342	1	0	0	1.00	0.00
FR831	1	1	1	3.00	1.00

### 10.3 Study Area Characteristics

The study area characteristics to be examined in terms of their correlation with a strongly-linked local farming sector include:

- Economic growth as this is captured by GDP growth. Because different areas are in a different level of development, we also construct a variable capturing the case study area's GDP growth in relation to its country and its wider NUTS2 region. Thus, GDP growth is captured by average growth for the period 1995-2006, and its relation (deviation) from the respective country average GDP growth and regional (NUTS2) GDP average growth.
- Unemployment rates are captured again as an average unemployment rate in the years 2007 and 2008 which are the years providing the largest number of valid observations for the case study areas. Again unemployment rates are also estimated as deviations from the respective country and regional (NUTS2) unemployment rates.
- Peripherality, estimated as multimodal accessibility for 2001 and 2006 to a European average of 100 (Spiekermann, 2009).
- Population growth, estimated between 2000 and 2006. The respective deviation from the country and the wider NUTS2 region are also estimated as ratios.
- Innovation is estimated by the number of patents per million inhabitants for the NUTS2 area where our case study area is located, and for the Food sector and Agriculture. We also estimate the deviation of this variable from the respective country figures as ratio.

- The age structure of the agricultural labour force, estimated as the ratio of number of people under 35 years old to the number of people over 65. This ratio is compared also to the respective country and NUTS2 ratios.
- Average Labour Productivity, estimated as the GVA in agriculture divided by total labour force measured in AWU. Labour productivity for the case study area is compared to respective national and NUTS2 labour productivity.
- Average Land Productivity, estimated as the GVA in agriculture divided by total UAA measured in hectares. Land productivity for the case study area is compared to respective national and NUTS2 land productivity.

All the above measures are estimated either as an average of a time series or to their value that is closest to 2005. Furthermore, in cases where NUTS3 values are not available (such as for innovation or for the agricultural structural characteristics of the two German case study areas), the respective NUTS2 values are used.

## 10.4 Methodology

The linkages are recorded as continuous variables showing the magnitude of forward linkage of Agriculture with the three sectors (Food, Trade and Hotels), under consideration. We have recoded the linkages as dichotomous (zero – one) variables as well. The total impact has been recoded as a dichotomous variable as well (see Table 2). The characteristics are all continuous variables. When we aim to test whether the forward linkage between Agriculture and a sector is related to one of the characteristics or its deviation from the respective country and NUTS2 value we estimate the correlation coefficient between the two variables. When the aim is to test whether the linkage recoded as a dichotomous variable is related to one of the characteristics or its deviation, we estimate a non-parametric (due to small sample size) test, analogous to the t-test. Thus, the reported results are either based on significant correlation coefficients or on significant differences in averages based on t-tests.

## 10.5 Description of Case Study Areas Characteristics

### 10.5.1 GDP

Figure No 1: GDP in Million Euros in 2006

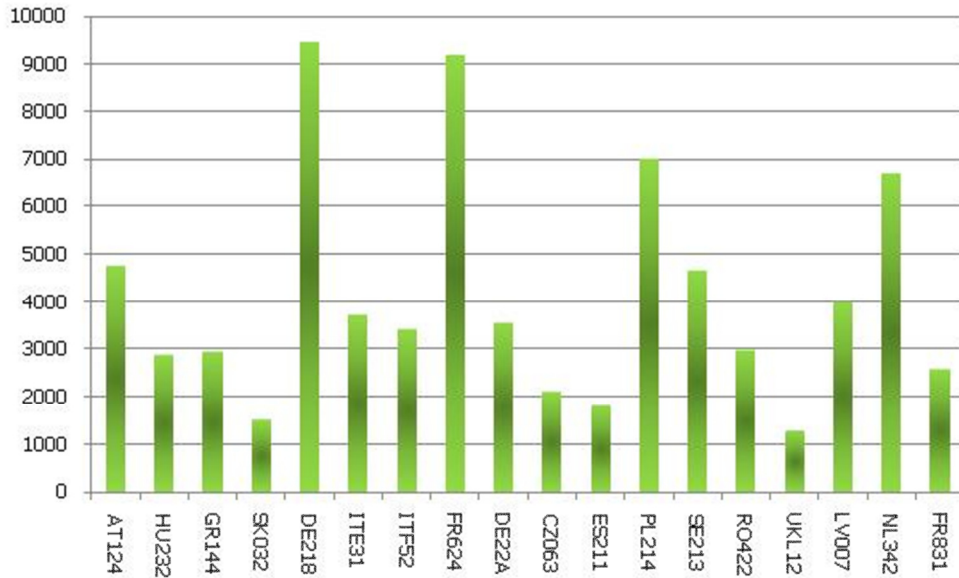
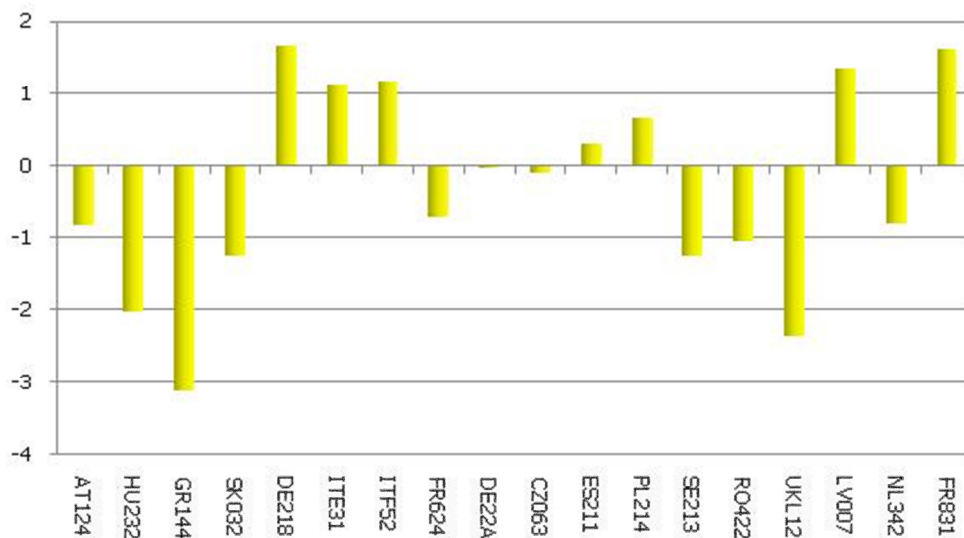
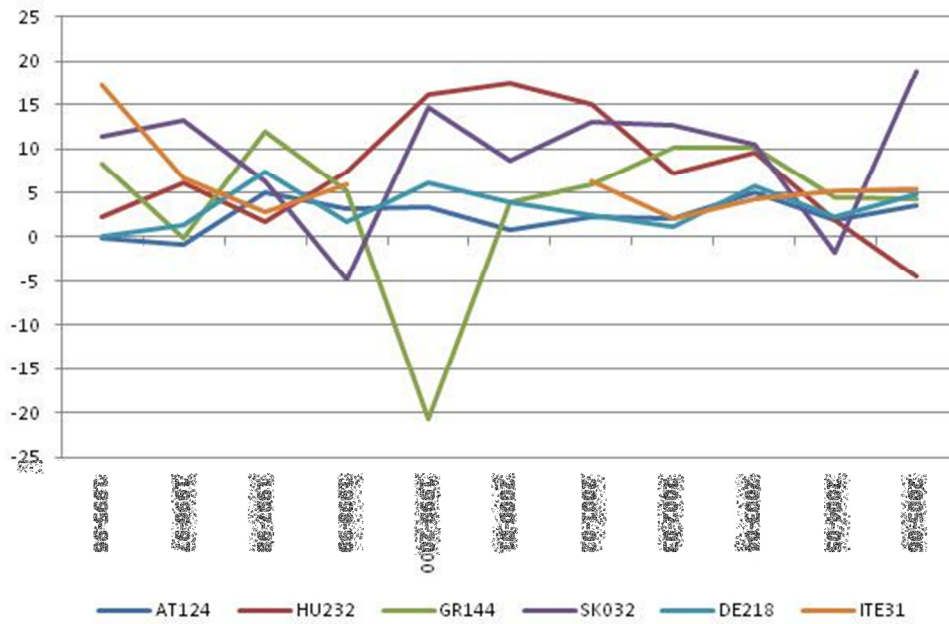


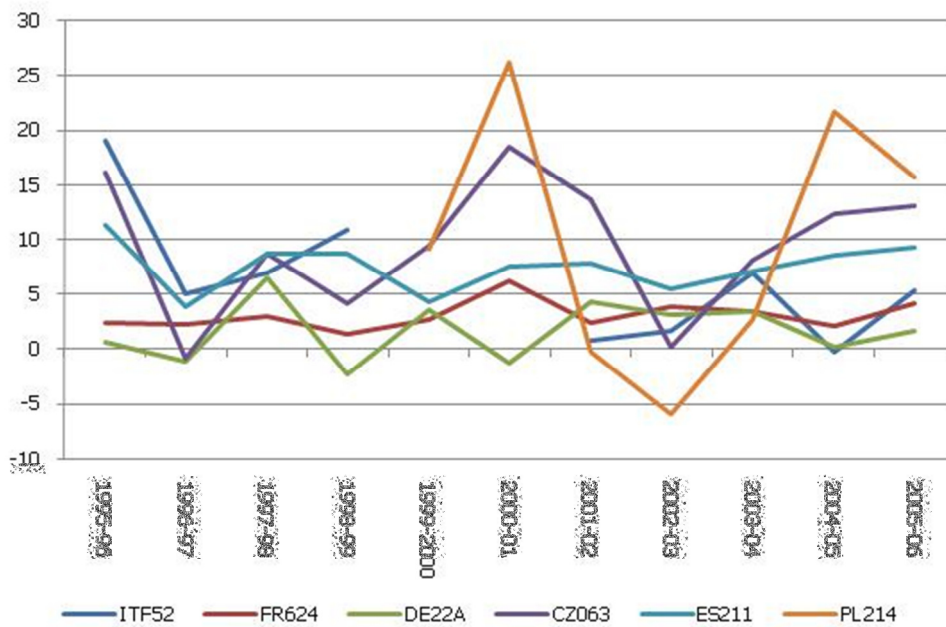
Figure 2: Deviation of case study average GDP growth rate from respective national average (1995-2006)



**Figure 3: GDP growth 1995-2006 for areas in cluster 1**



**Figure 4: GDP growth 1995-2006 for areas in cluster 2**



**Figure 5: GDP growth 1995-2006 for areas in cluster 3**

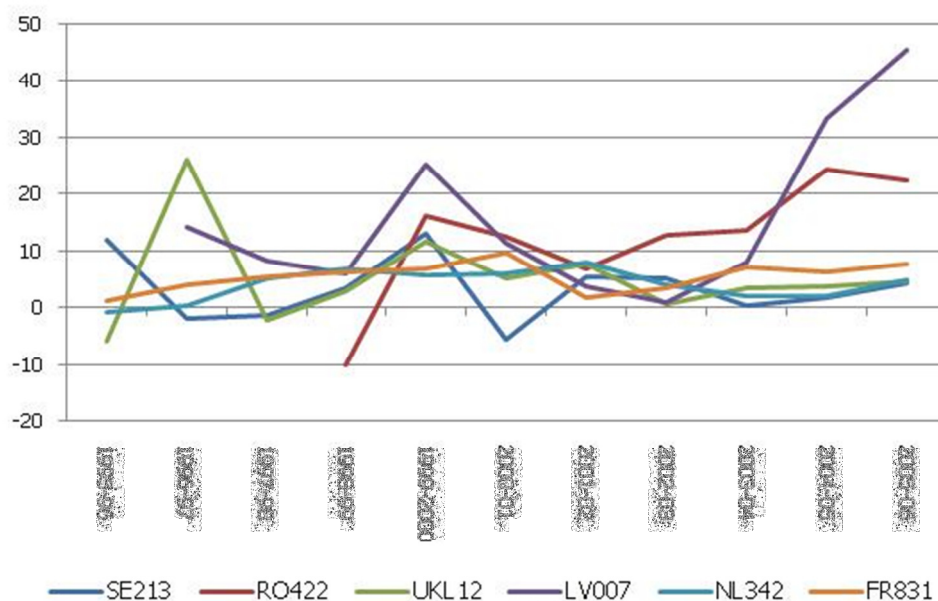


Figure 1 shows regional GDP in 2006. The regional GDP shows extreme variation which is due to the variation in the size of the regions and the level of economic development. Figure 2 presents the deviation of case study average GDP growth from the respective national average for period 1995-2006. The majority of the 18 study areas seem to have underperformed, with growth rates being much lower than the national ones especially in Somogy, Trikala, Kalmar Ian and Gwynedd. On the other hand, study areas such as Ebersberg, Pesaro e Urbino, Matera, Pieriga and Corse du Sud have grown much more rapidly compared to the national average during this reference period. Also, the same data shows that areas located in the new member states show the highest average GDP growth.

Figures 3 to 5 show annual GDP growth rates for period 1995-2006, for areas classified in clusters 1 to 3. In the case of GDP growth, the statistical analysis (i.e. investigation of correlation between areas with a strongly-linked local farming sector and high regional/national deviation in annual GDP growth) did not show any significant results. The only statistically-significant result is related to the fact that in study areas where high forward linkages between Agriculture and the Hotels and Catering Industry are observed, the average GDP growth rate is higher than the respective average GDP growth for the country as a whole. Table 3 below shows this cross-tabulation and the statistically significant chi-square.

**Table No 3: GDP growth in the study areas and the countries and Linkages of Agriculture to the Hotels Sector**

<b>GDP Growth in the Case Study Area in Relation to country</b>	<b>Low Linkages</b>	<b>High Linkages</b>	<b>Total</b>
GDP growth in the country above GDP growth in case study area	2	4	6
GDP growth in the country below GDP growth in case study area	9	2	11
<b>Total</b>	<b>11</b>	<b>6</b>	<b>17</b>



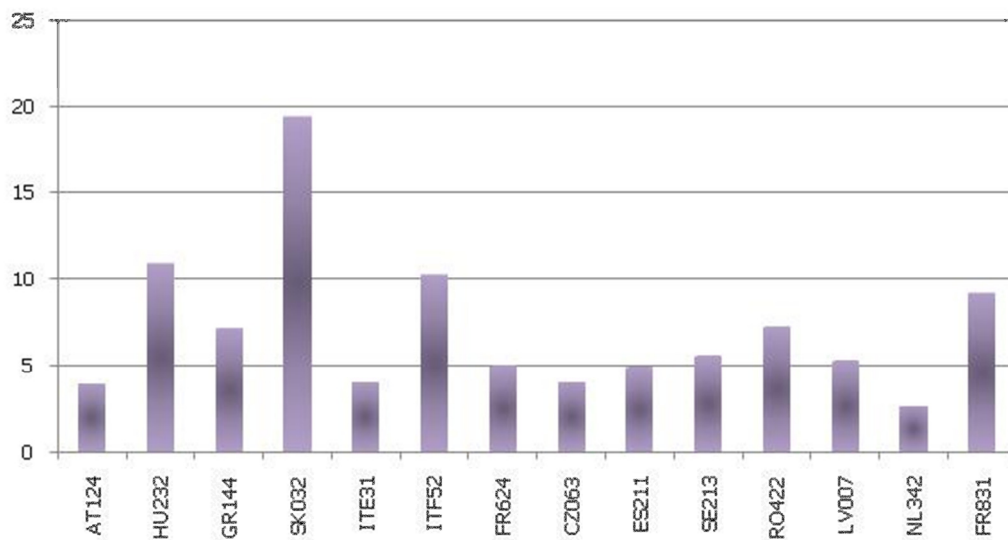
$$\chi^2 = 3.996 \text{ (d.f.=1 sig=0.046)}$$

### 10.5.2 Unemployment Rates

Figure 6 shows the average unemployment rates for period 2007-2008 and for all case study areas except for the two German study areas and the case study in Wales. These rates differ considerably amongst study areas and are considerably high in the case of the Slovakian, Hungarian, Italian (Matera), French (Corse du Sud), Romanian and Greek study regions.

Unemployment rates deviate very much from national averages during the same period, as indicated by Figure 7, which shows the deviation of the unemployment rates in the case study areas from the respective national average unemployment rates. Positive values indicate how much higher regional unemployment is compared to the national one, while negative values indicate that the case study area has a lower unemployment rate than the respective country average. As shown in the figure, only in Somogy, Banskobystricky kraj and Gers, unemployment is higher than the national average rate. Also, in several areas (e.g. Matera, Kalmar Ian, Overig Zeeland) unemployment is much lower compared to the national average.

**Figure No 6: Average unemployment rates for 2007-2008 in the case study areas**



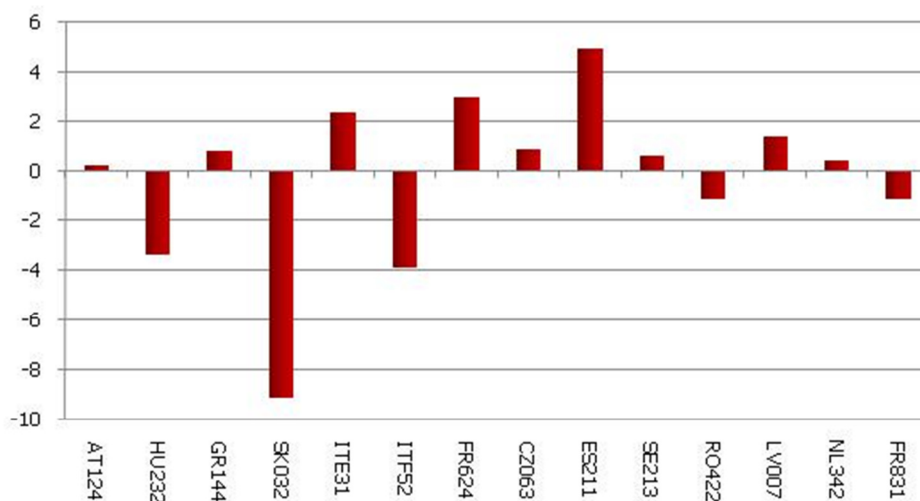
For unemployment rates, the statistical analysis did not show any significant correlation with the IO findings, except from the finding that, areas with high forward linkages between Agriculture and Hotels and Catering have lower unemployment rates compared to those of their respective NUTS2 areas (Table 4) & vice-versa.

**Table No 4: Unemployment Rates in the areas and the NUTS 2 regions where they are located and Linkages of Agriculture to the Hotels Sector.**

	Figure 1: GDP in Million Euros in 2006		Figure 1: GDP in Million Euros in 2006
Unemployment rate in the Case Study Area in Relation to NUTS 2 area	Figure 1: GDP in Million Euros in 2006	Figure 1: GDP in Million Euros in 2006	Figure 1: GDP in Million Euros in 2006
Unemployment rate in NUTS 2 Area Above Case Study Area	6	1	7
Unemployment rate in NUTS 2 Area Below Case Study Area	2	4	6
Total	8	5	13

$$\chi^2 = 3.745 \text{ (d.f. = 1 sig = 0.053)}$$

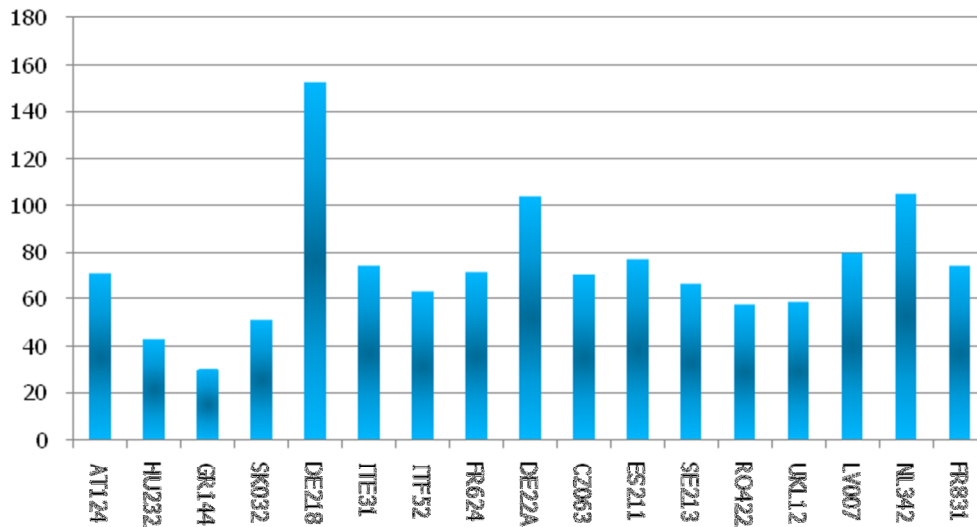
**Figure 7: Deviation of case study unemployment rate from respective national average (average 2007-2008)**



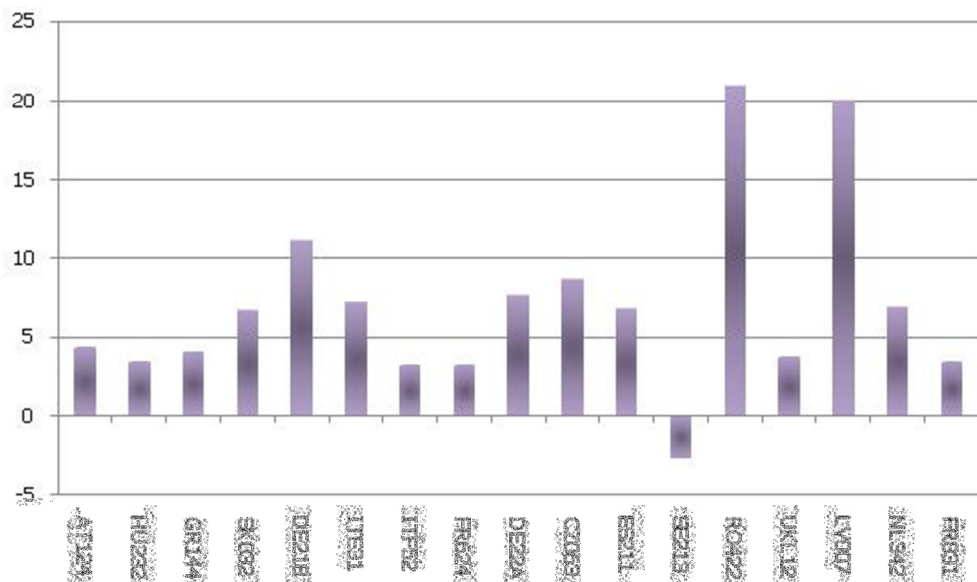
### 10.5.3 Accessibility and Peripherality

Figure 8 shows the accessibility rates estimated by a multimodal travel model by Spiekermann (2009) for the case study areas. The EU average is 100, showing that almost all case study areas are less accessible than the average EU area, with the exception of the two case study areas located in Germany and the Dutch case study area. Figure 9 shows the relative accessibility change between 2001 and 2006, as a result of investments in transportation networks. All case study areas seem to have become more accessible, with the exception of the case study area located in Sweden. For relative accessibility rates and their change, the statistical analysis did not show any correlation with areas exhibiting high forward links between Agriculture, Food Processing, Trade and Hotels & Catering.

**Figure 8: Accessibility of case study areas in 2006 (EU=100) (Spiekermann, 2009)**



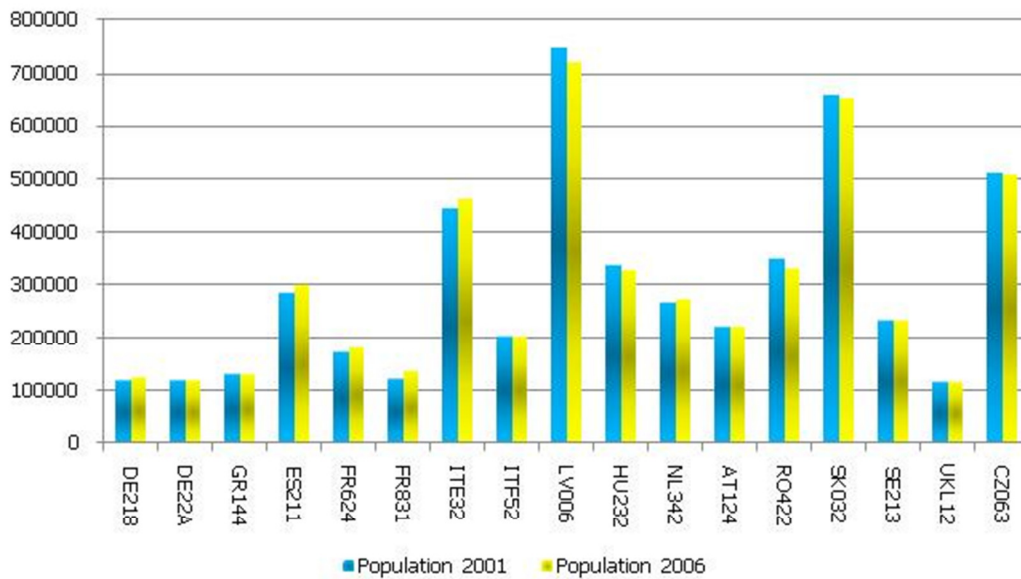
**Figure 9: Change in relative accessibility between 2001 and 2006**



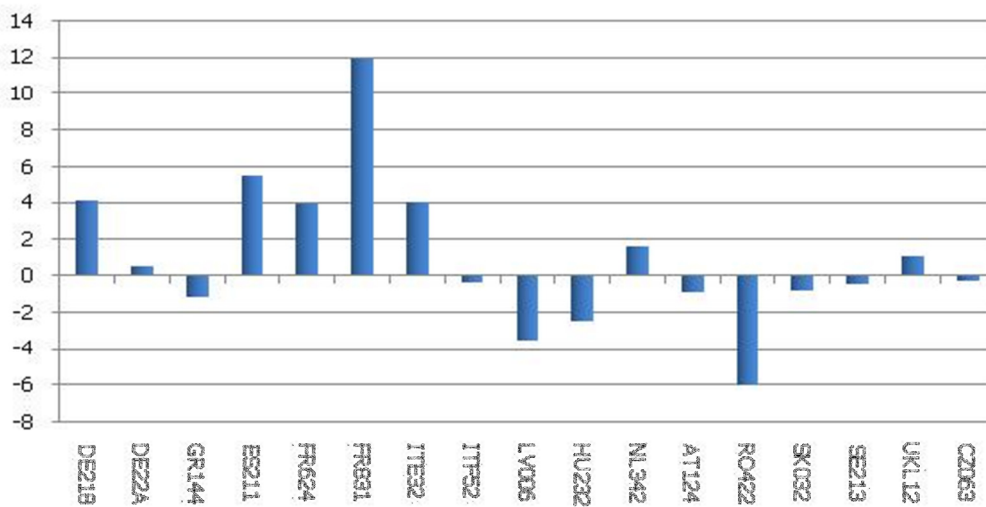
### 10.5.4 Population Growth

Figure 10 shows the population of the case study areas in 2001 and 2006. The population shows extreme variation which is due to the variation in the size of the regions. Figure 11 shows the percentage population change for 2001-2006. Population change is not significantly (in statistical terms) related to any of the linkages that Agriculture has been found to have with Food Processing, Trade or Hotels & Catering.

**Figure 10: Population of the case study areas in 2001 and 2006**



**Figure 11: Percentage population change 2001-2006**



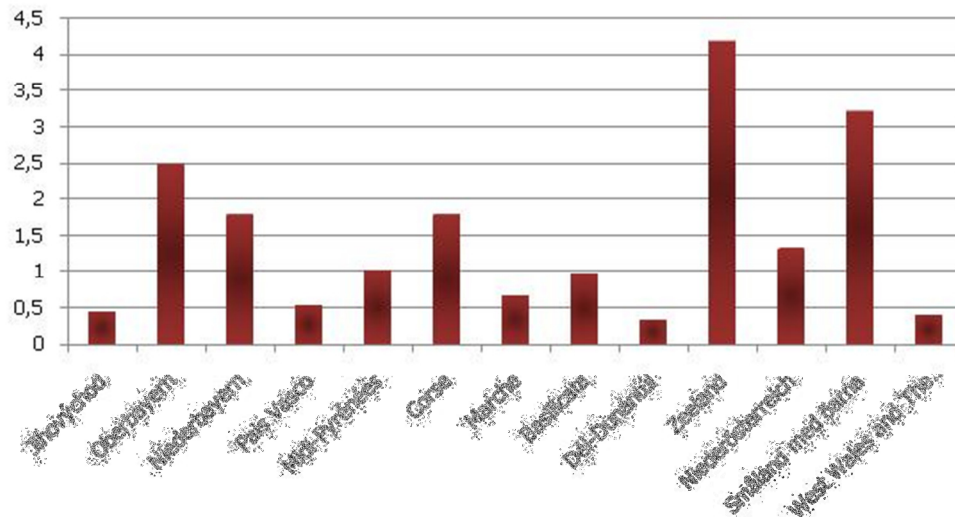
### 10.5.5 Innovation

Innovative activity is captured here by the average number of patents per million inhabitants for the period 1995-2006. Number of patents per million inhabitants for specific economic activities is recorded only at a NUTS2 level. Figure 12 shows the respective number of patents for agriculture. The deviation among regions is significant. Figure 13 shows the same information but for patents registered in the food sector excluding baking and meat processing.

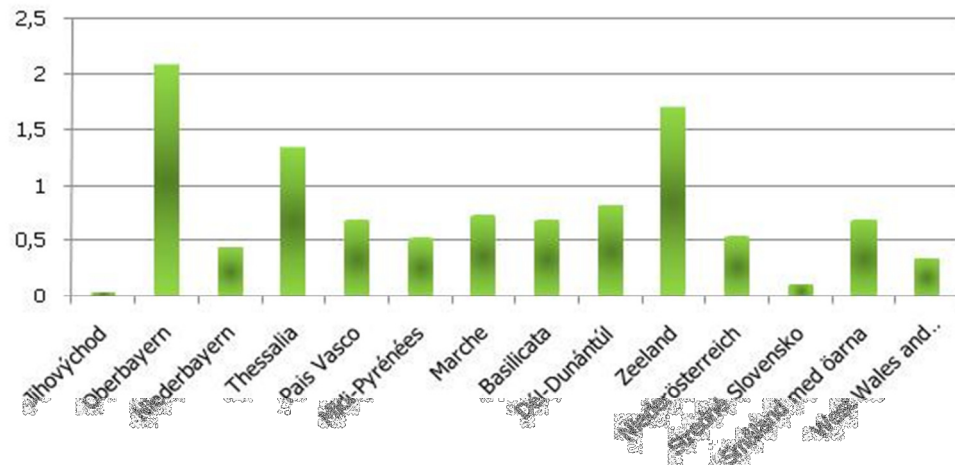
Figures 14 and 15 provide a comparison between the NUTS2 areas where the case study areas are located and the national average in patents per million inhabitants. A ratio above one show that the average patents per million inhabitants registered in the NUTS2 area is

larger than the respective average patents per million inhabitants registered for the nation as a whole.

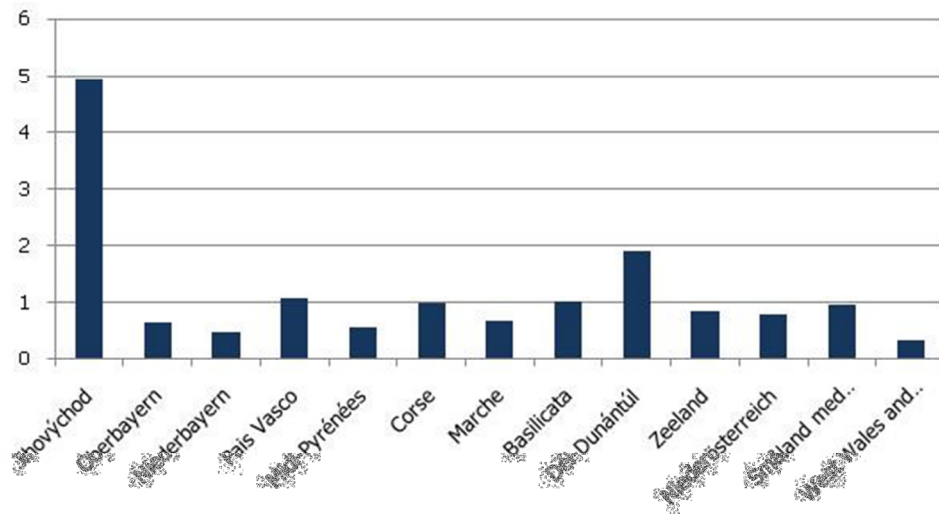
**Figure 12: Average (1995-2006) number of patents in agriculture per million inhabitants, respective NUTS2 areas.**



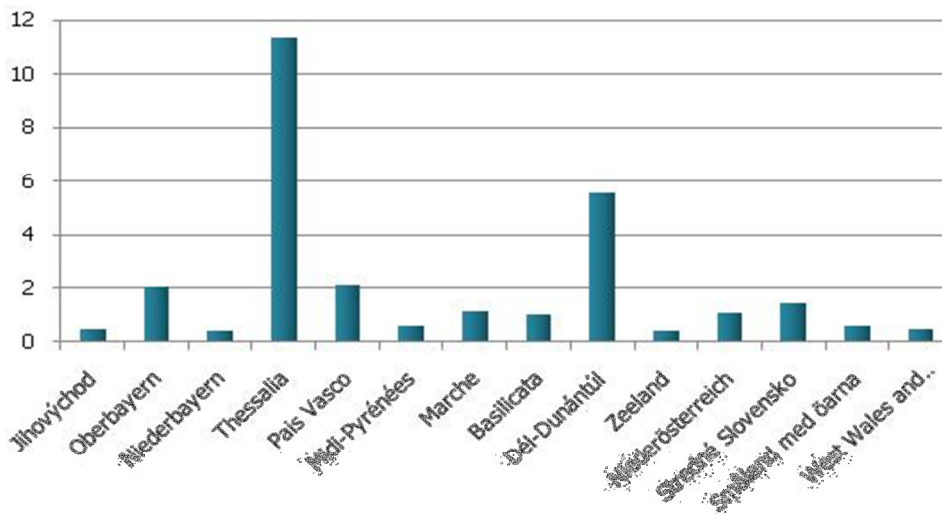
**Figure 13: Average (1995-2006) number of patents in the food industry (excluding baking and meat processing) per million inhabitants, respective NUTS2 areas**



**Figure 14: Ratio of NUTS2 to respective country patents in agriculture per million inhabitants, average 1995-2006.**



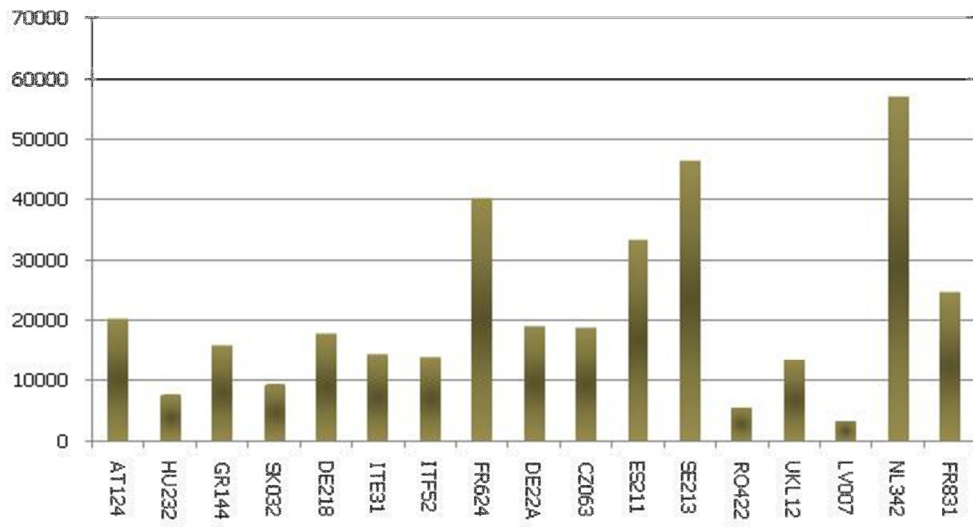
**Figure 15: Ratio of NUTS2 to respective country patents in the food industry (excluding baking and meat processing) per million inhabitants, average 1995-2006.**



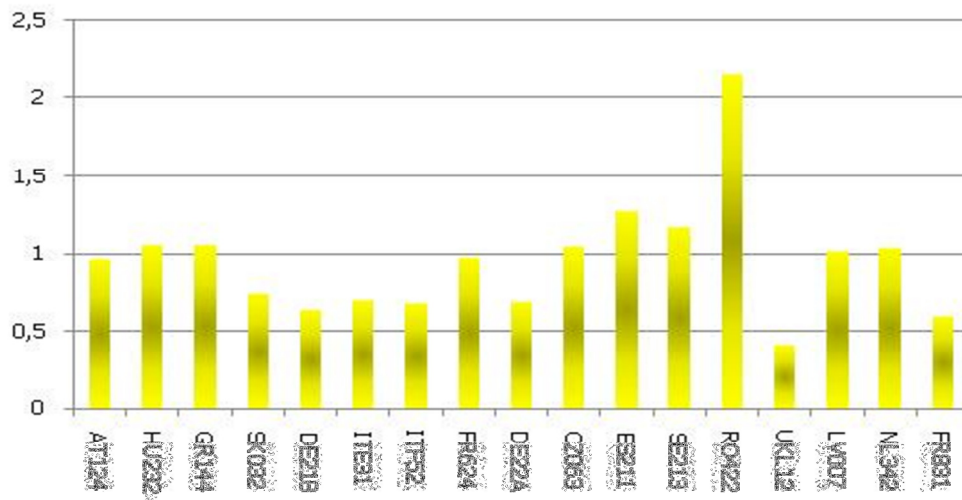
### 10.5.6 Labour Productivity in Agriculture

Average labour productivity in Agriculture in the case study areas is shown in Figure 16. The deviation among the study areas is significant, with study areas such as Overig Zeeland, Kalmar Ian, Gers and Alava exhibiting very high values.

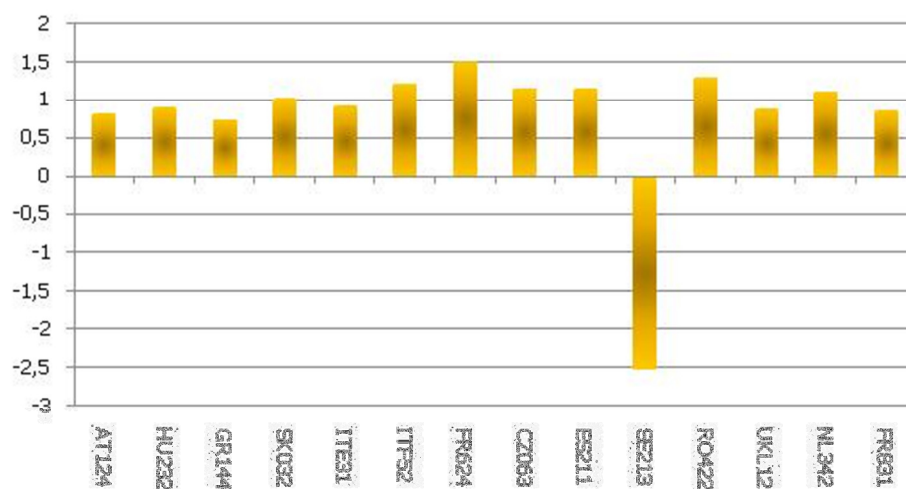
**Figure 16: Average Labour Productivity as Euro per AWU, 2005 or closest to 2005.**



**Figure 17: Ratio of Average Labour Productivity as Euro per AWU in the Case Study Area to the respective Country Average Labour Productivity (2005 or closest to 2005)**



**Figure 18: Ratio of Average Labour Productivity as Euro per AWU in the Case Study Area to the respective NUTS 2 Average Labour Productivity (2005 or closest to 2005)**



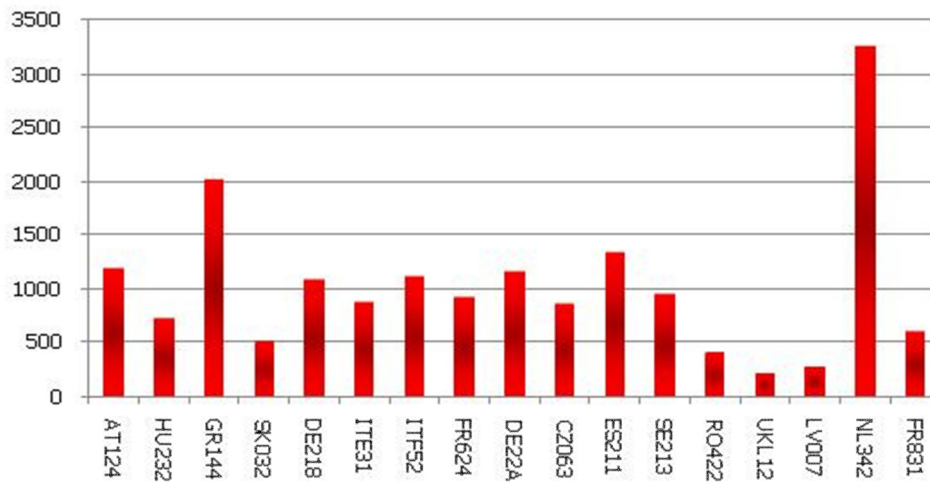
Figures 17 and 18 compare the labour productivity in the case study areas with the respective labour productivity in the countries and the NUTS 2 regions where the case study areas are located. A ratio of above 1 shows that the case study area has average labour productivity above the country or the NUTS2 area, respectively. For the Swedish case study area a negative labour productivity ratio of the study area to the NUTS 2 region is reported because the NUTS 2 average labour productivity is negative. The statistical analysis here did not reveal any significant relationships between labour productivity and the linkages that Agriculture has with the Food, Trade and Hotels Sectors.

### 10.5.7 Land Productivity in Agriculture

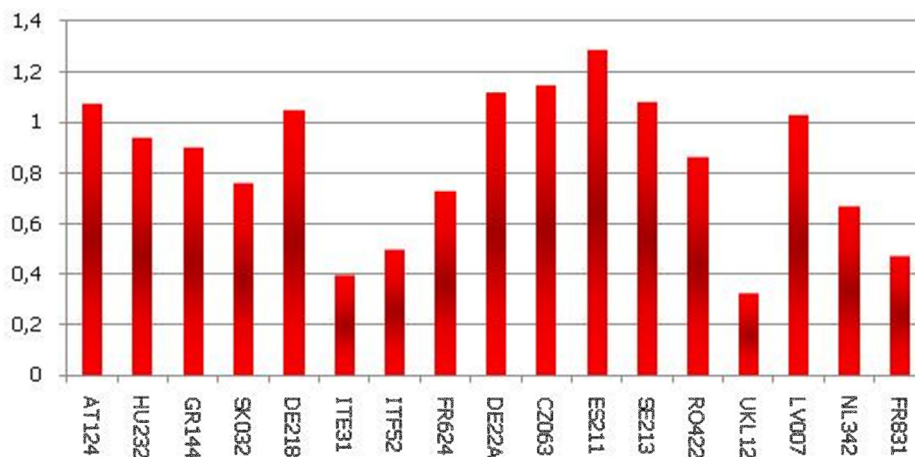
Average land productivity in the case study areas is shown in Figure 19. The deviation among the study areas is again significant. Figures 20 and 21 compare land productivity in the case study areas with the respective land productivity in the countries and the NUTS 2 regions where the case study areas are located. A ratio of above 1 shows that the case study area has average land productivity above the country or the NUTS2 area levels, respectively. For the Swedish case study area a negative land productivity ratio of the study area to the NUTS 2 region is reported because the NUTS 2 average land productivity is negative.



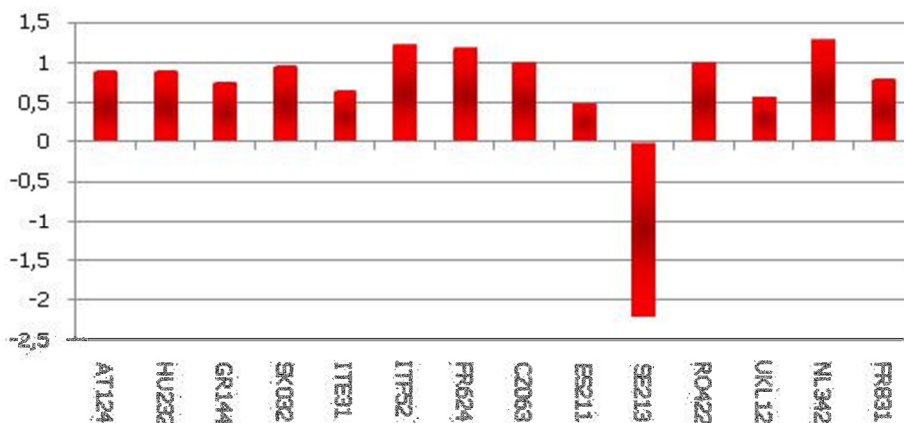
**Figure 19: Average Land Productivity as Euro per Hectare, 2005 or closest to 2005**



**Figure 20: Ratio of Average Land Productivity as Euro per Hectare in the Case Study Area to the respective Country Average Land Productivity (2005 or closest to 2005)**



**Figure 21: Ratio of Average Land Productivity as Euro per Hectare in the Case Study Area to the respective NUTS 2 Average Land Productivity (2005 or closest to 2005)**

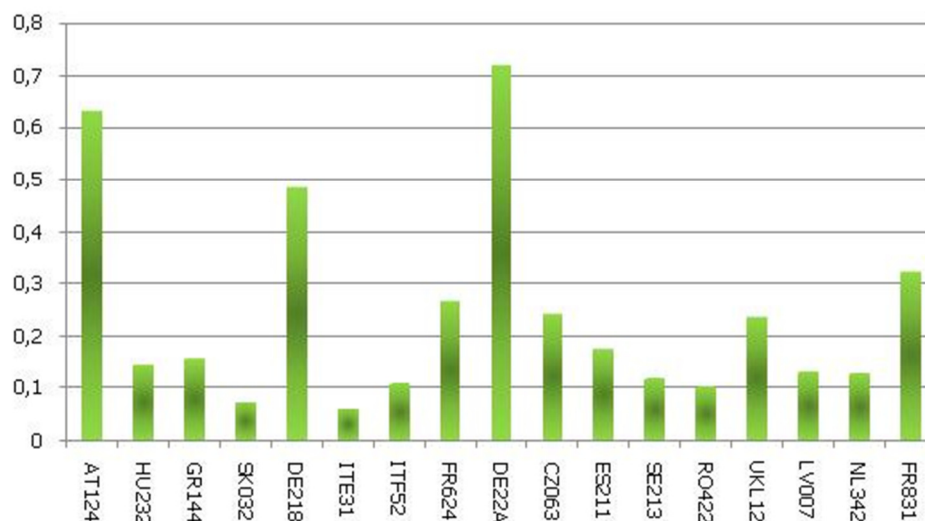


The statistical analysis revealed that the higher the average land productivity is in the study area in relation to the country, i.e. the higher the area to country land productivity ratio, the lower the magnitude of the forward linkages that Agriculture has with the Trade and Hotels sectors (correlation coefficients of -0.751 and -0.775 respectively). A t-test revealed that the ratio of regional to national average land productivity is significantly higher for those areas in which agriculture does not have high linkages with the hotels sector than for the areas in which agriculture maintains strong linkages with the hotels sector.

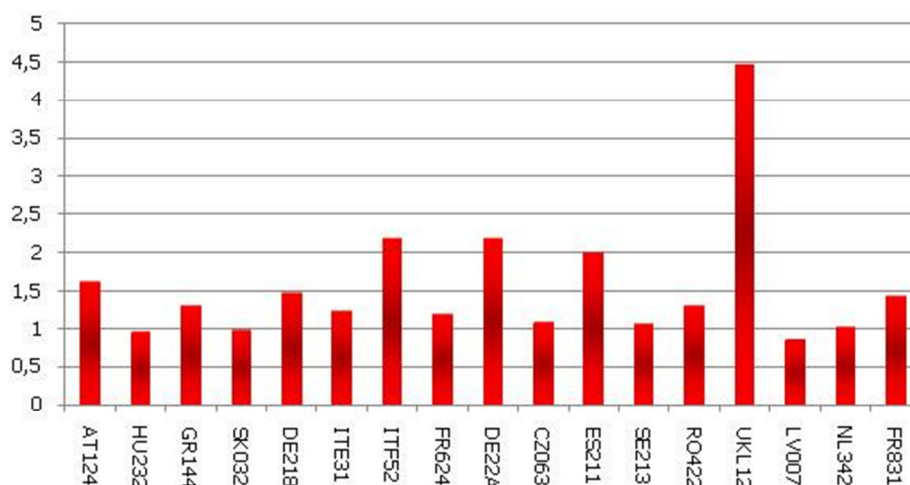
### 10.5.8 Age Structure of the Heads of Agricultural Holdings

The age structure of the agricultural population is captured by the ratio of the labour force in agriculture with an age of less than 35 to those with an age of over 65. The lower the ratio the more aged the agricultural labour force is in the case study area. Figure 22 shows this ratio for the case study areas. Figures 23 and 24 compare this ratio for the area with the respective ratio for the country and the NUTS 2 area where the case study area is located. The comparison results to an index of less than one if the age ratio in the case study areas is smaller than the respective age ratio in the country (Figure 23) or the NUTS2 area (Figure 24). An index of more than one is derived if the age ratio in the case study areas is smaller than the respective age ratio in the country (Figure 23) or the NUTS2 area (Figure 24).

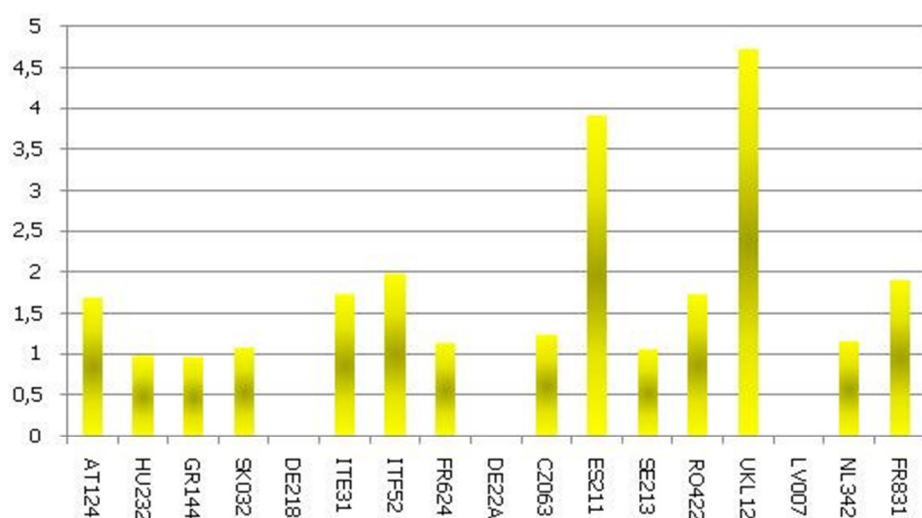
**Figure 22: Ratio of Labour Force in Agriculture Aged 35 or Less to Labour Force Aged 65 or Over in the Case Study Areas, 2005 or closest available year**



**Figure 23: The Less than 35 to More than 65 Age Ratio in the Case Study Area to the respective Country Ratio, 2005 or closest available year**



**Figure 24: The Less than 35 to More than 65 Age Ratio in the Case Study Area to the respective NUTS 2 Ratio, 2005 or closest available year**



Again, the statistical analysis did not reveal any significant relationships between age structure and the linkages that Agriculture has with the Food, Trade and Hotels & Catering sectors.

## 10.6 Overall statistically significant findings

The three statistically-significant findings of this work are summarized as follows:

- In areas where high forward linkages of Agriculture and the Hotels and Catering Industry are observed, the average GDP growth rate is higher than the respective average GDP growth for the country as a whole.

- In areas where high forward linkages of Agriculture and the Hotels and Catering Industry are observed, unemployment rates are lower than those in the respective NUTS 2 areas
- In areas with higher average land productivity than the respective average land productivity in the country, the forward linkages that Agriculture has with the Trade and Hotels sectors are comparatively low.

### ***References***

Spiekermann, K. 2009. Update of Air and Multimodal Potential Accessibility Indicators. Final Report March 2009, Spiekermann & Wegener, Urban and Regional Research (S&W) Co-financed.

## **11 ANNEX 4: Initial results from questionnaire on Inter-dependence between Agriculture and the wider rural economy: Detailed analysis in six regions – summary of findings**

### **11.1 Questions on inter-dependence**

#### **11.1.1 Links of Agriculture**

##### Non-Dynamic Areas

- High links with food processing in Trikala; low links in Somogy as farmers sell their output to food processing units “agglomerated” elsewhere, while some local food processing units buy farm products from other regions.
- Generally low backward linkages of agriculture
- Links with local trade seem not very important (small % of farm output sold to local traders); local traders buy farm products from nearby regions
- Same situation in links with hotels & catering

##### Agriculturally-Dependent Dynamic

- In both regions (Gers and Matera) most farm output is sold to food processing units located in other regions
- Low backward linkages
- Links with local trade are important in both Gers and Matera, but local traders buy farm goods also from nearby regions
- Links with hotels & catering are low in Gers (small sector) but good in Matera (also buying from elsewhere)

##### Diversified Dynamic

- High links with local food processing in Kalmar Ian; low in Gwynedd where farmers sell to food processors located elsewhere. Generally the vast majority of output directed to buyers with up to 150 Km distance.
- Backward links seem a bit better compared to NDA and ADD
- Links with local trade seem rather low; most sales to trade concern nearby regions
- Rather low links with local hotels & Catering

#### **11.1.2. Food Processing**

##### Non-Dynamic Areas

- Important in Trikala (heavy investment); not important in Somogy

- Local trade and hotels not a “significant” client!

#### Agriculturally-Dependent Dynamic

- Important in both areas with rather good contribution to local jobs
- Sales directed to local (Matera) or “adjacent” (Gers) traders
- Vice-versa in the case of sales to hotels and catering

#### Diversified Dynamic

- Food processing is an important sector generating jobs in both areas. Also investment seems quite significant
- Selling an important share of output to local traders in Kalmar Ian
- Rather inconclusive evidence on links with hotels & catering.

### 11.1.3 Trade

#### Non-Dynamic Areas

- Important sector, generating jobs in Trikala, less in Somogy
- Local hotels and catering not a “significant” client!

#### Agriculturally-Dependent Dynamic

- Very important sector in Matera; less in Gers
- Local hotels & catering are an important client in Maters; less important in Gers

#### Diversified Dynamic

- Trade is an important sector in Kalmar Ian; non-conclusive evidence for Gwynedd
- Selling an important share of output to local hotels and catering Gwynedd but not in Kalmar Ian

### 11.1.4 Hotels & Catering

#### Non-Dynamic Areas

- Important sector in both areas; buying mostly from other areas (Trikala case) but also from local region (Somogy)

#### Agriculturally-Dependent Dynamic

- Very important sector in Matera; less in Gers

- Buying locally (Matera); not in Gers

#### Diversified Dynamic

- Very important sector in both areas
- In both cases food products are bought from both within and outside the local areas.

### 11.1.5 Links with Environment

#### Non-Dynamic Areas

- Quite negative environmental impacts in Somogy (water; soil); rather mixed impacts in Trikala (water; soil; landscape)
- Contributing to local culture and rural heritage in both areas; social cohesion is positively affected in Trikala and negatively in Somogy. Negative impacts on local entrepreneurship; positive on regional identity

#### Agriculturally-Dependent Dynamic

- Impacts on water in Gers; less in Matera (!) where impacts on soil, biodiversity and landscape are recorded
- Important impacts on local culture, rural heritage, regional identity

#### Diversified Dynamic

- Not very different findings compared to ADD plus some inconclusive evidence .

## 11.2 Extending Assessment

### 11.2.1 Capacity to cope with change

#### Non-Dynamic Areas

- Low entrepreneurial capacity in Somogy; rather high in Trikala with the exception of agriculture (very low)
- Ageing and conservatism seem to be important constraints
- Farmers seem to be laggards in entrepreneurial initiatives
- Local food is an attraction in Trikala, but not in Somogy.

#### Agriculturally-Dependent Dynamic

- A dual model exists in both regions
- Ageing is the reason to the problem (where this exists)

- Well-developed farmer-associations
- Local food does not seem to be a main attraction for tourism

#### Diversified Dynamic

- Farm community is conservative in both areas
- Attitude towards change is rather low (Kalmar Ian)
- Inconclusive evidence on the attraction of local food in Gwynedd; positive factor for tourism in Kalmar Ian

In accordance to the specification of the Thematic Working Group 2, the general objective of this working group is to identify and describe the relationships and potential synergies/conflicts between agriculture and the wider rural economy in various types of rural territories (such as remote, intermediate and peri-urban rural areas).

Step 1 of the TWG 2 workplan aims at the investigation of links between agriculture and the rest of the rural economy in terms of:

- i. use of farm output in the rest of the economy;
- ii. provision of non-agricultural goods and services to the farm sector;
- iii. supply and demand for production factors, and
- iv. potential for diversification of farm activities.

In more detail, the aim of Step 1 is to:

- to examine the current situation related to the synergy and interdependence between agriculture and the rest of the rural economy in representative rural regions in the EU; these regions will be preliminary classified according to several criteria including the relative importance of agriculture (which will constitute a major criterion);
- to investigate the construction of a typology of regions on the basis of the findings of the above analysis.

Within this context, the first two Tasks (1.1 and 1.2) of Step 1 aim at the investigation of linkages between agriculture and the rest of the rural economy and at the preliminary identification of a typology of regions. Specifically, these aims can be broken into the following sub-tasks:

1. the systematic analysis of data for the selection of representative regions; this analysis will be based on criteria which reflect the degree of importance of agriculture in relation to the importance of other major rural industries (such as food processing and tourism), demographic evolution, structural/physical characteristics (e.g. mountainous area) and competition for natural resources (land, water).
2. the application of the Regional Input-Output (I/O) methodology in order to assess synergy and interdependence between agriculture and the wider rural economy. Inter-relationships to be investigated include the use of farm output in the rest of the economy, the provision of inputs to the agricultural sector, the links between agriculture and production factors and the potential for diversification of farm activities. These inter-relationships will be investigated through the estimation and analysis of indicators of economic interdependence.



3. the utilization of the indicator analysis in order to identify different patterns of interdependence in the selected study areas.
4. the specification of a preliminary typology of EU rural regions, based on the findings of sub-task 3 (above).

Significant linkages identified (sub-task 3) will be further investigated in the context of Step 2 of TWG 2. In more detail, there will be an investigation (test of hypothesis) of the degree of correlation between different patterns and key factors related to different degrees of interdependence between agriculture and the wider rural economy and additional study-region-specific characteristics (such as e.g. agricultural specialization, innovation in food processing, etc.). This analysis will lead (through amongst others, a possible modification of IO models) to a re-run of the structural IO analysis and ultimately, to a revision of the preliminary typology of EU rural regions.

Taking the above into account, this report is structured as follows: section 2 presents analytically the I/O methodological framework including its regional and environmental application (ecological commodities model) which will be utilized for the estimation of the links between agricultural and non-agricultural sectors, water and land. Section 3 presents several alternative indicators capturing the nature and strength of inter-industry linkages and links between economic activity and production factors. Section 4 concentrates on the application of the I/O methodology to the test regions. It first presents the process utilized for selecting 18 test regions; then there is a presentation of the model construction process (procedure, data requirements). Subsequently, Section 5 presents the interdependence analysis results in a comparative manner (i.e. comparison between and within the specified cluster groups). The presentation of interdependence analysis results will be structured according to the four categories of links between agriculture and the rest of the economy specified in the work plan (see also above). Then, the last Section of the report will present a preliminary typology of EU rural regions, based on the findings of the interdependence analysis.