

# Studies in Agricultural Economics

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## Foreword

The invited articles published in this issue of *Studies in Agricultural Economics* address the important theme of ‘The Role of Cohesion Policy in Rural Development’. All were first presented at the conference entitled ‘What Future for Cohesion Policy? – An Academic and Policy Debate’ held on 16-18 March 2011 in Bled, Slovenia.

The conference was co-organised by the Directorate-General for Regional Policy (European Commission), the Regional Studies Association and the Government Office for Local Self-Government and Regional Policy, Slovenia. It took place at a key point in the cohesion policy calendar – immediately following the publication of the Fifth Cohesion Report<sup>1</sup> and close to the time when the European Union (EU) was expected to publish its proposals for the post-2013 financial perspective.

Central to the debates on the future of the policy are the following themes:

- Policy goals, including the contribution to Europe 2020;
- The interpretation of territorial cohesion;
- The spatial coverage of the policy;
- Policy performance and effectiveness;
- The efficiency of governance structures and implementation arrangements;
- The relationship between Cohesion Policy and other EU structural policies such as Rural Development.

Amongst these themes, the latter is of particular significance to readers of *Studies in Agricultural Economics*. The Fifth Cohesion Report explicitly states (p.273) that ‘Rural areas are a key element in any strategy for sustainability and territorial balance’ and notes that ‘rural regions often share particular strengths and assets, on which Cohesion Policy can build’. Large sections of the Report are devoted to discussing rural issues.

The conference provided a forum for the first international academic debate on the Fifth Cohesion Report between regional studies researchers and senior officials from the European institutions. It also provided an opportunity to take stock of recent research on Structural and Cohesion Funds and for discussion of the above themes. The seven papers selected for this thematic issue of *Studies in Agricultural Economics* explore several aspects of the relationship between Cohesion Policy and Rural Development.

Recognising that rural change is multifaceted, Copus, Schucksmith, Dax and Meredith propose that Cohesion Policy for rural areas after 2013 should combine carefully targeted horizontal programmes with neo-endogenous local development approaches. They stress that with increasing connectivity geographical proximity (such as local urban-rural interactions) is becoming less important than ‘organised proximity’. In line with this, Knippschild demonstrates, using several examples, that supra-regional coalitions are emerging in the EU which can cross national borders. But these can be observed more often in western than in central

and eastern Europe, where coalition building and strategy development still face severe problems. Across the EU, the question of delineating the respective cooperation areas is a major challenge. Using migration, an issue of major importance to rural areas, as an illustration, Ladias, Hasanagas and Papadopoulou suggest the quantitative network approach as a tool for this purpose. This could allow policy making to better address real issues, by being less constrained by administrative or historical boundaries.

Fieldsend notes that there is no simple definition of rural employment but that a sustainable approach to exploiting natural capital, together with the development of the other capitals (human, social, physical and financial) of the territory via a place-based (i.e. territorial policy) approach, can create jobs and encourage working age people either to stay in, or relocate to, rural areas. This demands a closer alignment of rural and regional funding. An example of this is funding for broadband Internet access. Fekó, Sass and Nagy show that, in this respect, disparities between rural and areas are still huge (especially in the New Member States) and recommend that Structural Funds should be used to stimulate the development of superfast broadband networks in rural areas of the EU. However, Michalewska-Pawlak observes that ‘rural development’ in the EU is presently dominated by the agriculture approach, and that the social, cultural, service aspects of rural development are marginalised. The challenge posed by rural areas to Cohesion Policy after 2014 can only be met by including a separate rural development programme within Structural Funds.

Finally, Montresor, Pecci and Pontarollo attempt to quantify whether regional and rural policy and funding are effective in promoting economic growth and foster the process of convergence of EU regions. Using a methodology based on the Solovian model, they show that both CAP funding and Structural Funds have had a positive impact on regional convergence.

*Studies in Agricultural Economics* would particularly like to thank Sally Hardy, Chief Executive of the Regional Studies Association, for her cooperation in allowing these seven papers of relevance to rural development to be brought to the attention of a wider audience.

**Andrew Fieldsend**  
Budapest, September 2011

<sup>1</sup> EC (2010): Investing in Europe’s future: Fifth report on economic, social and territorial cohesion. Brussel: European Commission.

Andrew K. COPUS\*, Mark SHUCKSMITH\*\*, Thomas DAX\*\*\* and David MEREDITH\*\*\*\*

## Cohesion Policy for rural areas after 2013

### A rationale derived from the EDORA project (European Development Opportunities in Rural Areas) – ESPON 2013 Project 2013/1/2

The starting point of the EDORA project was the recognition that, rather than becoming more uniform in character, rural Europe is, in many ways, becoming increasingly diverse, implying new challenges and opportunities. The project's overarching aim was to examine the process of differentiation, in order to better understand how EU policy can enable rural areas to build upon their specific potentials to achieve 'smart, sustainable and inclusive growth'. The first phase of the project consisted of a literature review in order to establish a conceptual framework for subsequent empirical analysis. This identified a very wide range of aspects of contemporary rural change. In order to manage this complexity, and so that it could be communicated simply and clearly, three 'meta-narratives' of rural change were devised. In the second phase the evidence base for rural change was explored, both in terms of large scale patterns, based upon regional data, and local processes. The macro-scale patterns were addressed by three typologies. These were complemented at a micro-level by in-depth studies of 12 exemplar regions, reflecting a wide range of types and contexts. The third phase explored policy implications. The project's findings point towards neo-endogenous approaches, in which a 'bottom up' process of regional programme design is fully supported and guided by available information, expert advice and the kind of strategic perspective which is best assembled at a central level. The EDORA findings are thus generally supportive of the 'place based' approaches advocated by the Barca Report.

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## Introduction

The objective of this paper is to show how an appreciation of current processes of rural change and differentiation supports a rationale for 'neo-endogenous rural cohesion policy'. This strategy requires a territorial approach with a careful balance between strategic, macro-scale, targeted interventions on the one hand, and micro-scale 'bottom-up' programmes on the other. It is conceivable that both elements of the Common Agricultural Policy (CAP), and multi-fund local development interventions could be complementary elements in such a policy framework.

In order to demonstrate this it is helpful to begin by reflecting upon the changed realities of rural Europe, and the need to update or discard the generalisations (stereotypes) from which rural policy, at all levels (strategic European Union (EU), Member State, and local implementation), has derived its rationale. This is the task of the first section of the paper, which summarises the findings of the conceptual and empirical work carried out by the EDORA project (<http://www.nordregio.se/EDORA>).

Rural change is a highly complex phenomenon, but one way to make a manageable overview is through the articulation of 'meta-narratives' which are global in reach and largely exogenous to the local rural/regional development process. Patterns of geographical differentiation may be observed at a variety of spatial scales. Analysis in the EDORA project has been carried at both *macro* levels (through a set of NUTS 3 regional typologies) and *micro* level, through a set of case studies. It is argued that both levels are appropriate contexts for policy intervention, and that what is needed is a careful balance between strategic, macro-scale, targeted interventions on the one hand, and micro-scale 'bottom-up' programmes which address specific challenges and oppor-

tunities, with a particular regard to 'softer' or intangible territorial assets, on the other.

The paper concludes by identifying elements of the recent policy documents relating to the CAP and Cohesion Policy (EC, 2010a), and the EU Fifth Cohesion Report (EC, 2010b) which could together provide the building blocks for such a 'neo-endogenous rural cohesion policy'.

## Processes of contemporary rural change – stereotypes and meta-narratives

Clearly rural change is an extremely complex and nuanced phenomenon; the more that policy makers can understand of the details of the local experience, and the more intervention strategy can accommodate the full range of regional differences, the more effective it will be. The rural policy literature is of course populated by many generalisations, some being more or less representative and accurate, and others being anachronistic stereotypes with an inadequate evidence-base, which Hodge (2004) has dubbed 'stylised fallacies'. These are sometimes perpetuated by powerful interest groups. Such rural stereotypes have often been quite negative, and have included, for example:

- *The agrarian countryside*, in which land-based industries are seen as the driver of the rural economy, whilst other forms of economic activity are seen as either associated with agriculture, or as focused on meeting the needs of nearby urban markets. There certainly are some parts of Europe for which this generalisation remains true to some extent. However in the majority of regions secondary and tertiary activities, largely

independent of both agriculture and local cities or towns, are relatively more important.

- *The 'rural exodus'*: characterised by out-migration and demographic ageing. This ignores the fact that many rural areas show in-migration, population increase and relatively young age structures.
- *Rural 'dependency culture'* – an attachment to policy supports and compensation for disadvantage as the main policy option. In reality many rural areas, even remote ones, show evidence of dynamism, innovation and growth, even without policy support.
- Rural labour markets are commonly associated with *segmentation*, in which a dominant 'secondary' component is characterised by low levels of human capital, insecurity, low activity rates (especially for females), disguised unemployment, and high levels of self-employment. All of these characteristics are certainly present in some (but by no means all) rural areas.
- Similarly, *sparsity of population* is often perceived as a barrier to entrepreneurship, due to an absence of agglomerative economies. As a result, the impacts of globalisation processes are believed to be predominantly negative in rural areas. Nevertheless it is important to recognise that information and communication technology (if associated with appropriate human capital conditions) are facilitating new forms of economic activity which enable some rural areas to sidestep these handicaps.

Faced with the complexity and variety of rural development paths it is commonplace to stress the uniqueness of each individual rural area (often as a justification for 'bottom up' development paradigms). However, the debate concerning policy options for 'non-urban' Europe cannot be sustained by phenomenological approaches alone. Broad generalisations have an important role to play. Nevertheless, it is not desirable that one set of 'stylised fallacies' be replaced by generalisations which, although they are closer to contemporary realities, introduce a new set of inflexibilities. It is crucial that the debate begins to move away from anachronistic stereotypes, and is informed by generalisations which are soundly based upon up-to-date evidence.

The literature review carried out by the EDORA project team generated a large volume of information about elements of rural change which are interlinked in complex ways across both rural space and time. A 'narrative' approach was appropriate as a means of organising and presenting these findings (Lee *et al.*, 2009). A large number of what may be termed 'story lines', focused on specific aspects (demography, business development, employment etc.) emerged. At a more synthetic level these 'story lines' may be woven into various 'meta-narratives' which are not constrained by disciplinary or research topic boundaries, but integrate processes across the spectrum.

Woven through the contemporary literature of rural change is the 'leitmotif' of *Connexity*; the increasing interconnectedness, over longer distances, of all aspects of rural economic and social activity (*ibid.*). This means that the strength of linkages to sources of information, innovation, and business opportunities, and the capacity to exploit them,

can become more important than proximity to resources *per se*. Within this overarching theme, three 'meta-narratives' of contemporary rural change can help us to understand the complexity and variety of individual development paths:

- The *Agri-Centric* meta-narrative (*ibid.*), which draws together various ideas relating to the move away from food and fibre production as the sole focus of European farming, towards a more 'multifunctional' industry, redirected towards provision of countryside public goods and diversification into a range of new activities, such as food processing, recreation and tourism. Some have used the term 'consumption countryside' to describe the kind of rural economy which results from this change (Marsden, 1999). This move from 'productivist' to 'post-productivist' approaches is paralleled by a change from agricultural policy supporting modernisation and structural change, to a greater emphasis upon rural development and the role of farmers as custodians of the rural environment. Not all rural regions have responded to these changes in the same way. Two development paths are commonly observed. Some regions show increasing specialisation, increasing farm size and the increasing importance of agribusiness, only moderated by the constraints imposed by agri-environment and animal welfare policy. This has been termed 'para-productivism' (Crowley *et al.*, 2008). Other areas have smaller, diversified farms, and more fully embrace the 'commodification' of countryside public goods as a business model. This kind of response is described by Crowley, Walsh and Meredith (2008) as 'peri-productivist'.
- The *Rural-Urban* meta-narrative (*ibid.*) draws together various story lines relating to migration, rural-urban relationships, access to services, agglomeration (or its absence), and highlights the 'vicious' or 'virtuous' circles of decline or growth which intensify disparities between accessible and remote or sparsely populated rural regions.
- The meta-narrative of *Globalisation* (*ibid.*) emphasises implications of increasing connexity and global trade liberalisation, in terms of the geographical segmentation of labour markets, (whereby high and low status employment opportunities tend to be concentrated in different parts of the world), and the associated structural change of European rural areas.

It is tempting to view these 'meta-narratives' as the 'drivers' of rural change. Nevertheless, it is important to keep in mind the extreme complexity of regional and rural development processes, and the partial nature of our understanding of them, which means that it is risky and perhaps simplistic to speak in terms of linear cause and effect relationships. It is safer to consider the 'meta-narratives' primarily as 'heuristic devices' – a helpful way of organising an otherwise bewildering array of information. It is also worth emphasising that they are not mutually exclusive, the same 'story lines' may be tied into more than one meta-narrative. Neither are the meta-narratives synonymous with the development paths of individual rural areas. Most localities show evidence of several meta-narratives concurrently.



The meta-narratives are neither exhaustive nor inclusive of all the ways in which individual regions experience change, however they provide useful generalisations about common vectors which act upon rural regions across Europe. As such they are part of an interactive web of socio-economic changes and trends which are global in scope and impact. Each of them is associated with a wide range of both opportunities and challenges. The balance between the positive and negative implications of the meta-narratives depends upon aspects of geographical context, both in terms of local conditions and broad-brush patterns, and especially of the capacity to respond to new challenges.

## Broad-brush geographical patterns: regional typologies

In order to understand current patterns of rural differentiation across Europe, it is necessary to acknowledge both macro and micro-scale dimensions of variation. The former are reflected in the typologies presented in this section of the paper. At the micro-scale, the profile of positive and negative outcomes in each locality reflects the configuration of a range of ‘territorial assets’, both tangible and intangible. This is the focus of the fourth section of the paper.

What then can helpfully be said about macro-scale geographical patterns across rural Europe? Again, as with the preceding discussion of processes of change, the following attempt to outline broad socio-economic patterns is not viewed as an end in itself; but as a means by which policy may be better informed by, and attuned to, contemporary rural realities.

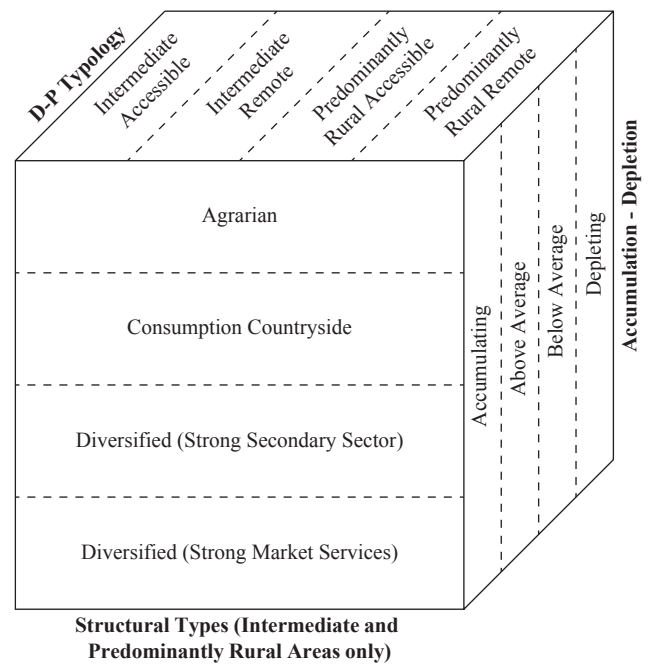
In pursuit of a form of generalisation which is more evidence-based the EDORA project developed an ‘analysis framework’ composed of three discrete regional typologies (Copus and Noguera, 2010). A single typology cannot easily encompass the salient aspects of differentiation of rural regions. The so called ‘EDORA cube’ therefore comprises three typologies, reflecting three distinct dimensions of variation (Figure 1).

The three typologies attempt to capture the following aspects of rural differentiation:

(i) **Rurality and accessibility.** This typology relates to the Rural-Urban meta-narrative, and was developed by DG Regio from the OECD typology (Dijkstra and Poelman, 2008). Four types of (non-urban) regions are distinguished; Intermediate Accessible, Intermediate Remote, Predominantly Rural Accessible, and Predominantly Rural Remote.

(ii) **Economic restructuring.** This typology relates to both the Agri-Centric and Global Competition meta-narratives, and was developed from 13 indicators, using a multi-criteria, disaggregative approach. Again four types of non-urban regions were distinguished:

- **Agrarian;** in which the primary sector accounts for an above average share of Gross Value Added (GVA) and employment.
- **Consumption Countryside;** regions in which the primary sector is less important, but countryside public goods form the basis for a substantial part of the



**Figure 1:** The EDORA Cube – a three dimensional framework for analysis.

Source: Copus (2010b)

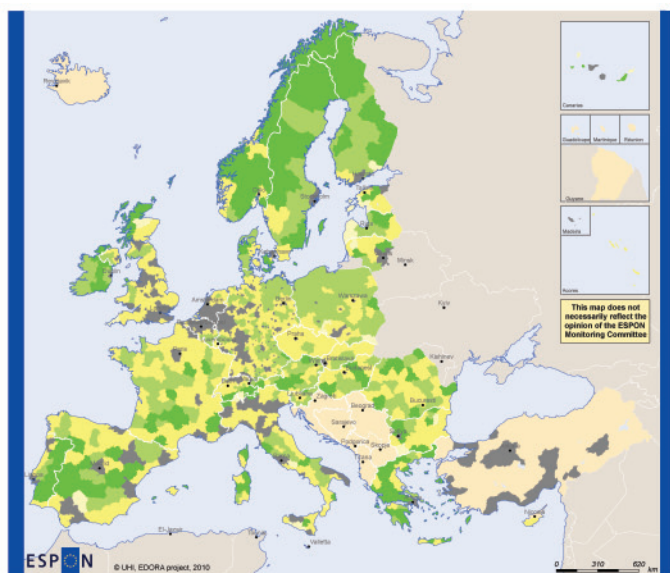
economy, as reflected in indicators relating to tourism and recreation activity, access to ‘natural assets’, and the role of small-scale diversified forms of farming.

- **Diversified (strong secondary sector);** regions which did not fulfil the criteria for either of the first two types, and in which manufacturing accounts for a higher share of GVA than market services.
- **Diversified (strong market services sector);** regions which did not fulfil the criteria for either of the first two types, and in which market services accounts for a higher share of GVA than manufacturing.

(iii) **Performance.** This typology places regions on a continuum between ‘accumulation’ and ‘depletion’, and derives its rationale mainly from the Rural-Urban meta-narrative. It is based upon a synthetic index of performance, incorporating five indicators. Four types of region are distinguished; Accumulating, Above Average, Below Average, and Depleting.

A simple visual comparison of the typology maps (Figure 2) provides some clear first impressions of the broad-brush patterns which overlay the individuality associated with the regional and subregional contexts:

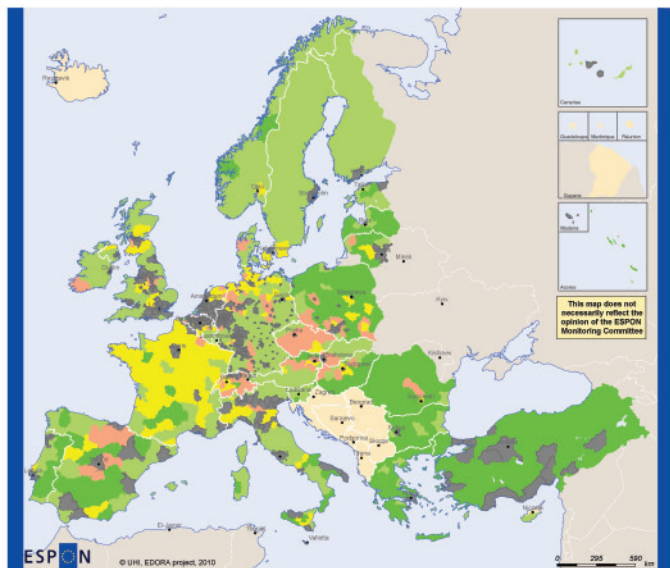
- Regions in which the primary sector plays a major role in the local economy are mainly concentrated in an arc stretching around the eastern and southern edges of the EU27.
- The rest of the European space is characterised by a patchwork of three types of rural area, Consumption Countryside, Diversified (Secondary) and Diversified (Private Services). Of these the last seems to be to some extent associated with the most accessible areas.
- Broadly speaking there is a tendency for the Agrarian regions to be relatively low performers, showing



**Urban-Rural Types**  
(NUTS 3 Regions)

- No Data
- Predominantly Urban
- Intermediate Close to a City
- Intermediate Remote
- Predominantly Rural Close to a City
- Predominantly Remote

Regional level: NUTS 3  
Source: EDORA Database, 2010  
Origin of the data: Eurostat REGIO Database, and other sources, various years (corrected on 2000)  
© EuroGeographics Association for the administrative boundaries

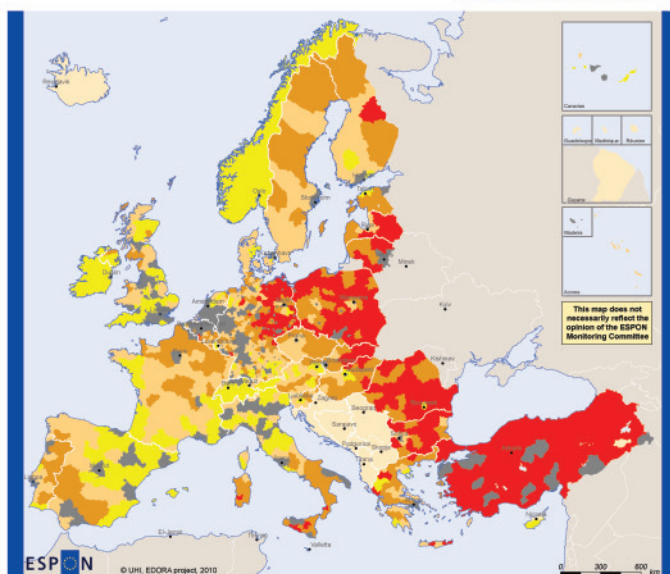


**Structural Types**  
(Intermediate and Predominantly Rural NUTS 3 Regions)

- No Data
- Predominantly Urban
- Agrarian
- Consumption Countryside
- Diversified (Strong Secondary Sector)
- Diversified (Strong Private Services Sector)

Note: A simplified classification procedure was necessary in CH and TR, due to missing data. However it is anticipated that acquisition of a wider range of indicators would not materially change the outcome.

Regional level: NUTS 3  
Source: EDORA Database, 2010  
Origin of the data: Eurostat REGIO Database, and other sources, various years (corrected on 2000)  
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**Performance (A-D) Types**  
(Intermediate and Predominantly Rural NUTS 3 Regions)

- No Data
- Predominantly Urban
- Depleting
- Below Average
- Above Average
- Accumulating

Note: The type allocation to TR and CH is based upon a reduced set of indicators, and should not be considered fully comparable with the typology for the EU27.

Regional level: NUTS 3  
Source: EDORA Database, 2010  
Origin of the data: Eurostat REGIO Database, and other sources, various years (corrected on 2000)  
© EuroGeographics Association for the administrative boundaries

**Figure 2:** The three EDORA typologies

Source: Copus (2010b)

many of the characteristics of the process of socio-economic ‘Depletion’. The Diversified (Secondary) regions also tend to be relatively poor performers, perhaps because they are dependent upon declining manufacturing industries.

- The Consumption Countryside regions and the Diversified (Private Services) group are both high performers, and likely to continue to ‘accumulate’ in the immediate future.

A more careful cross-tabulation approach (Copus, 2011) suggests some interesting relationships between rurality, structure and performance. For example:

- Predominantly Rural Remote regions are frequently classified as Agrarian. Intermediate Accessible regions are commonly Diversified (Private Services), or Diversified (Secondary). Intermediate Remote regions are most often associated with the Consumption Countryside group.
- Statistical analysis has shown that the Structural typology is particularly efficient at discriminating between regions in terms of performance. In other words the performance of ‘non-urban’ regions tends to be more closely related to degree of economic restructuring than it is to the distinction between Intermediate or Predominantly Rural, or proximity to a city.
- 60% of the population of Intermediate Accessible Europe lives in Above Average performing or Accumulating regions. All other Urban-Rural types had a majority of population living in Below Average or Depleting regions
- Almost 50% of the population of Agrarian regions lived in Depleting Regions, and only 12% in Positive Performance categories. More than two-thirds of Consumption Countryside population lives in positive performing regions. The same is true of the Diversified (market services) regions, but only 55% of Diversified (Secondary) population lives in regions with above average performance.

As mentioned above, the three meta-narratives are each associated with a range of positive and negative implications for rural and regional development. The balance between the opportunities and challenges confronting an individual region will be determined by its location within the macro-scale patterns of rurality and economic restructuring summarised by the above typologies. The typologies presented above thus offer a broad spatial framework which can help us to identify areas in which the challenges are dominant (-), others in which the opportunities are more evident (+), and finally those where the balance between positive and negative impacts is not very clear (+/-). This is represented schematically in Figure 3<sup>1</sup>.

These broad-brush generalisations are not designed to address the complexity of local variation in rural areas across Europe, or the infinite number of possible combinations of drivers, opportunities and constraints. Rather they

	Meta-Narrative		
	Agri-Centric	Rural-Urban	Globalisation
Intermediate Accessible	+/-	+	+
Intermediate Remote	+/-	+	+
Predom. Rural Accessible	+/-	+	+
Predom. Rural Remote	-	-	-
Agrarian	-	+/-	-
Consumption Countryside	+/-	+/-	+/-
Diversified (Secondary)	+	+	-
Diversified (Market Serv.)	+	+	+

Rural Types

Legend

- + Opportunities more evident than challenges
- Challenges more evident than opportunities
- +/- Opportunities and challenges balanced

**Figure 3:** Schematic representation of meta-narrative impacts on the Urban-Rural and Structural Types.

Source: Copus (2010b)

are intended to isolate those components of variation which are to some degree systematic across space at a macro level. As such, within the context of the debate about the future of European cohesion policy for rural areas, it would seem that the four Structural Types may be more useful as generalisations than the prevalent, but outdated, association of rural mainly with Agrarian rural economies, or even with the Consumption Countryside. The rather different needs and potentials associated with Diversified rural economies (whether strong in secondary activities or private services) would seem to deserve far more attention in the context of the policy debate than they have heretofore received.

### Micro-scale variation

It is rather more difficult to make clear or conclusive statements about rural socio-economic variation, change and development opportunities and constraints at a micro<sup>2</sup> level. There are two principal reasons for this: Firstly, by definition such variation is unsystematic (in spatial terms). This is why the Territorial Cohesion Green Paper (EC, 2008) mantra of ‘Turning diversity into strength’ points to the uniqueness of each rural area as a basis for development. Secondly, many of the key characteristics which make up the unique territorial capital of rural areas are what are sometimes termed ‘soft factors’ or ‘intangible assets’. The importance of these lies in their role in facilitating or

<sup>1</sup> More detail on how the relationships between meta-narratives and regional types, and the relative impacts, were determined, together with specific policy suggestions relating to the each type of region, is provided in the EDORA Final Report (Copus, 2011).

<sup>2</sup> The term ‘micro’ is used here rather loosely in terms of local variations between or within NUTS 3 regions which are not clear, systematic, features at a European level (i.e. they do not typify a group of regions forming a distinct macro region on the map of Europe).



hampering the ability of a rural economy or community to exploit opportunities to develop extra-local networks which can sustain innovation and foster the preconditions for development. It is therefore to this issue of patterns of interaction that we now turn.

## Patterns of interaction

At a micro scale level a key concept in the policy debate, over many years, has been urban-rural interaction. The origin of this thread of debate can be traced back to the work of Francois Perroux (1955) on 'growth poles' in the 1950s and 1960s. Despite the persuasiveness of its logic as a normative theory, the evidence of significant urban-rural 'trickle down' benefits from real world implementations was soon found to be scanty, and this led to its virtual abandonment by the academic regional/rural development community from the late 1970s onwards. It has lingered on within the policy discourse however, transforming itself into a principle for better governance; whereby rural-urban interaction benefits may be harvested through cooperation of local administrations or third sector institutions such as business associations (Copus, 2010a; Courtney *et al.*, 2010). The European Spatial Development Perspective (ESDP), the INTERREG programmes, the European Spatial Observatory Network (ESPON), and the Territorial Agenda have been associated with a revival of interest in rural-urban cooperation as a complement to their core vision of 'polycentricity'. As recently as 2005 the Territorial Agenda stated that 'In predominantly rural areas with single urban centres, the question is how rural-urban partnership can help to strengthen the urban centres as growth poles for the entire region on the one hand while on the other hand providing services for rural areas and enabling endogenous and sustainable development, without making the surrounding area completely dependant on the urban centre'. (COPTA, 2007, p. 63). In parallel with this in 2008-2009 DG Regio explored the issue of urban-rural cooperation (in its broadest sense) through a series of seminars.

In the end urban-rural relationships may turn out to be a policy *cul-de-sac*. There are several reasons for this: (i) Although the general concept of urban settlements as regional drivers for development is winsome, specific details of the mechanism by which benefits diffuse outwards from poles tend not to be considered. (ii) There has been a disappointing lack of evidence of quantifiable 'spread effects'. (iii) In the context of the increasing 'connexity' of the rural economy it has become evident that the traditional concept of local rural-urban linkages is far too simplistic. In the twenty-first century performance of most rural economies is contingent upon interactions at a wide range of spatial levels, local, regional, national, European and global. Local urban-rural interaction cannot be considered a principal driver for rural economies in Europe today.

The realisation that increasing connexity is disrupting long established spatial hierarchies of interaction is not, of course, peculiar to the discussion of rural-urban linkages. Thus in the field of governance the concept of 'glocalisation' has been put forward by Swyngedouw (2004). In regional science some have argued that 'organised proximity' and

'relational space' are becoming more important than geographical proximity and Euclidean space. Closer to the focus of this paper Marsden (2009) has been a leading proponent of what he terms 'Sustainable Rural Development', which draws together the concepts of multifunctionality, short supply chains, quality products and new forms of marketing under a process of 'relocalisation'. This has some similarities with the concept of industrial districts (Piore and Sable, 1984; Belussi, 1996) and is held up as an alternative to 'delocalisation' processes which are taking place in 'productivist' regions characterised by large scale farming and agribusiness.

The business networks literature also has much to say about patterns of interaction by rural businesses. A key point is that well developed business networks may allow rural SMEs to survive and indeed flourish independently of local rural-urban relationships. Thus agglomeration and business networks may be viewed as alternative responses to the need to minimise transaction costs and to maximise access to information relating to innovation. Technological changes affecting production, transport and communication are affecting the trade-off conditions between agglomeration and networking in complex ways, so that spatial patterns of economic development are likely to change in the first decades of the 21<sup>st</sup> century (Johansson and Quigley, 2004).

Business networks play a vital role in the transmission of information, which in turn promotes innovation. The effectiveness of a region's business network depends not only upon its local network 'density', degree of 'embeddedness', and the associated human and social capital, but upon its connections to more distant sources of specialist information. These two capabilities are known as 'bonding' and 'bridging' respectively. In essence, bridging capability channels information into the local network, whilst bonding distributes it among local firms and entrepreneurs, facilitating collective learning. Bathelt *et al.* (2004) coined the memorable phrase 'local buzz and global pipeline' to describe regions in which high levels of local interaction combine with effective channels which bring in exogenous knowledge which supports local innovation.

Murdoch (2000) has pointed out that the industrial districts literature draws heavily on examples of densely networked, dynamic, innovative regions with traditions of 'co-opetition' (such as the 'third Italy') which have emerged from an agro-industrial starting point. The present day industrial organisation and ethos of such regions had its origin in a society of small scale farms which needed to diversify into craft activities to supplement income, and which carried over co-operative farming traditions into this new sphere of activity.

Murdoch (2000) highlights the importance of 'path dependence' in the formation of industrial districts, or 'networks of innovation', and suggests that many rural areas, with their stronger community traditions, levels of trust and reciprocity, may provide an appropriate context for this form of endogenous development in the future. '... those rural areas that hold a reservoir of traditional farm-based economic forms, which are integrated with kinship and other close connections, may be best placed to grasp the new economic opportunities' (p. 414). By contrast those regions which were most affected by exogenous farm and rural



development policies of the recent past (farm restructuring, market support etc) may well have suffered ‘collateral damage’ to their social structures and traditions which will make this form of development much more unlikely<sup>3</sup>. Murdoch is not optimistic about the development potential of regions characterised by large scale commercial agriculture and ‘vertical’ supply chain networks, innovation being discouraged by ‘rather standardised forms of production kept in place seemingly through the exercise of rather crude power relations’ (*ibid.* p. 415).

A recurrent message which emerges from these various perspectives on the interaction of rural areas with the rest of the world is the sense that the rural economy is less and less tied to that of adjacent urban areas. Rural firms and rural people are increasingly participating in complex networks in which ‘organised proximity’ is more important than geographical proximity. To borrow a term from the migration literature these networks are ‘translocal’, they tend to connect localities – whether urban or rural – which possess a common motive for interaction, regardless of the physical distance separating them. Those regions which are not so competent at participating in ‘translocal’ interaction will fall behind in terms of innovation and general economic vitality. Two key policy implications follow:

- Interventions to stimulate intra-regional rural-urban cooperation, to some extent at least, ‘miss the point’ and fail to address the key issues.
- A fundamental pre-requisite for effective rural policy in the twenty-first century is a better understanding of what local conditions are conducive to the development of strong ‘translocal’ networks. It is to this issue that we now turn.

## Local assemblages of territorial assets

Micro scale patterns which help to define opportunities and constraints for development include those comprised of ‘hard’ features, such as raw material resources, landscape, physical infrastructure and buildings, and ‘soft’ aspects, such as the skills and capacities of the local workforce, its entrepreneurial culture and innovativeness, characteristics of business networks, the quality of local institutions and governance, and so on. The EDORA exemplar regions reports (Lee *et al.*, 2010) provide many illustrations of these different kinds of assets.

The role of these different ‘territorial assets’ has been recognised within a practical development policy context, especially in the developing world, but also, increasingly, in association with local development initiatives in Europe, through an approach known as ‘Asset Based Community Development’ (ABCD). ABCD is founded on a conceptual framework which defines seven forms of capital (Table 1, after Braithwaite, 2009).

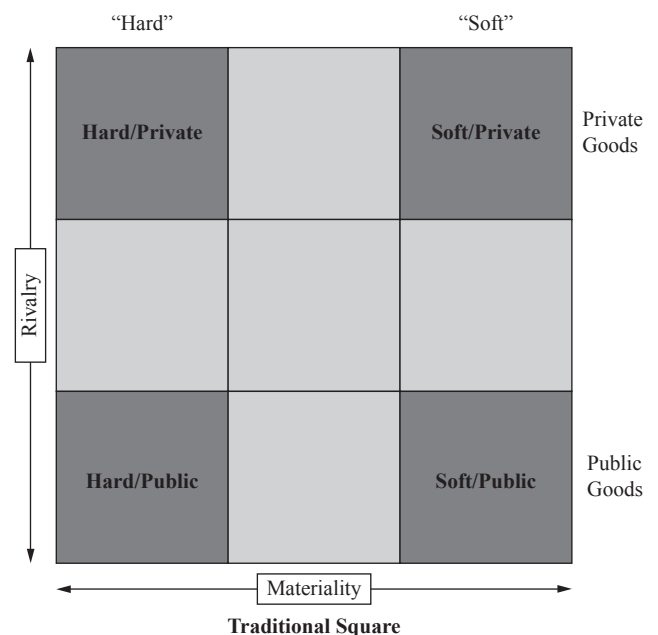
<sup>3</sup> ‘Thus, areas that have advanced furthest under the previous round of industrialisation – which was based on strong rural specialisation and pronounced forms of standardisation, leading to large, stand-alone enterprises – may not benefit from the new economic conditions ...’ (*ibid.* p. 414).

**Table 1: The Seven Capitals Approach.**

Capital	Definition	Examples and comments
Financial	Financial capital plays an important role in the economy, enabling other types of capital to be owned and traded.	The liquid capital accessible to the rural population and business community, and that held by community organisations.
Built	Fixed assets which facilitate the livelihood or well-being of the community.	Buildings, infrastructure and other fixed assets, whether publically, community or privately owned.
Natural	Landscape and any stock or flow of energy and renewable or non-renewable) resources that produces goods and services, (including tourism and recreation).	Water catchments, forests, minerals, fish, wind, wildlife and farm stock.
Social	Features of social organisation such as networks, norms of trust that facilitate cooperation for mutual benefit. May have “bonding” or “bridging” functions.	Sectoral organisations, business representative associations, social and sports clubs, religious groups. ‘Strength’ relates to intensity of interaction, not just numbers.
Human	People’s health knowledge skills and motivation. Enhancing human capital can be achieved through health services, education and training.	Health levels less variable in an EU context. Education levels very much generational. ‘Tacit knowledge’ is as important as formal education and training.
Cultural	Shared attitudes and mores, which shape the way we view the world and what we value.	Perhaps indicated by festivals, or vitality of minority languages. Some aspects – e.g. ‘entrepreneurial culture’ – closely relate to human and social capital.
Political	The ability of the community to influence the distribution and use of resources.	Presence of, and engagement in, ‘bottom up’ initiatives, the most local part of ‘multi-level governance’. Relates to local empowerment v. top-down policy, globalisation.

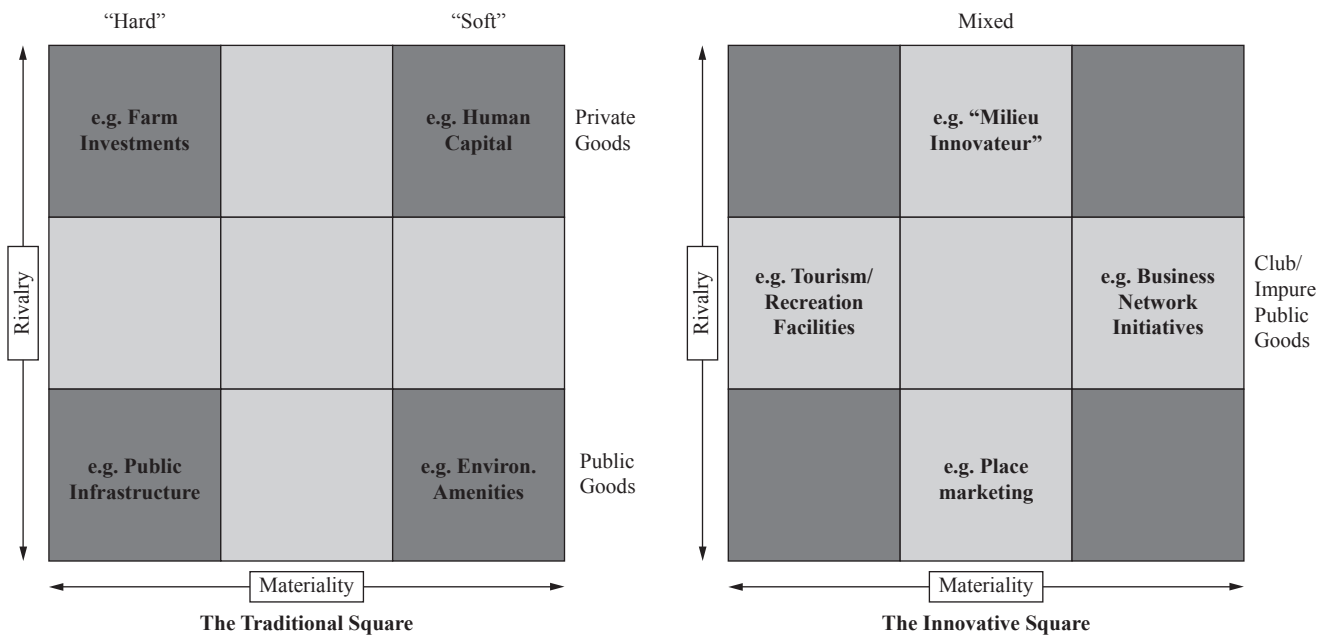
Source: Based upon Braithwaite (2009)

Camagni (2008) has defined the concept of ‘territorial capital’ from a more theoretical economic perspective, mapping out different forms of territorial capital in a two dimensional matrix, the axes distinguishing assets in terms of rivalry/excludability, and ‘materiality’ (Figure 4). The materiality dimension is already evident in the ABCD approach above. The second axis distinguishes (at the extremes)



**Figure 4: A typology of territorial assets.**

Source: Based upon Camagni (2008)



**Figure 5:** Application of the Camagni Territorial Capital Framework in a rural policy context.

Source: Copus (2010b)

between local assets which are bought and sold in conventional markets, and those which are public goods.

Camagni argues that regional policy has, until now, tended to focus upon the four corners of his typology diagram, and that further consideration should be given to the intermediate categories of both axes, (i.e. to club/impure public goods, and ‘mixed materiality’). In terms of rural policy it could be argued that the tendency has been to operate mainly on the left side of the diagram concerned with ‘hard’ assets, such as farm investments, or public infrastructure. In this context one suggestion might be to reinforce policy efforts with respect to the right hand side of the diagram, by supporting ‘softer’ forms of capital, such as human capital, or the protection/exploitation of environmental amenities (Figure 5). Some possible examples have been included in the right hand side of Figure 5, although the task of selecting illustrative examples underlines the fact that the clear distinctions of the Camagni diagram are not easy to sustain in the real world, and that the theoretical perspective will be a difficult one for practical policy makers and practitioners to apply. This does not mean, of course that important insights and principles may not be carried across into the policy discourse.

Meanwhile, in a different disciplinary context, the literature on the knowledge economy has borrowed the term ‘Intangible Asset’ from that on intellectual property rights to describe the contents of the right-hand side of the Camagni diagram. Thus a recent Framework 7 project (IAREG – Intangible Assets and Regional Economic Growth) stated:

Globalization and increased competition are putting new types of pressure on companies and, by extension, on the regions that depend on their success... The relative importance of (physical) resource endowment as drivers of regional growth is decreasing as these factors are now almost ubiquitously available. However, ‘soft’ production factors, that is, those related to personal bounded knowl-

edge, are becoming more important. (Suriñach and Moreno, 2010, p. 4).

This project has made a valuable contribution in providing a more systematic overview, and in identifying new quantitative indicators. Nevertheless, since variation in such ‘soft factors’ is generally aspatial (Copus, 2001), a local qualitative auditing process would still appear to be the most appropriate way to build an evidence base on ‘intangible assets’ in a Cohesion Policy context.

## Towards a rationale for rural Cohesion Policy

The description of macro and micro scale patterns of rural change and differentiation provided above can provide a basis both for a ‘clean sheet’ rationale for rural cohesion policy, and some more specific insights in relation to the current consultations regarding the future of EU Cohesion policy and the CAP. This section summarises the key principles for policy which may be derived from the EDORA findings, whilst the final section provides some examples of how these principles could be applied in the context of current policy arrangements and the proposed reforms. Further detail may be found in the EDORA project Final Report (Copus *et al.*, 2011), and in the policy working paper (Dax *et al.*, 2010).

The research reported above supports three broad propositions about rural differentiation and change which have the potential to form the foundation for a coherent policy rationale:

**A.** In a globalised world, in which various kinds of ‘non-Euclidian’ space are becoming increasingly important as arenas for economic and social activity, intangible assets will increasingly become the key to enabling each rural region to fulfil its potential.

**B.** Also as a consequence of globalisation, processes of change which affect rural areas (i.e. the meta-narratives) may be considered exogenous, and common throughout much of the ESPON space. The observed increase in rural differentiation is thus primarily a consequence of local or regional (i.e. endogenous) differences in the capacity of regions, (or rather of their people and businesses) to respond to the challenges or opportunities which are presented to them.

**C.** The capacity to respond may be divided into two components, according to the geographical scale at which they vary:

- Some exhibit broad macro-scale patterns of differentiation. These reflect the fact that the meta-narratives have different impacts in different types of rural area. These patterns may be to some extent captured by regional indicators, and typologies.
- Others, particularly the intangible assets, seem to vary in an 'aspatial' way, which can only be captured on a region-by-region (or locality) basis, by some form of qualitative auditing.

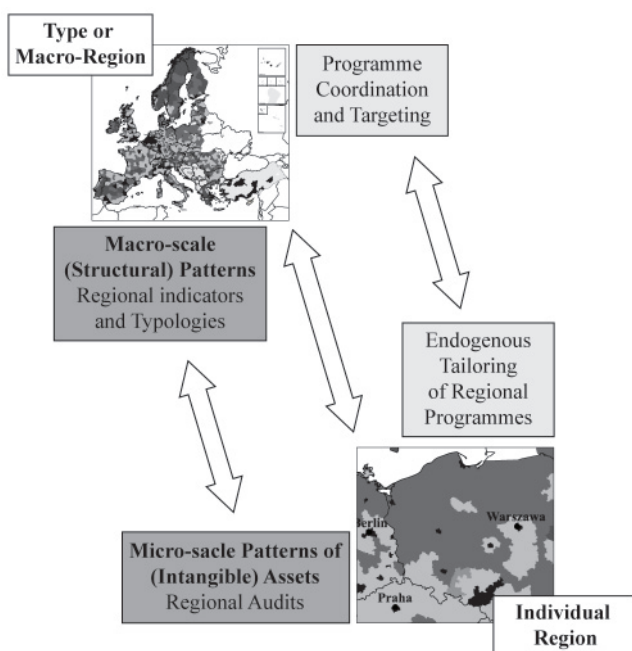
These propositions point towards a two-tier policy arrangement, combining carefully targeted horizontal programmes with neo-endogenous local development approaches (Figure 6). The EDORA findings are in this sense supportive of the 'place based' approaches advocated by the Barca Report (Barca 2009).

Some guiding principles emerge from the findings presented above:

- A clear and conscious distinction should be made both in policy design and implementation structures, between, on the one hand, issues characterised by macro-scale differentiation, and which are amenable to interventions applied on an EU-wide scale, and, on the other, those which are essentially aspatial, and

which therefore should be addressed by local development approaches;

- With respect to the former, careful consideration should be given to the geographical targeting of resources. The application of the principle of 'juste retour' (whereby Member States seek to get back what they put into the common funding 'pot') should be abandoned in favour of regional allocations based upon objective indicators and typologies of potential and absorption capacity;
- The local development component should be based, as far as possible, upon 'diagnostic audits' of regional challenges and opportunities. Whilst it is inevitable that these will not be furnished with all the quantitative indicators which might be desired, they should at least follow standard guidelines in the use of qualitative information;
- The local development programmes should avoid a disproportionate emphasis upon provision of 'hard' (tangible) assets, and should be encouraged as far as possible to address less tangible issues which determine the development of translocal networking as a support to innovation and entrepreneurship;
- Whilst a menu-based approach to designing Local Development programmes may imply unhelpful rigidities, the 'top-down' guidance should be sufficiently clear and specific to ensure its value as a resource to support regional implementation, and yet be flexible enough to be relevant across the full range of contexts;
- There would be a need for close coordination between interventions to support territorial cohesion in rural areas, and other policies active in similar contexts and themes. These include Cohesion Policy itself, the CAP, and a range of EU, national and regional Social and Employment policies which also address the issue of intangible assets;
- This policy concept is only feasible within the context of effective multi-level governance. Where appropriate, support should be provided to facilitate regional capacity building. In addition to the need for rural audits and indicators of intangible assets, in the context of programme design, these should be developed in tandem with systematic monitoring and evaluation of impacts.



**Figure 6:** Neo-Endogenous Rural Cohesion Policy.

Source: Copus (2010b)

The EDORA working papers (particularly Dax *et al.*, 2010 and Copus and Noguera, 2010) and the ESPON 'Scientific Paper' (Copus, 2010b) elaborate further by considering which opportunities and constraints characterise each type of rural area, and the kinds of intervention which may be an appropriate response in each context. Space will not permit a detailed account of this discussion here. Instead the remainder of the paper will consider how the broad rationale established above may be brought to bear upon the current consultation regarding the shape of Cohesion Policy and the CAP after 2013. In this exercise the broad architecture presented by the consultation documents is accepted as given, and the focus is upon specific aspects which could potentially shift policy in the direction of the principles set out in this paper.



## Some reflections on the current consultations and proposed reforms

In this section we will highlight two specific opportunities to implement the above principles in the context of the current consultations. The first opportunity relates to targeting of the CAP, and the second to multi-fund local development initiatives under Cohesion Policy. By doing so we do not imply that these would be sufficient to meet the EU 2020 objectives (smart, sustainable and inclusive growth) (EC 2010c), or to fully address rural territorial cohesion issues. Rather the examples are intended to be illustrative of the kind of practical policy outcomes which could be derived from the above rationale.

### (a) Better targeting of CAP Direct Payments

The consultation document ‘CAP towards 2020’ (EC, 2010a) states very clearly (p. 11) that Pillar 1 direct payments ‘are not sufficiently targeted’, because at present the allocation is based upon historical levels of intervention in different Member States and regions. It is therefore seen as a policy objective ‘to adjust current income support instrument so that it corresponds better to the needs in diverse economic, social and environmental conditions throughout the EU and complements market income’ (*ibid.* p. 13).

The document proposes three policy scenarios, which are termed ‘Adjustment’, ‘Integration’ and ‘Re-focusing’. The first essentially assumes incremental change, with the basic instruments remaining the same, but with some adjustments to address specific concerns and to render the policy more compatible with the EU2020 objectives. The second attempts to integrate the objectives of EU2020 more effectively through a more radical reform. The third refocuses the CAP on environmental and climate change objectives only.

The first scenario incorporates limited changes to Direct Payments ‘towards a significant harmonisation in the level of payments throughout the EU (through a general flat rate payment or one adjusted by objective social and economic criteria) ...’ (*ibid.* p. 14). The second scenario goes further, and suggests a structure which could well provide a basis for rendering the Single Payments System (SPS) an effective tool for enhancing territorial cohesion:

The SPS system would be divided into a basic income component (capped to avoid large payments to single beneficiaries) and additional payments targeting environmental issues applicable throughout the EU territory through generalised, non-contractual and annual environmental actions linked to agriculture (such as permanent pasture, green cover, crop rotation and ecological set-aside) with enhanced conditioning through cross-compliance. The option would be left to Member States to commit a certain part of the financial envelope to compensate specific natural constraints and address selected economic and social challenges. (*ibid.* p.15).

We would argue that the ‘selected economic and social challenges’ could be defined in terms of the macro-scale patterns revealed by the Structural Typology (Agrarian and Consumption Countryside), and that a component of the

Direct Payment be specifically associated with a territorial cohesion objective. It seems to make little sense to leave this to Member States to decide, since this would lead to strong inconsistencies across Europe. Such an arrangement would seem to offer a means to respond to the macro-scale pattern of economic restructuring revealed by the Structural Typology, and the very clear and strong association with socio-economic performance.

At this point it is important to reiterate the point that in this section we are considering only the proposals set out in the CAP towards 2020 consultation document. In doing so we do not intend to give the impression that the proposals go far enough in the direction of supporting territorial cohesion. It is not possible to explore this issue in detail. However it is perhaps sufficient to note that we do not imply that enhanced Single Payments to farmers is the ideal form of intervention to encourage economic restructuring in Agrarian regions. We would concur with the conclusions of the ESPON TIPTAP project (Camagni *et al.*, 2010), which argued for a transfer of funds from Pillar 1 to Pillar 2. Indeed we would suggest that the reinforcement of Rural Development policy should be focused on Axis 3 and Axis 4, which support diversification, the wider economy, community capacity, and local governance.

### (b) Multi-Fund Local Development Programmes

As the cross-tabulation analysis of the structural and performance typologies has shown, the diversified regions, especially those with a strong market services component to their economy tend to be relatively strong performers. Those in which the secondary sector is still more important than market services are often relatively poor performers. In these two types of regions in particular, it would seem that neo-endogenous development initiatives, of the type described in the previous section, would be an appropriate form of intervention.

The EU Fifth Cohesion Report devotes several pages to local development as a form of implementation, and noting its use in the URBAN II programme, ESF funded initiatives, LEADER, and Fisheries Local Action Groups. The key features of local development are described as follows:

- a well defined local area, usually small scale;
- a strong partnership with, and the close involvement of, all the relevant local actors, mobilising their unique strengths and local knowledge. This work often requires a degree of capacity building and administrative support from larger units;
- an integrated strategy tackling the various challenges facing the area. This strategy should be developed in close partnership between the various local public and private actors, as well as different administrative levels (local authorities and territorial units of central or regional government) (EC, 2010b, p. 236).

The main challenge with local development (*ibid.* p. 237) is thought to be the amount of effort required to stimulate local involvement. However in the conclusions to the EU Fifth Cohesion Report the mobilisation of local communities and strengthening of partnership between different levels of governance is seen as a key benefit from local development initiatives:

In this context, the role of local development approaches under Cohesion Policy should be reinforced, for example, by supporting active inclusion, fostering social innovation, developing innovation strategies or designing schemes for regeneration of deprived areas. These should be closely coordinated with similar actions supported under rural development and maritime policies. (*ibid.* p. XXIX).

The last sentence conveys a vision of coordinated multi-fund local development programmes which is very much in the spirit of what emerges from the rationale for Rural Cohesion policy above. Presumably these local development initiatives will be coordinated as part of the 'Common Strategic Framework' mentioned by both DG Agriculture and DG Regio in their consultation documents:

For the sake of efficiency, it will be essential to strengthen the coherence between rural development policy and other EU policies, while also simplifying and cutting red tape where possible. To this end, a common strategic framework for EU funds may be envisaged (EC 2010b, p. 11).

... a common strategic framework (CSF) adopted by the Commission translating the targets and objectives of Europe 2020 into investment priorities. The framework would cover the Cohesion Fund, the European Regional Development Fund, the European Social Fund, the European Agricultural Fund for Rural Development and the European Fisheries Fund (EC 2010c, p. XXIV).

## Conclusion

This paper has sought to replace inaccurate stereotypes with more accurate generalisations about contemporary rural Europe, in order to establish a clear rationale for 'rural cohesion policy'. The broad principles set out emphasise the need for intervention at two levels, a macro-scale level to address broad systematic spatial patterns of differentiation, such as that exhibited by economic restructuring (away from agriculture), and a micro-level, to respond to localised, aspatial variations in territorial capital. The latter, typified by intangible assets, are crucial to the capacity of each rural locality to develop 'translocal' networks through which information, which is the key to innovation and growth, is transmitted.

The consultation documents relating to the CAP and Cohesion Policy after 2013 are examined, and two specific opportunities to apply the principles of rural cohesion policy are identified. These relate to geographical targeting of Single Farm Payments (an example of an intervention which reflects macro-level geographic patterns), and to multi-fund local development programmes (which addresses micro-level capacity issues). It cannot be too strongly emphasised, however, that we do not consider these, on their own, to be sufficient as a basis for a 'rural cohesion policy' during the next programming period. For this a more radical reform, based upon the principles set out in this paper, and allowing greater freedom for locally devised and managed, place-based, forms of intervention,

would be required. Without this the addition of top-down strategic coordination risks achieving little more than adding a layer of bureaucracy.

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## With 'Regional Territorial Agendas' towards territorial cohesion? The emergence of supra-regional coalitions in Europe and their future role in Cohesion Policy

This paper focuses on current trends of regionalisation with supra-regional coalitions emerging in Europe. In the context of further European integration and institutionalisation of cross-border cooperation, functional integration in cross-border areas is developing. By exploiting cross-border territorial capital these coalitions might contribute to the concept of territorial cohesion as stated and upgraded in the European Union's Treaty of Lisbon. The paper considers the right scale for these emerging supra-regional coalitions and their implications for the European Spatial Development Policy. When elaborating on the right delineation of supra- or transnational regional coalitions and about policy options, 'territorial knowledge' on territorial specificities, territorial capital and development potential is urgently needed. In border regions this includes cross-border functional linkages and interdependencies. The paper highlights an enhanced framework condition for cross-border functional integration and gives examples of supra-regional coalitions emerging in Europe, especially along Germany's borders. It shows the difficulties with cross-border data availability for delineation of supra-regional coalitions in Europe and discusses the implications for European Cohesion Policy.

**Keywords:** Territorial cohesion, border regions, urban-rural partnerships, cross-border regionalisation, regional territorial agendas

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### Introduction – territorial cohesion 'upgraded'

With the Treaty of Lisbon coming into force in December 2009, territorial cohesion became one of the policy objectives of the European Union (EU) alongside economic and social cohesion. Territorial cohesion is now a matter of shared competences between the European Commission (EC) and the Member States (MS) (EU, 2007). The term 'territorial cohesion' is still to be defined, even after the consultation process following the publication of the Green Paper on Territorial Cohesion (EC, 2008). The Green Paper identified territorial cohesion as a place-based policy with a stronger role for functional regions such as urban-rural territories. The consensus from the following consultation process was that territorial cohesion is about allowing regions to mobilise their development potential and to utilise their specificities. Cooperation between regions plays an important role here (EC, 2008).

The EU Fifth Report on Economic, Social and Territorial Cohesion (EC, 2010a) concludes that territorial cohesion has to be more strongly addressed in the new programmes after 2013. The focus should be also on functional geographies, areas facing specific geographical or demographic problems and macro-regional strategies. There should be greater flexibility in the architecture of future Cohesion Policy in order to better reflect the nature and geography of development processes. The Cohesion Report states that territorial cohesion also means addressing urban-rural linkages in terms of access to affordable and quality infrastructures and services – and also states that, for example, border regions need targeted provisions to reflect the regions' specificities (EC, 2010a; Ahner, 2010).

The shape of Structural Funds for the period 2014-2020 is currently being designed. The discussion on territorial

cohesion also has a strong impact on the discussion on Cohesion Policy beyond 2013. All of the above-mentioned documents will have an impact in terms of more 'territorial programming' (Ahner, 2010). But what do these functional geographies look like – not only from a national perspective but in the light of further integration in Europe?

### Better conditions for cross-border and transnational cooperation

Political and legal framework conditions for cross-border and transnational cooperation have been enhanced dramatically in recent years, particularly in Central and Eastern Europe. With the EU enlargements in 2004 and 2007, the Schengen Agreement coming into force in many Central and Eastern European countries in 2007 and the free movement of workers from May 2011, physical barriers along national borders are being practically removed. This rapid process of integration allows the emergence of new regional coalitions across national borders in Europe.

Furthermore, a new legal framework now allows easier cross-border cooperation. The instrument of European Groupings for Territorial Cooperation (EGTC) aims at the establishment of cross-border legal bodies. For the first time authoritative competences can be delegated and decentralised to cross-border regional bodies. So far sixteen EGTC have been established. Most of the EGTC cover Eurodistricts or Euroregions on a local and regional scale although much bigger coalitions can be observed as well, such as the EGTC - INTERREG - Programme Grande Région, whose purpose is to jointly administrate an Objective 3/INTERREG IV A programme for cross-border cooperation. The New Member States (NMS) are involved in only four setups, all of them located along the Hungarian-Slovakian border (Committee

of the Regions, 2011).

Therefore cross-border approaches are necessary for abolishing not only physical borders but also borders in spatial development policy. Furthermore the new geopolitical situation in Europe – characterised by processes of ‘macro-regionalisation’ allows regions and communities to more strongly express their interests (Scott, 2004). With reference to Allmendinger and Haughton (2009), Faludi (2010) argues that vanishing internal borders in Europe and the ideal of a federal Europe are bringing about ‘soft spaces’ with shifting configurations and new governance arrangements that are separated from, yet inextricably linked to, established administrative entities. These ‘soft spaces’ require soft planning instruments – like development strategies for macro-regions such as the EU Strategy for the Baltic Sea Region (Faludi, 2010). Such ‘soft spaces’ are actually emerging across European borders.

At least since the European Spatial Development Perspective (ESDP) was approved in 1999, urban-rural partnerships beyond administrative territories have been recognised as a key for sustainable and polycentric development in Europe. This notion was underlined in the Territorial Agenda of the European Union in May 2007. Here, the EU MS emphasise that coordination at local and city-regional level should be strengthened and equal partnerships between cities and rural areas should be developed. The principle of territorial cohesion values territorial specificities and territorial capital. Future Cohesion Policy will more strongly consider functional approaches and variable territories (Piskorz, 2010). Unlike in the past, when the Community initiatives LEADER and URBAN focused either on rural or on urban spaces, the future regional policy of the EU will aim at fostering integrated area-based approaches in larger functional areas with interdependencies.

The following sections of this paper will present examples of recent processes of regionalisation in Europe on different territorial levels.

## New processes of regionalisation in Europe

Examples for supra-regional coalitions across national borders are the so called ‘macro-regions’. In the fore here are policy making and strategy development (EU Strategy for the Baltic Sea Region, EU Strategy for the Danube Region). These strategies are elaborated by the EC in collaboration with the respective regions. The Danube Region covers parts of eight MS (Germany, Austria, Hungary, Czech Republic, Slovak Republic, Slovenia, Bulgaria and Romania) and six non-EU countries (Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Ukraine and Moldova) (EC, 2011). The Danube Region Strategy focuses on eleven priority areas related to transport connections, energy connections, the environment, socio-economic development and security (EC, 2010b). Although the macro-regional strategies provide no new EU funds, the Danube Region for instance demands ‘a sustainable framework for cooperation’ from future Cohesion Policy and it calls for additional international, national,

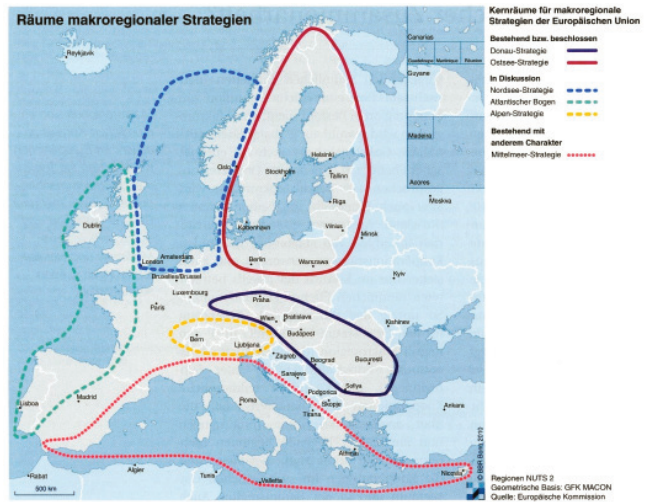


Figure 1: Areas of macro-regional strategies.

Source: Görmar (2010)

regional or private funds and better use of existing funds (EC, 2010b). Although the macro-regional strategies have been elaborated by the EC in collaboration with the respective MS and regions, supra-regional bottom-up processes of problem solving and strategy development have been preceded, often in the framework of transnational cooperation projects (Görmar, 2010). Besides the existing macro-regional strategies for the Baltic Sea Region and the Danube Region, further cooperation spaces for potential macro-regional strategies are under discussion e.g. in the North sea Region or the Alpine Region (Figure 1).



Figure 2: The functional urban areas (FUAs) of the cross-border polycentric metropolitan regions and the cross-border cooperation perimeters.

Source: ESPON and University of Luxembourg (2010)



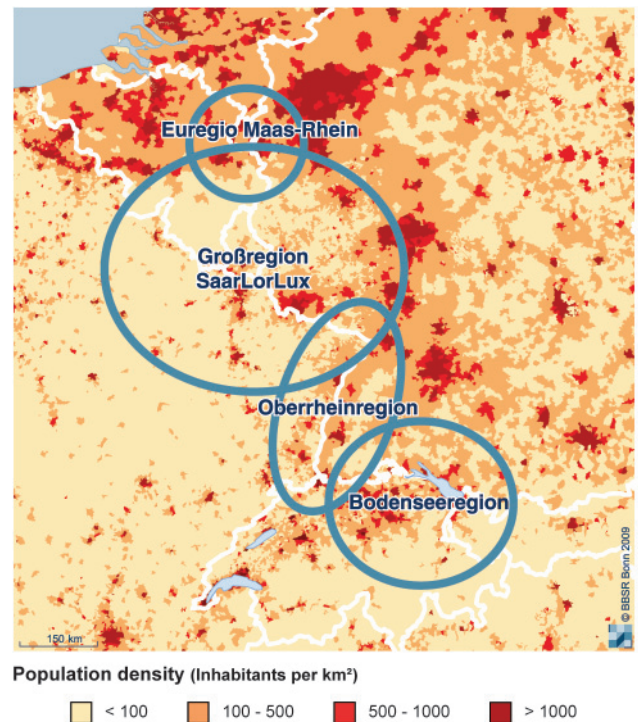
At a more local level an interesting type of coalition has been investigated by the ESPON 2013 project *METROBORDER – Cross-border Polycentric Metropolitan Regions* coordinated by the University of Luxembourg. In the focus here are cross-border polycentric metropolitan regions characterised by strong functional linkages and interdependencies (cross-border commuting, cross-border labour markets, cross-border health-care etc.) and their development potential. The research team identified and investigated Cross-border Polycentric Metropolitan Regions in Europe with an in-depth investigation of the Greater Region (DE, LU, BE, FR) and the Upper Rhine (DE; CH, FR) (Figure 2).

Interestingly METROBORDER is a project in *Priority 2 – Targeted Analyses* of the ESPON 2013 programme with regional stakeholders from different MS making proposals for research projects with a thematic and/or regional focus. This shows the strong bottom-up approach at least in the two case study regions of this project and their will to be recognised no longer as peripheral border regions but as cross-border metropolitan regions with specific development potential. The project has highlighted dynamic in functional cross-border integration, in particular in sub-spaces of the investigated regions. Also, in terms of governance, space matters within the cross-border polycentric metropolitan regions. The 'multi-level-mismatch' – administrative and institutional asymmetries – are tackled differently in the investigated regions – and in different spatial contexts. Another crucial conclusion of the METROBORDER project is that these asymmetries require a clear cross-border strategy shared by all partners (ESPON & University of Luxembourg, 2010).

In Germany the national spatial development policy reflects these European trends with its 'Perspectives of Spatial Development in Germany' from 2006 (BBR/BMVBS, 2006). The concept of 'Growth and Innovation' stresses the role of urban-rural partnerships and promotes the cooperation of urban and rural, central and peripheral as well as economically strong and weak regions. The strategic approach aims at solving the antagonism between town and countryside and it is in some ways intended as a 'magic formula to overcome spatial disparities' (Kawka, 2009a, p.61).

In order to gain experiences in this regard and to share best practices, in 2008 the federal government in Germany launched a demonstration project where seven metropolitan regions in Germany tried to implement the idea of urban-rural cooperation in supra-regional partnerships that go far beyond the traditional regional planning areas. A second demonstration project that started in the same year recognised that urban-rural partnerships are also an important topic in regions along and beyond national borders. The four regions Euregio Maas-Rhine, Greater Region SaarLorLux, again Trinational Metropolitan Region Upper Rhine, and Region Bodensee – became the German model regions for Supra-regional Partnerships in Cross-Border Areas (Figure 3).

In autumn 2008 stakeholders from German planning authorities in these four regions joined together in order to take the initiative for a project *Supra-regional partnerships in large cross-border regions*. This initiative became a demonstration project for spatial planning supported by the Federal Ministry of Transport, Building and Urban Affairs



**Figure 3:** Supra-regional partnership in large cross-border regions. Source: Kawkla (2009b)

(BMVBS) and the Federal Office for Building and Regional Planning (BBR) in the period 2008-2010. One intention of the four partner regions was to gather evidence on delineation and specifications of large cross-border areas in comparison with European metropolitan regions. With this evidence the regions wanted to strengthen the concept of large cross-border regions in order to gain greater internal and external perception in Germany and Europe and to achieve higher competitiveness by promoting specific social, cultural, economic and ecological potential. Finally the project intended to give recommendations for spatial development policy in Germany and Europe and to establish a network which is also open to other large cross-border regions to institutionalise the partnership and foster lobbying at national and European levels (Kawka, 2009b).

## Conclusion

In conclusion, four key issues relating to the development of supra-regional coalitions can be identified on the basis of the evidence presented above. These conclusions have an explorative character and require further investigation and underpinning. They are addressed to stakeholders concerned with future Cohesion Policy and those involved in regional development policies in border regions.

### The 'practice gap' between INTERREG A and INTERREG B

In the light of the above-mentioned supra-regional coalitions across national borders in Europe there seems to be a gap in the current (2007-2013) Structural Fund period between INTERREG A and INTERREG B programme areas



– i.e. between cross-border regions on a local level and transnational programme areas – which does not allow cooperation between large cross-border regions beyond INTERREG A programme areas but on a smaller scale than transnational cooperation areas. Also trilateral cooperation is often not possible within the actual period of Structural Funds. This in particular affects the border triangles in Europe. Future instruments of Cohesion Policy should close this gap and focus also on cooperation at a mezzo level between cross-border and transnational cooperation programmes.

### The challenge of delineation

When discussing supra-regional coalitions in Europe a major issue is the question of delineating the respective cooperation areas. Although most of the above-mentioned coalitions are characterised by variable geometries the question of delineation – even though a number of different thematic layers and delineations are imaginable – is clear. Of course, each functional interrelation refers to a different sphere of action. The labour market refers to a different area than retail and services, economic clusters or leisure. At the latest when establishing political and institutional settings a preliminary delineation has to be agreed on. In cross-border settings the delineation is even more difficult due to different administrative constellations and responsibilities.

### The challenge of regional knowledge and data availability on cross-border interdependencies

When discussing appropriate delineations of supra-regional coalitions knowledge about these territories is urgently needed. The same is true when deriving policy options. Territorial knowledge means knowledge on territorial specificities, territorial capital and development potential. In cross-border and transnational coalitions often complementary functions bare specific development potential. Therefore knowledge is needed on cross-border functional linkages and interdependencies. But there is a lack of available comparable data. While data to describe the situation on one or the other side of the border are available (e.g. via EUROSTAT), this in particular concerns data on cross-border flows and interweaving as well as specific regional competences (cross-border economic clusters, cross-border commuting, cross-border demands in retail and services, cross-border leisure behaviour, cross-border governance, language skills etc.). This problem has also been highlighted by the METROBORDER project – in particular in the field of economy and polycentricity (ESPON & University of Luxembourg, 2010) – and also for the four regions of the German demonstration project on Supra-regional partnerships in large cross-border regions. Further research is needed, for example within the ESPON 2013 and future programmes.

### Towards regional territorial agendas?

Currently the Territorial Agenda of the European Union (TAEU) is being revised in order to implement new trends in spatial development in Europe and to gain indications on the forthcoming Structural Funds period. The revised TAEU

will again formulate a common sense of the frame of spatial development in the EU. It will be interesting to see what the common view is among the 27 MS on the subject of urban-rural and transnational partnerships. Another interesting question is if one single Territorial Agenda for the EU can meet the requirements of the manifold diverse regions in Europe at all. Regions in Europe should be encouraged to establish their own ‘Regional Territorial Agendas’ (Kunzmann, 2008) in order to identify regional potential and foster regional strategy development. Again the generation of territorial knowledge would then be in the hands of such regions. Future Cohesion Policy could react on this and support the emerging supra-regional coalitions on this path.

The above-mentioned processes are anything but self-evident. This paper has highlighted that strategic coalition building across national borders can be observed more often in Western than in Central and Eastern Europe. Many regions among the NMS still face severe problems when making an effort towards coalition building and strategy development: lacking experience in cross-border cooperation, language barriers, lacking political continuity, legal uncertainties, lacking trust between stakeholders as well as lacking capacities and know-how.

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## Conceptualising 'macro-regions': Viewpoints and tools beyond NUTS classification

Definitions are imposed but properties not. The basic question addressed by this paper is how to 'detect' objective socio-economic spatial structures instead of 'defining' them arbitrarily. The NUTS classification model is rather arbitrary. Not only have the administrative units been structured through 'accidental' historical conditions but the reliability of the measurement of the population in an area is disputable as long as the mobility is strengthened and the 'usual residence' becomes more and more vague. Concerning the auxiliary criteria, they are also heterogeneous and are rather perceptions imposed by decision makers than physical entities. The quantitative network analysis (QNA) approach is suggested as a tool to detect macro-structures regarded as socio-economic and natural infrastructure of a 'macro-region'. This is based on algebraic analysis of a number of variables such as flows of people migration, financial means, information, commodities, bio-diversity elements and parameters of the new relationship between urban and rural areas. In this paper, by using algorithms of QNA, such as Density of flows or Betweenness centrality of places, 'denser' networks of flows among places or more 'central' places can be differentiated from others, and thus can be used for a more substantial demarcation of 'macro-regions'.

**Keywords:** macro-region, NUTS, flows, quantitative network analysis, migration, rural-urban relationship, place

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### Introduction

The aim of this paper is to present conceptual tools of complete<sup>1</sup> Quantitative Network Analysis (QNA) for detecting and analysing spatial macro-structures of flows of social, political, economic and ecological character. These macro-structures can be regarded as macro-regions, which are physically and not politico-administratively defined, as they are constructed by structures that exist independent of any arbitrary decision. The network analysis software Visone is used for this purpose. Hypothetical visual examples of networks are produced and processed with this software. The understanding of informal spatial structures of flows is important because these structures, and not always the formal ones, determine policy outputs.

Basic flows which are discussed in this paper are: a) migration (economic, social, political and environmental), b) relationship between rural and urban areas, c) information, d) financial means, e) commodities, and f) bio-diversity. Each of these flows composes a different spatially cohesive macro-region which can be of sub-national, national or interstate character, as long as the flow network is characterised by relatively high density.

The hypothetical visual network examples will be from the field of migration, because this field seems to be closer to common everyday experience and simultaneously constitutes a much-discussed issue. Thus, it is considered to be more interesting and easy to understand than the other flows (e.g. information, bio-diversity, commodities) which eventually need more specifications in order to reach a similar level of understanding and stimulation for a typical reader. These flows will be discussed and the hypothetical network pat-

terns of migration will be tried to be conceptually applied to the fields of other flows.

The engineering design of a software product for social network analysis is decisive for the perceptual output of a policy arena (Degenne and Forse, 1999; Hasanagas *et al.*, 2010a). The formulation of 'smart' evaluation algorithms which should be abstract and simultaneously functional and meaningful for a wide range of heterogeneous policy fields, from socio-political up to ecological structure analysis (Anghel *et al.*, 2010; Engler and Kusiak, 2010) is a diachronic, substantial and still challenging question in software engineering (Hand *et al.*, 2001; Antonelli and Chiabert, 2010; Cisar *et al.*, 2010; Zamfirescu and Filip, 2010). The examples suggested until now are mainly related to concrete fields such as rural-environmental (Hasanagas *et al.*, 2010b), new rural-urban relationships, spatial (Dimen and Ienciu, 2005), industrial (Antonelli and Chiabert, 2010; Cisar *et al.*, 2010), commercial (Kalay, 2006; Engler and Kusiak, 2010) and public administration issues (Henning and Wald, 2000). They depict a path leading to a more 'immaterial' perception of networks and to a sharper perceptiveness toward the institutional infrastructure of the reality, but without dealing with the challenge of detecting physically existing spatial macro-structures of politico-administrative importance.

In the literature, not only the density but also the hierarchy is a necessary factor of keeping a network cohesive (Simon, 1957; Popitz, 1992). However, hierarchy exists not only among organisations but also among places. This may look like an abstract approach but it also applies among places and constructs an order of 'superior' and 'inferior', 'rich' and 'poor', 'leading' and 'led', 'central' and 'peripheral' countries, cities and villages (Piore 1979, Kolmannskog and Myrstad, 2009, Hasanagas *et al.*, 2010a; Papadopoulou *et al.*, 2011).

This hierarchy has already been identified as a major dimension of power in policy networks that seems to replace incentives or formal regulations as driving forces for policy output (Eisenstadt 1995, Hasanagas 2011), but not at a spa-

<sup>1</sup> A network is a system of nodes and links among them. The complete network analysis detects all existing links of a specific content (e.g. migration flow, economic flow, information flow etc.) among all really involved nodes (persons, organisations, places etc.). In this paper, the nodes will be places and links will be various flows of migrants, economic means etc among them. A complete network analysis includes all nodes involved in a certain issue, in contrast to ego-network analysis which examines the relations of a certain node to other nodes. (Papadopoulou *et al.*, 2011).



tial level, in the sense of defining macro-regions in a physical way. An attempt to copy the approach of network analysis to space dimension in order to conceive a kind of 'ecological' macro-region was suggested by Zetterberg *et al.* (2010). It is worth mentioning other kind of flows which are closer to social, economic and politico-administrative dynamics (Krott, 1990; Krott and Hasanagas, 2006).

Assuming that today, an intensive transition from 'spaces of places' to the 'spaces of flows' is experienced (Castells, 1989; Castles 2002), the use of network analysis software for re-conceiving the structure of 'region' and 'macro-region' becomes necessary for policy-makers and researchers. Migration is a flow which can be used for re-structuring a new constellation of borders and regions, as well as markets (Piore, 1979; Williams *et al.*, 1997; Kolmannskog and Myrstad, 2009) and information flows (Barthélemy *et al.*, 1988; Lianos *et al.*, 2004).

The expected contribution of this paper is the suggested toolbox to conceive and detect physical (objectively existing) socio-political, economic and ecological spatial structures instead of 'defining' them through politics at national and supranational level. An example of such an arbitrary system is the NUTS classification model. This is based on administrative units and population as basic criteria as well as on geographical, socio-economic, historical, cultural or environmental circumstances, when it is necessary to define further aggregation of smaller units (EC, 2003). The administrative units have been structured accidentally through historical conditions. Apart from that, the reliability of the measurement of the population in an area is disputable as long as the mobility is strengthened and the 'usual residence' notion becomes steadily vaguer, especially in the framework of the new relationship between rural and urban areas. Concerning the auxiliary criteria of geographical, socio-economic, historical, cultural or environmental character, they are heterogeneous and are rather perceptions imposed by decision-makers, and also accidental incidences rather than physical entities.

A useful definition is the one which presents properties useful for predicting and planning. The NUTS system seems to be descriptive rather than explanatory. It 'defines' rather than 'detects', while a tool which 'detects' rather than 'defines' macro-structures regarded as socio-economic and natural infrastructure of a 'macro-region' is the QNA, which is based on algebraic analysis of a number of variables such as flows of people migration, financial means, information, commodities, bio-diversity elements and the new relationship between urban and rural areas. In this paper, by using algorithms of QNA, such as density of flows or Betweenness centrality of places, 'denser' networks of flows among places or more 'central' places can be differentiated from others, and thus can be used for a more substantial demarcation of 'macro-regions' beyond NUTS levels (municipalities, prefectures, states etc.).

Although it may sound too ambitious, this could be seen as a tool for a more acceptable and administratively effective re-conceiving and reconstructing of people communities, institutional arenas and nature protection areas beyond the will of decision-makers who set borders according to opinions or interests.

## Using Quantitative Network Analysis for defining macro-regions

### Defining a network

The flow of migrants among places (villages, towns and cities of various countries or within the same country in the case of internal migration) can be conceived as a network of population flow. The places can be regarded as nodes of the network and the flows as links among these places. The flows can be distinguished according to the cause of the migration: economic (to earn money), social (to find more convenient customs and rules or reputation), political (refugees or exiled people), or environmental (people searching for more convenient and/or safe ecological conditions).

A basic mathematical entity for operationalising and developing formulae for network analysis is the *link* (flow caused by economic, social, political, or environmental factors) from node (place)  $i$  to node  $j$ . The link (relation) from node  $i$  to node  $j$  is defined as:  $Z_{ij}$  (Brandes *et al.*, 2003). If there is no flow in direction  $i \rightarrow j$  then:  $Z_{ij} = 0$  migrants population. The link is valued:  $Z_{ij} = X$  migrants population flowed in a certain time (e.g. 37,657 migrants for economic reasons from 2006 to 2010). Thus, a complete migration network is defined by the migration cause (link form) and the time limits within which a researcher desires to examine the migration. In these terms, a network is really 'complete' only when the snowball sampling is exhausted by the researcher. This happens when the interviewed migrants do not cite to the researcher any new place, even if this means that all countries, cities or villages of the world will appear in the network.

In order to define a network more specifically, one should specify a) the link form: e.g. not generally 'economic migration' but 'economic migration because of war in the place A' or 'economic migration because of bankruptcy of agricultural holdings' etc., or/and b) the time horizon (e.g. 2000-2003).

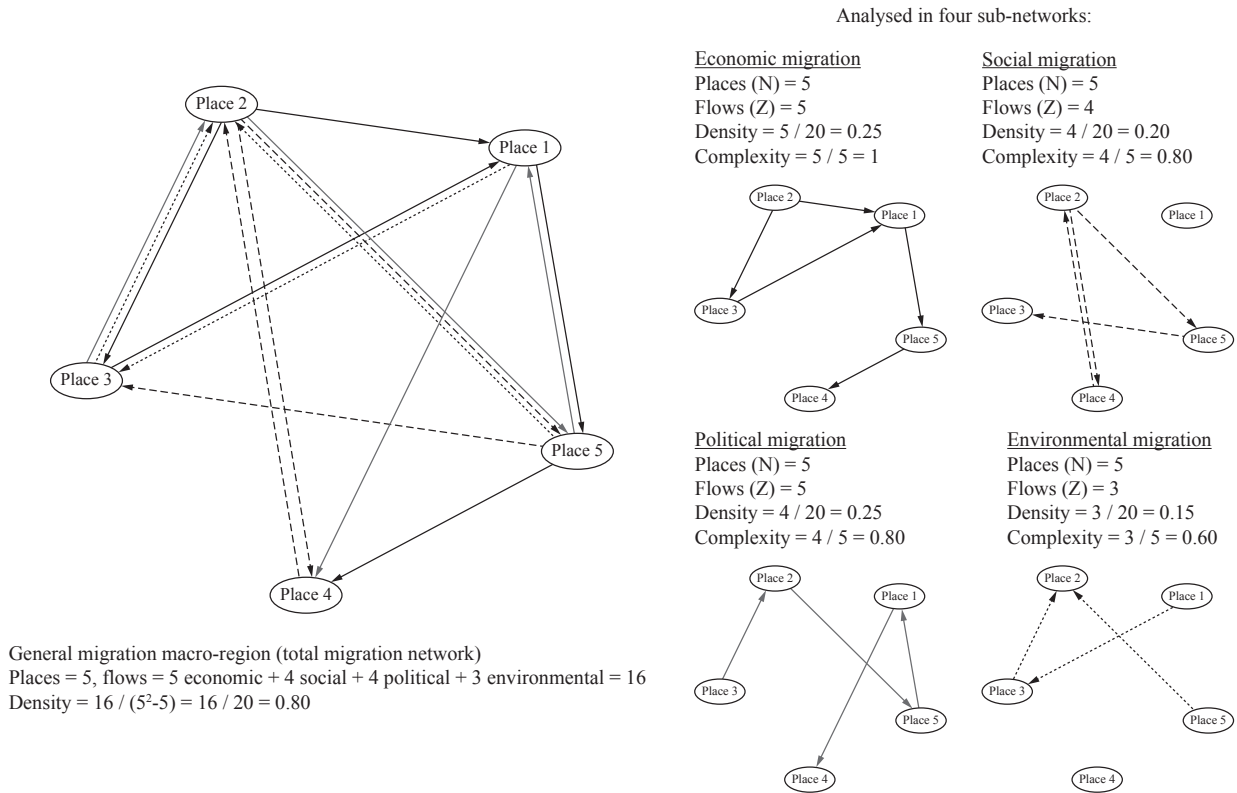
A complete network is opened up through snowball sampling by detecting successively all chains of flows (using documents of migration, questionnaires of other appropriate method depending on the flow examined). The researcher knows that the network is fully detected only when no reference to a new place appears. Thus, nobody decides arbitrarily which places belong to the network and the procedure of opening up is completed automatically. Naturally, this method includes also the bidirectional flows, which are also processed through the algorithms described below.

### Interpreting network algorithms

#### Network density and complexity

Density ( $D$ ) is a characteristic of the entire network. It is defined as the proportion that is calculated from the number of all flows occurring in the polygon divided by the number of all possible flows ( $N^2 - N$ ):

$$D = \frac{\sum_{i=1}^N \sum_{j=1}^N Z_{ij}}{N^2 - N} \quad (1)$$



**Figure 1:** Visualisation of hypothetical migration networks: density and complexity.

where  $i \neq j$ ,  $Z_{ij}$  is the link from actor  $i$  to actor  $j$  and  $N$  is the total number of places within the network. The links (flows) are measured in binary scale (inexistent = 0, existent = 1).

In other words, a network's (polygon's) density is the proportion of the existing diagonals to all possible (double-directed) diagonals. In a total macro-region such as in Figure 1, Density may be higher than 1 (or 100%) as the links between two places can be multiple (e.g. economic, social and environmental).

$D$  is significant for the extent to which all possible migrants' 'chances for a new life' which can be tested at all possible places have been exhausted. But this should not be considered as the only indicator for intensity of activity, because e.g. a network with  $N = 4$  and  $D = 100\%$  is still felt to be much simpler than a network with  $N = 50$  and  $D = 30\%$ .

Thus, Complexity ( $Comp$ ) is proposed as a more accurate indicator of the practical difficulties that can take place in the migration policy making at international level and is defined as follows (Hasanagas, 2012):

$$Comp = \frac{\sum_{i=1}^N \sum_{j=1}^N Z_{ij}}{N} \tag{2}$$

The most complex of the hypothetical networks of Figure 1 is this of economic migration ( $Comp = 1$ ). The simplest is this of environmental migration ( $Comp = 0.60$ ). The complexity is an indicator which implies the *intensity of tasks* for a government or supranational authority dealing with the particular network. Thus, in the case of the macro-region of Figure 1, the most challenging task is expected to be the policy making in economic migration. Second comes the social and political migration ( $Comp = 0.80$ ) and last the issue of

environmental migration.

Place networks of higher density or complexity than other constellation of places can be regarded as macro-regions concerning the particular flow type: Macro-regions of migration flow, of commodities (macro-markets) or financial resources transfer among places, of special bio-diversity (migration of bird species), of scientific or general information etc. In this way, the macro-region is physically and not politically defined. Thereby, the regional, national or interstate authorities (in case of transnational physical macro-regions) can more accurately design and deliver their policy in the relevant macro-region (migration, rural development, nature conservation etc.) and the private actors can also make more rational choices (investment in the right market, e.g. agricultural, forest products, high technology etc.). The proposed method can thus be used for defining macro-regions by demarcating the networks which have higher density or complexity than the density or complexity of the whole system of flows in Europe. A macro-region (sufficiently dense or complex network) can be extended over NUTS units or even be cross-frontier. Such a dense (or complex) network can be regarded as one single macro-region.

**Place status**

Not all places are equally attractive for migrants. The migrants are also not always able to reach the final target place immediately. Sometimes, they are obliged to pass through other places in which they have better chances of strengthening their position (first one may earn money in a village in order to go to a city, first one may strengthen his social reputation with a Master study in Britain in order to

seek a career in the USA etc.).

Thus, status of a place can be perceived as an indicator of concentration of (supposed) chances and attractiveness of a place. The 'inferior' places function as successive migration 'steps' or 'bases' for 'superior' ones. Thereby, an informal hierarchy of places is constructed. If, for example, place A is a step for place B, place B for place C and B and C steps for place D, then place D is the most attractive one. In this case, place D is perceived as a 'promised land' which necessitates a gradual progress and self-development in the part of migrants.

The following formula for calculating the status of an actor in a network has been proposed (Katz, 1953):

$$T = aC - a^2C^2 + \dots + a^kC^k \quad (3)$$

where  $T$  is a matrix including the status values of all flows elements, and  $C$  is the algebraic matrix presenting the network, where the places are ordered horizontally and vertically and the elements are the flows among each other. If possible, the flows are preferably measured in metric scale (population of migrants) and not in binary (inexistent = 0, existent = 1).

The status of each place is expressed in the matrix  $T$ . A simplified description of the matrix  $T$  is as follows: The matrix  $T$  has horizontally and vertically the actors (nodes) in the same order. Its elements are the numbers of paths inter-connecting the actors. The Visone software calculates the share of the status of each place in per cent. This software also visualises the whole status hierarchy (Figure 2). Places located at higher layers have a higher status than these located at lower layers. Thus, they cannot have the same physical position.

The more 'steps' are precedent to a particular place and the more migrants flow to it, the higher status this place can be considered to have.

Within a physical macro-region, as defined above, such a hierarchy of places can disclose the much-discussed notion of the 'new rural-urban relationship'. The urban areas have been seen for long time as 'superior' to rural areas by many people from many points of view: firstly, the intensive migration to cities especially during the 20<sup>th</sup> century sets urban areas at the top layers of the status pyramid. Apart from that,

the flow of financial resources, commodities and information dissemination potential were also concentrated in cities. An example of this inequality was that in Greece in the 1930s the rural income was seven times lower than the urban income, while agrarians were paying 2.4 times more tax than the urban population. Thus, not only social dynamics (migrants seeking a career or a 'better' life quality in cities) but also the tax system fostered such an inequality in status between rural and urban areas (Koutsou and Hasanagas, 2007). The only exception seems to be bio-diversity flow (rural areas were more attractive than cities for most species) (Hasanagas, 2009).

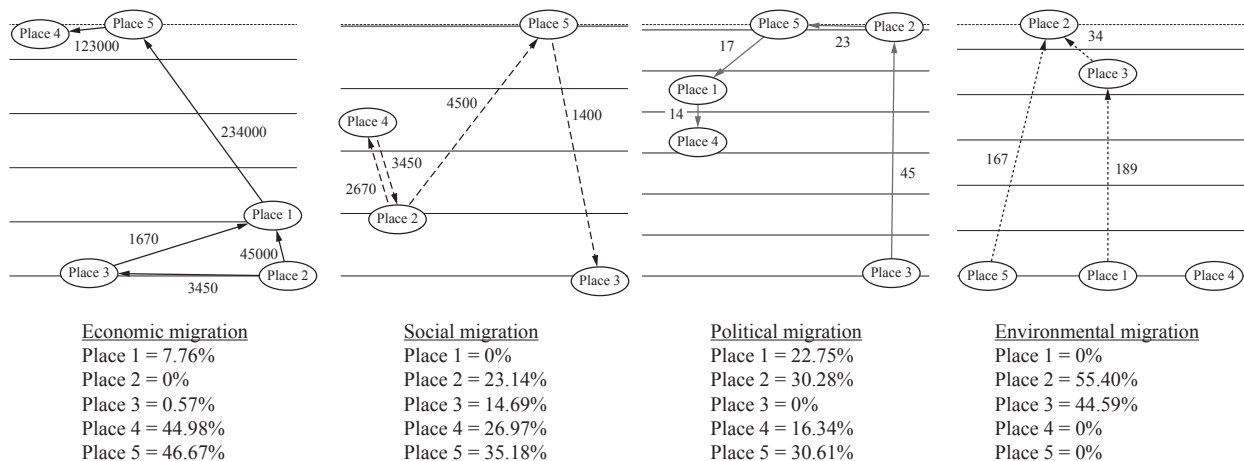
The ESDP (European Spatial Development Perspective) is an initiative for decreasing this status inequality (Papadopoulou and Hasanagas, 2011). If it proves effective, this will be depicted in the status pyramid by setting rural and urban areas at similar levels. A migration flow from cities to rural areas has been observed in many countries. This may lead to equalisation of status between rural-mountainous and urban areas. Of course, this is not the only dimension of the rural-urban relationship. Other dimensions may be the spatial distribution of employment, of the communication technology etc.

Finally, in case of natural disasters and increasingly extensive pollution, birds may also gradually change biotopes through survival of the fittest.

### Place importance

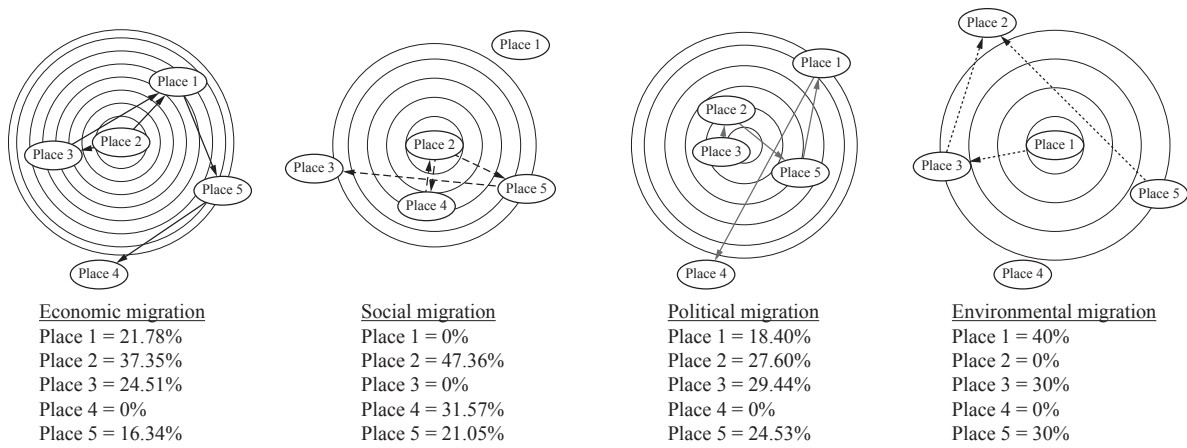
The status of a place is insightful but not always feasible to be measured because data about the migrants' population are often unavailable. Thus, a more simplified indicator, Closeness centrality, can be used, where the flows will be valued in a binary scale (inexistent = 0, existent = 1) and not in a metric scale as in status.

The Closeness centrality ( $C_c$ ) measures the distance  $d$  (i.e. the shortest number of links) between two places. If place A is a step for place B and the place B for place C (and there is no direct link from the place A to place C), then the distance from the place A to the place C is  $d = 2$  (i.e. two links). The sum of all distances from place  $i$  to any other

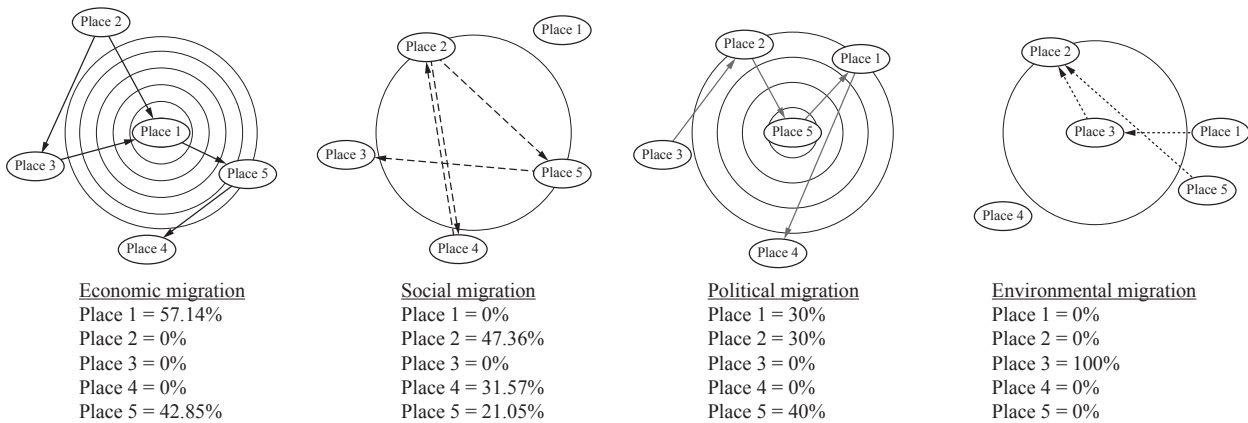


**Figure 2:** Visualisation of hypothetical migration networks: status (precise attractiveness calculated with flows ideally valued in metric scale). The most attractive place (village, city, country etc.) for economic immigrants is place 5 (46.7%) but the most attractive place for environmental immigrants is place 2 (55.4%).





**Figure 3:** Visualisation of hypothetical migration networks: closeness centrality (less precise attractiveness than status, calculated with flows valued in binary scale).



**Figure 4:** Visualisation of hypothetical migration networks: Betweenness centrality (place control potential calculated with flows valued in binary scale).

place is the closeness of the actor  $i$  and then the closeness centrality of  $i$  is defined as its inverse closeness:

$$Cc_{(i)} = \left[ \sum_j d(j,i) \right]^{-1} \quad (4)$$

The fewer links are needed to connect  $i$  to all other places, the higher its  $Cc$  is. If a place is considered to offer better chances than the other places, then the migrants, the investors etc. try to reach this place immediately, without ‘losing time’ in other places. Thereby, this place acquires high closeness centrality. The  $Cc$  of each place is expressed in per cent. The Closeness centrality structures are depicted in Figure 3: the closer to the centre a place is located, the higher is its  $Cc$ .

In the case of information distribution, this algorithm can be especially useful, as information (scientific, political, environmental etc.) cannot be measured in pre-defined, objective and generally acceptable units, as financial means and population can be measured. Places with high  $Cc$  in information distribution are considered to be the most important (‘central’) ones which influence the other (‘peripheral’) places. In other words, the most influential public or private actors which formally or informally play the role of decision-makers in various fields (market, environmental, cultural, rural

development policy etc.) are often located in ‘central’ places.

### Control potential of places

The Betweenness centrality ( $Cb$ ) (Brandes *et al.*, 2003) quantifies the control (formal or informal) that may be exerted through a place  $i$ . It is defined as the sum of the ratios of shortest paths between other places that the place  $i$  sits on:

$$Cb_{(i)} = \sum \frac{|P_i(i,j)|}{|P(i,j)|} \quad (5)$$

where  $P(i,j)$  and  $P_i(i,j)$  are the sets of all shortest paths between  $i$  and  $j$ , and those shortest paths passing through  $i$ , respectively. In the case of  $Cb$ , the flows are also measured in a binary scale (existent = 1, inexistent = 0). The  $Cb$  of each place is also expressed in %. The Betweenness centrality structures are depicted in Figure 4: the closer to the centre a place is located, the higher is its  $Cb$ .

A place with a high percentage of  $Cb$  plays the role of the go-between for many other places in term of shortest paths and, in this way, functions as a central control point for the flow and spread of migrants. When the place of the highest  $Cb$  is not identical with the place of the highest status or  $Cc$ , then migrants who appear there are ‘passers-by’ rather

than persons who have decided to seriously invest their time and work in order to start a 'new life'. It is understandable that they may often not regard this place as a 'promised land' but rather as a place of accidental or unfortunate 'landing' where they should find the 'easiest' and contemporary way to 'survive'. Under these conditions, there seems to be greater susceptibility to resisting integration and developing deviant behaviour or illegal activities. If the authorities could distinguish places of high *C<sub>b</sub>* which are not simultaneously of high *C<sub>c</sub>* or status, they could focus their attention and concentrate their efforts on these places, and thereby become more effective.

The detection of places of high *C<sub>b</sub>* is also of importance for producers and traders but also for industries in order to make more rational decisions on their establishment and to achieve optimal access to markets within economic macro-regions. Places of high *C<sub>b</sub>* are also important for actors dealing with nature protection and bio-diversity researchers or forest policy analysts, as these places constitute attractive biotopes for bird species. Thereby, they can recognise macro-regions of natural heritage and more important biotopes within them.

In the case of information distribution, when places of high *C<sub>b</sub>* can play the role of 'postman', while places of low *C<sub>b</sub>* are the 'addressees'. When a place has high *C<sub>b</sub>* and low *C<sub>c</sub>*, then it mainly play the role of 'postman' and not of 'decision-maker' (Hasanagas *et al.*, 2010b). Normally, places with high *C<sub>c</sub>* have also high *C<sub>b</sub>*. However, when such a differentiation appears, then this can be useful in order to distinguish the 'decision-maker' from the 'postman' in order to design and conduct lobbying activities more effectively.

## Discussion

By applying algorithms used in QNA such as Density, Complexity, status, Closeness centrality and Betweenness centrality, macro-regions of social, economic, political and ecological issues can be physically depicted as existent networks of flows among places – practically place networks – and not politically (arbitrarily) defined. These macro-regions can be regarded as issue-based spatial macro-structures (networks of flows). Thereby, private and public policy makers and researchers can draw their attention to real structures and not to politically constructed structures, depending on subjective interpretation of demographic, politico-administrative or historical conditions. In this way, the policy-making can more accurately confront a real issue, and the policy analysis and research can become more independent from policy design. The algorithms can be used for detecting different features and in different issues (Table 1).

Using these algorithms in the appropriate cases, the policy makers and researchers can recognise physically existent macro-regions beyond NUTS or any other politically defined spatial unit. This may lead to more effective policy making at politico-administrative level and to a disclosure of properties of socio-political variables at academic level. Which flows (migration, commodities, information etc.) present the strongest cohesion (density) in these macro-regions and influence other types of flows can be a challenging question for future research and perhaps can initiate a new research field of both applied and basic character. Each flow may be further specified (e.g. commodity flow may be categorised as 'car flow', 'forest products flow', 'agricultural products flow' etc.). Additional flows may also be defined, measured and tested for possible

**Table 1:** Application of algorithms to analysis of macro-regions.

		Algorithms				
		Density	Complexity	Status	Closeness centrality	Betweenness centrality
Use and evaluation of algorithms	Issue-based macro-region (issue-based spatial macro-structures)	Demarcation of macro-region	Assessment of intensity	Assessment of place attractiveness. More precise. Mostly appropriate for metric scales.	Assessment of place attractiveness. Less precise. Mostly appropriate for binary scales	Assessment of place control potential. Mostly appropriate for binary scales.
		Appropriateness (✓)				
Socio-political flows	a) Macro-regions of migration (economic, social, political, environmental)	✓	✓	✓	-	✓
	b) Macro-regions of relationship rural-urban areas (concerning the dimension of migration from cities to rural places)	✓	✓	✓	-	✓
	c) Macro-regions of information	✓	✓	-	✓	✓
Economic flows	d) Macro-regions of financial means	✓	✓	✓	-	✓
	e) Macro-region of commodities/cohesive market	✓	✓	✓	-	✓
Ecological flows	f) Macro-region of birds bio-diversity	✓	✓	-	-	✓

properties. The measurability and traceability of the flows remain a great challenge for inventory services and researchers. Also, in future research maps of NUTS regions and maps of new regions defined by this method can be compared.

It is evident that a macro-region defined by QNA is changeable depending on objective conditions and not on spontaneous and instantaneous politico-administrative decisions. It is not simply cross-frontier but also 'border-ignoring', as long as, for example, Thessaloniki (Greece), Rosdorf (a village in Germany), and London (UK) may be included in the same macro-region and characterised by high or low the same status, closeness or between centrality regarding a certain flow, disregarding how 'well known' or 'famous' they are, and without including the other villages, cities or countries which are located between them. This makes sense, as it allows recognising a cross-frontier group of places (macro-regions) which need to organise a more cohesive control system of flows and a stronger cooperation among them. Also, the importance of each place for each other within the hierarchy of the macro-region can be more objectively evaluated. This is the main strength and also the most challenging point of this approach. Some can see it as an 'opportunity', while others as a 'threat', depending on their interests. If such macro-regions also include places outside the EU, then this is a criterion about the real territorial cohesiveness of the EU.

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Andrew F. FIELDSEND\*

## Rural Europe 2+2+: A conceptual framework for a rural employment policy

The four main ways in which rural employment creation can be grounded on the exploitation of natural capital can be structured by two complementary analytical directions. These are firstly, 'production' based on (a) renewable resources (agriculture, energy) and (b) depletive resources (energy, construction materials) and, secondly, 'consumption' by (a) non-residents (tourism and leisure) and (b) residents (incomers including the wealthy retired). This analysis forms the basis of a conceptual framework (Rural Europe 2+2+) which recognises that there is no simple definition of rural employment but that a sustainable approach to exploiting natural capital, together with the development of the other capitals of the territory via a place-based (i.e. territorial policy) approach, can create jobs and encourage working age people either to stay in, or relocate to, rural areas. Thus five Strategic Orientations which target the major driving forces for rural employment, namely natural, financial, human, physical and social capital, and the interactions between them, could be the focus for future rural employment strategies. They are as follows: SO1. Encourage the development of key growth sectors; SO2. Reinforce the local rural economy; SO3. Improve skills and labour market participation in rural areas; SO4. Develop infrastructure and services; and SO5. Ensure proper implementation of the strategy through support actions.

**Keywords:** rural employment, European Union, natural capital, place-based development, strategic orientations

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### Introduction

A 'one size fits all' approach across the European Union (EU) to promoting rural employment is not appropriate owing to the different spatial, social and economic circumstances existing in different areas. Rural areas of the EU-15 countries and post-socialist New Member States (NMS) differ in their socio-economic characteristics, not least due to the higher importance of farming and the historical legacy of socialism in the latter. In 'accessible' (to cities and to a lesser extent to market towns) rural areas, daily commuting to jobs in urban centres is more feasible than it is in 'remote' rural areas. In territories with low population densities, service costs are higher in rural areas and local authorities can lack the fiscal resources to meet expectations, thus impacting on both the availability of jobs and the attractiveness of such areas as places to live.

Cedefop (2010) provides a post-economic crisis prediction of medium-term (i.e. to 2020) trends in employment in the EU in the context of demand for skills. A continuing shift away from the primary sector (especially agriculture) and traditional manufacturing industries towards services and knowledge-intensive sectors is predicted. Although in many newer as well as some older Member States employment in agriculture and manufacturing is still relatively high, there are clear signs that this is changing rapidly. In the next decade the total share of jobs in the primary sector and utilities is expected to decrease from 6.5% to 5.1%. The dependence of the rural economy on the 'traditional' rural sector of agriculture has already declined in most EU regions (Copus *et al.*, 2006) and this trend seems set to continue.

Nonetheless, the results of the EU Framework 7 project 'RuralJobs' have demonstrated that 'natural capital' continues to characterise the profile of rural employment but that this effect now goes far beyond agriculture. Alongside the 'production' activities of rural areas, there has been a strengthening of the role of 'consumption'. Thus, Fieldsend

and Kerekes (2011) concluded that there are four main ways in which rural economic prosperity, through rural employment creation, can be grounded on the exploitation of natural capital. These consist of two groups of two, from which they derive the name 'Rural Europe 2+2+':

There are two components of the 'production' role of rural areas:

- Production based on renewable resources. Foremost amongst these is land, which is used by the agri-food and forestry supply chains in a renewable way for the production of food, feed, fibres and fuel, and increasingly for new uses like pharmaceuticals. Other renewable resources include sunlight, wind, water and tidal power;
- Production based on non-renewable (depletive) resources. These include coal, gas, oil and other minerals including sand and gravel, clay, limestone, granite and marble.

The 'production' role of rural areas is particularly relevant to the agri-food and energy supply chains, but also provides raw materials for construction and other sectors.

The two components of the 'consumption' role of rural areas are as follows:

- Consumption by non-residents of the territory including visitors and those with 'holiday homes'. This is primarily via tourism and leisure but also includes the consumption aspects of agri-food chains such as geographical appellations, local products, animal welfare, environmentally-friendly production methods etc.
- Consumption by residents of the territory. This is a commonly overlooked driver of rural employment, but natural capital is an important factor in encouraging people to remain in, or relocate to, rural areas. Many people who locate to rural areas for 'consumption' reasons are entrepreneurs who set up their own

businesses and create jobs, as opposed to those that move from towns to rural areas to take up semi-subsistence farming, where the driver behind the move is production. The wealthy retired can also create jobs by being a market for leisure and care services.

The ‘consumption’ role of rural areas is therefore relevant not just to the tourism sector but also to several others such as Knowledge Intensive Business Services (KIBS) and Knowledge Intensive Public Services (KIPS) including health and social work.

Clearly there are interdependencies between the four components of Rural Europe 2+2+. For example, between the production and consumption facets of the agri-supply chain, between the consumption facets of the agri-supply chain and tourism, and between consumption by residents (in terms of general ‘quality of life’) and leisure.

Fieldsend (2010a) used the driving force, pressure, state, impact and response (DPSIR) framework to show the link between ‘driving forces’ which affect employment and economic prosperity, and policy responses. Rural employment represents the *state* in the model. This has an *impact* on economic prosperity and other issues such as social cohesion, which in turn influence policy responses. These responses may be targeted either at the *driving forces* which in turn influence the *pressures* on employment, i.e. supply of labour and supply of jobs. This approach was preferred to alternatives, such as the ‘pyramidal model of regional competitiveness’ described by Lengyel (2009), as it captures the ‘feedback loop’ whereby responses can be targeted (particularly) at driving forces.

*Driving forces* can be categorised in several ways. For example, van der Ploeg *et al.* (2008) refer to social capital, ecological capital, human capital, economic capital and cultural capital, all of which can be summarised in the broad notion of territorial capital. This study has used the broadly similar, widely recognised approach described in DFID (1999) as part of its ‘sustainable livelihoods framework’, namely human, social, physical, financial and natural capital. DFID (1999) provides comprehensive definitions for each ‘capital’. Listed below for illustration are definitions of ‘capitals’ which are compatible with the DFID definitions, but simpler and employment-focused:

- *Human capital*: the skills and knowledge possessed by workers. Workers acquire these skills both through formal education and through on-the-job and life experiences
- *Social capital*: the networks of relationships among persons, firms, and institutions in a society, together

with associated norms of behaviour, trust, cooperation, etc., that enable a society to function effectively

- *Physical capital*: any non-human asset made by humans and then used in production
- *Financial capital*: money used by entrepreneurs and businesses to buy what they need to make their products or provide their services
- *Natural capital*: a stock of natural resources - such as land, water, and minerals - used for production. Natural capital can be either renewable or non-renewable

Through the results of case study research, this paper shows how the sustainable exploitation of natural capital, linked with the development of the other capitals of the territory via a place-based approach, can assist rural employment creation. Rural Europe 2+2+ thus forms a conceptual framework for a rural employment policy that can support the Europe 2020 vision of a smart, sustainable and inclusive economy (EC, 2010).

## Methodology

Research on current employment patterns and opportunities for, and constraints on, rural economic diversification was conducted in five contrasting NUTS2 regions across the EU. There were two case study areas in France, Hungary and the UK, and one case study area in each of Bulgaria and Romania (Table 1). A brief description of each area is given by Fieldsend (2010b). The source material for the research consisted of (a) information gathered from the interviews with local actors/key experts, (b) quantitative data sets and (c) previously published (mainly local) studies. Approximately 20 interviews were conducted in each case study area, and interviewees included representatives of (a) decision makers; (b) local government experts; (c) community organisations / NGOs; (d) other experts (e.g. academics, consultants); and (e) the business sector (e.g. Chamber of Commerce, Farmers’ Union).

In each case study area, a SWOT analysis of rural employment potential was conducted from the results of the field research. The *internal audit* i.e. the Strengths and Weaknesses, was based on the ‘assets’ of the case study area, i.e. the ‘driving forces’ which are internal to the DPSIR loop. The *external audit* i.e. the Opportunities and Threats was based on factors influencing change in the rural economy (and therefore rural employment) in the case study area. From the comprehensive lists of Strengths, Weaknesses, Opportunities and Threats, the most important factors with

**Table 1:** Case study regions included in the research.

Name of case study area	Region and country
1. Pazardjik agglomeration area (AA)	South-Central Region, Bulgaria
2. Pays de Tulle	Corrèze, Limousin Region, France
3. Pays de Guéret	Creuse, Limousin Region, France
4. Hajdúszoboszló Local Labour System (LLS)	North Great Plain Region, Hungary
5. Karcag Local Labour System (LLS)	North Great Plain Region, Hungary
6. Bistrița-Năsăud county	North West Region, Romania
7. The Chelmsford and Braintree Travel to Work Area (TTWA)	Essex, East of England, UK
8. Thames Gateway South Essex	Essex, East of England, UK

respect to sustainable economic prosperity were identified for use in a Strategic Orientation Round analysis (see Januszewska *et al.*, 2009 for methodology). The *importance re. the employment development potential* of each interaction between Strengths and Weaknesses on the one hand, and Opportunities and Threats on the other, was quantified on a 0 and 3 to scale, and for the most important interdependencies an ‘operational objective’ was formulated. Where possible, similar operational objectives were merged and then the remaining operational objectives were clustered into a set of ‘strategic orientations’ which could be the focus for future rural employment strategies in the case study area. These strategic orientations were then grouped into five ‘composite’ EU-wide strategic orientations for rural job creation which are aligned with the five ‘capitals’ identified by DFID (1999).

## Results

The ‘composite’ strategic orientations are centred on the mobilisation of the natural capital of rural areas and thus form the framework for the implementation of Rural Europe 2+2+. Each includes a number of components which are widely applicable across the case study areas (Table 2). SO1 focuses directly on the development of key growth sectors which mobilise natural capital while SO2-SO5 identify other targets for EU development programmes.

### SO1. Encourage the development of key growth sectors

Regarding *production based on renewable resources*, it is felt that there is still potential for rural job creation in the agri-food chain, especially in the NMS case study areas. The strategic orientations include following suggestions: ‘*Development of fruit-, vegetable- and vine-growing*’, including the production of high-quality and healthy foodstuffs, ‘*Sup-*

*port of the food processing enterprises’ creation, growth and sustainability*’, producing goods with high degree of added value and local characteristics, and ‘*Utilisation of the region’s comparative advantages for high-quality processed food production, oriented to exports*’ in Pazardjik AA; ‘*There are exceptional agricultural conditions but the competitiveness and range of local products can be increased*’ in Hajdúszoboszló LLS; ‘*Promote the exceptional conditions of agriculture that provides great opportunity to create local products and develop local food industry*’ in Karcag LLS; and ‘*Promote, encourage and develop agricultural production and marketing*’ in Bistrița-Năsăud county. Key themes for facilitating job creation thus include competitiveness, diversification, food processing development and value added.

In the EU-15 case study areas, much less emphasis is placed on job creation in the agri-food chain although this sector is mentioned in the Chelmsford and Essex TTWA and (as part of the green economy) in Pays de Tulle and Pays de Guéret. Also as part of the green economy, these latter are the only areas which identify, by implication, the forestry and renewable energy supply chains as activities for creation of new rural jobs. *Production based on non-renewable resources* is not included in the strategic orientations of any case study area.

In terms of *consumption by non-residents of the territory including visitors*, all case study areas identify scope for rural job creation in the tourism and leisure sectors. Strategic orientations include ‘*Promote the tourism and leisure sectors*’ in the Chelmsford and Essex TTWA; ‘*Improve the tourist offer*’ in Pays de Tulle and Pays de Guéret; ‘*Elaboration of local tourism endowments connected with cultural and natural capital*’ and ‘*Providing transparency of the procedure and following up clear programme for tourism development*’ in Pazardjik AA; ‘*The competitiveness and the range of local tourism products can be increased*’ in Hajdúszoboszló LLS; ‘*Promote better utilisation and development of tourism based on rich cultural and historical heritage*’ and ‘*Promote*

**Table 2:** Strategic orientations and their components arising from the Strategic Orientation Round analysis of each case study area. See Table 1 for identities of case study areas.

Strategic orientations and their components	Case study area							
	1	2	3	4	5	6	7	8
<b>SO1. Encourage the development of key growth sectors</b>								
• Production based on renewable resources	•	•	•	•	•	•	•	
• Production based on non-renewable resources								
• Consumption by non-residents	•	•	•	•	•	•	•	
• Consumption by residents		•	•				•	
<b>SO2. Reinforce the local economy</b>								
• Improve business practices	•	•	•	•	•			•
• Improve rural business support services	•	•	•	•	•	•		•
• Improve the trading environment for rural businesses	•	•	•	•			•	•
<b>SO3. Improve the skills balance and labour market participation in rural areas</b>								
• Improve skills in rural areas		•	•	•	•	•	•	
• Promote labour market participation				•	•			
<b>SO4. Develop infrastructure and services</b>								
• Develop infrastructure in rural areas	•			•	•	•	•	
• Develop rural services			•			•	•	
<b>SO5. Ensure proper implementation of the strategy through support actions</b>								
• Mobilise the population around the strategic plan	•			•				
• Valorise rural areas as places to live, work and play	•	•	•			•	•	



the development of thermal water use and related high level spa services' in Karcag LLS; and 'Create a rural tourism network' in Bistrița-Năsăud county. The link between rural tourism and cultural and natural capital is clearly stated here. Some of the strategic orientations listed above for the agri-food chain also allude to the consumption dimension via topics such as local characteristics, healthy foodstuffs and local products.

The *consumption by residents* component of Rural Europe 2+2+ is only advocated in the EU-15 case study areas. In the Chelmsford and Essex TTWA, 'Promote the establishment, growth and sustainability in rural areas of businesses (including home based businesses/consultancies) with low environmental impacts, particularly in the knowledge based services' is suggested. Such businesses are recognised to be a key component of the 'genuine growth dynamic' of rural areas there. As the creation and transfer of knowledge is their main activity their impact on the environment is minimal and the 'attractiveness' of the environment is not compromised. As part of the process of creating such jobs in rural areas, it is suggested to 'Encourage farm diversification projects which lead to sustainable, low environmental impact, preferably knowledge-based, rural employment'. Teleworking, by 'Promoting, particularly in the public sector, arrangements which allow employees to spend a greater proportion of their work time working from home' is also suggested. All of these processes are already happening in the Chelmsford and Essex TTWA but could be encouraged further. All are equally applicable to rural areas of Thames Gateway South Essex and teleworking, at least, is beginning to develop in Pays de Tulle and Pays de Guéret.

Also relevant to 'consumption by residents', in Pays de Tulle and Pays de Guéret it is suggested to 'Take advantage of the characteristics of the population to develop the silver economy' which covers the demand for products and services, and mobilisation of savings and of human capital of retired people. This suggestion could also be applied to the Chelmsford and Essex TTWA. In England, employment in KIPS has already 'increased rapidly' over the period 1998-2005 (CRC, 2008), with the greatest growth of KIPS plus KIBS jobs occurring in 'Rural 50' (24.3%) and 'Rural 80' (22.1%) regions.

## SO2. Reinforce the local rural economy

This strategic orientation, to some extent, develops the synergy between natural capital and financial capital. Several actions were identified which could help the establishment, growth and sustainability of rural businesses, as well as their competitiveness, thereby promoting job creation, either in employment or self-employment.

Firstly, there are several ways in which *business practices can be improved*. In Thames Gateway South Essex it was suggested to 'Set up a rural-urban private sector-led entrepreneurial learning network' in which key private sector business 'champions' should, either by themselves or in partnership with universities and public agencies, establish learning networks to stimulate entrepreneurship through a range of business-focused activities. Other suggested examples of business cooperation are 'Encouragement of new

forms and business initiatives' creation in the rural areas' in Pazardjik AA; and 'Spread good cooperation practices between multinational companies and small rural enterprises' and 'Promote the cooperation/ clusters of SMEs to be competitive on the market' in Hajdúszoboszló LLS.

Recognising the elderly profile of rural business owners in some sectors, which may be linked to lack of innovation and increased risk of closure of the company, 'Emphasise takeovers of existing businesses' is suggested in Pays de Tulle and Pays de Guéret. 'Provide opportunities for diversification, knowledge on entrepreneurship and for becoming self-supplier' was a suggestion from Karcag LLS. 'Promote local ideas to develop local products, agriculture and other sectors linked to rural development which can absorb unemployment among less educated people' from Karcag LLS and 'Support of the development activity for high-quality and healthy food products' from Pazardjik AA were points specifically targeting product innovation whilst 'Education improvement in relation to the products and services' marketing' suggested in Pazardjik AA implies a need for marketing innovation. From Pazardjik AA, 'Reinforcement of the local capacity for EU funds assimilation' recognises that businesses need to use EU (and other) funding more effectively.

Secondly, to support the above, *rural business support services should be improved*, including support provided at municipal level, particularly for small businesses. Rural businesses outside agriculture have almost the same needs as urban ones but isolation is an issue and rural businesses have less of an understanding and ability to access available support. 'Develop specific business support for rural enterprise' is suggested in Thames Gateway South Essex to focus on rural issues such as access to and integration with urban markets, diversification, ICT adoption etc. The need to 'Strengthen existing support schemes' is noted in Pays de Guéret while similar suggestions are 'Support from the side of the local authority and governmental regulation bodies' in Pazardjik AA and 'Active employment policy tools have to be used on supporting SMEs' in Hajdúszoboszló LLS.

Support for innovation includes 'Realisation of projects to ensure an increase in local employment and to widen the market presence of local endogenous products and goods' and 'Reinforcement of the control authorities' effectiveness at a local level; support for the creation of products with declared origin; direct sales development' in Pazardjik AA.

Regarding funding, the suggestion from Karcag LLS to 'Enhance the opportunities of rural settlements to attract capital with local policies' and therefore support businesses, for example via tax reduction, low rents, free land, etc., recognises that the problems caused by the lack of capital further strengthen the negative effect of the international economic crisis. European Agricultural Fund for Rural Development (EAFRD) 'Investments and marketing support in the food-processing sector' is suggested in Pazardjik AA. Help with absorbing funding is needed in Pazardjik AA ('Development of municipal level administrative services related to EU funds absorption') and in Bistrița-Năsăud county ('Develop local advisory services for accessing the EU rural development fund', including private consultancies funded by the beneficiaries and from public funds). Gorton

et al. (2009) note that absorption of EU funds has been a particular problem in Central and Eastern Europe because of rules on co-financing.

Thirdly, there is a need to **improve the trading environment for rural businesses** in several different ways. ‘*Strengthen economic synergies in Brive-Tulle*’ (i.e. linking two urban areas so as to create an enlarged market (including activity areas, clustering) through collective and coherent governance) was suggested in Pays de Tulle to reduce territorial competition by giving them slight specialisations according to their assets. ‘*Optimise economic synergies with neighbouring areas*’ is a similar proposal from Pays de Guéret. In the Chelmsford and Braintree TTWA the suggestion to ‘*Increase flexibility of spatial planning*’ is intended to promote more economic activities with low environmental impacts in rural areas, for example via more small serviced office units and live/work units, more tourist activities/accommodation etc. Coupled with this, in Thames Gateway South Essex it is suggested to ‘*Promote rural localities as places to accommodate new business enterprise*’, emphasising that such areas can offer access to urban-related benefits without the associated diseconomies such as congestion and higher local taxes, and to ‘*Conduct an audit of rural premises in the sub-region*’ to identify structures and areas that could accommodate future business growth, particularly amongst business service activities. A similar suggestion from Pays de Tulle is to ‘*Promote reserved land*’ for the development of agricultural structures and local production (short supply chains, organic production), for the development of the green economy (biofuels, green chemistry) and for the development of the silver economy.

In Pazardjik AA, ‘*Support of the agricultural farms’ consolidation and market institutions development; creation of market-places, markets and stock markets*’ was suggested. Regulation and bureaucracy need to be reduced, especially in the NMS. Suggestions are ‘*Regulatory framework improvement, alleviation of permissive regimes, one stop services and development of e-services*’ (via Internet) in Pazardjik AA; and ‘*Reduce bureaucracy linked to SMEs and civil organisations*’, in order to reduce transaction costs of the economy and to make better allocation of funds, and ‘*Reduce labour costs*’, so as the labour market demand can be increased, in Hajdúszoboszló LLS.

### SO3. Improve skills and labour market participation in rural areas

Here, the synergies between natural capital and human capital are developed. Through its aim of more and better jobs, job quality is central to EU Cohesion Policy (EC, 2005). In areas where there is a high proportion of low-paid, low skilled jobs, including part time and/or seasonal labour (such as many rural areas), children often have low aspirations. This can lead to a ‘low skills equilibrium’ where employers do not relocate to an area because of lack of skills, and young people do not seek to acquire skills owing to lack of skilled job opportunities.

The need to **improve skills in rural areas** through higher quality and more accessible education and training programmes is widely recognised. In the Chelmsford and

Braintree TTWA the suggestion to ‘*Improve rural delivery of education and training, including entrepreneurship/ business skills, to reduce the dependence on low-skilled jobs and/or urban centres*’ recognises that the access to and suitability of training courses are bigger problems than the quantity of training that is available. Suggestions from other areas are ‘*Support key sectors through training; forecasting tools; and by networking the actors*’ in Pays de Tulle; ‘*Encourage training courses specifically tailored to the needs of the area*’ in Pays de Guéret; ‘*Education and professional training have to be improved to match labour market needs*’ in Hajdúszoboszló LLS; ‘*Support tradition based agricultural education that is more suited to the needs of the labour market*’, for creating local products, establishing local food industry etc. and ‘*Tailor education and professional training more to labour market needs*’ in Karcag LLS; and ‘*Improve the low level of education and skills*’ in Bistrița-Năsăud county.

The low rural activity rates in the NMS case study areas show the need to **promote labour market participation**, particularly amongst vulnerable sectors of society. Suggestions are to ‘*Support the reintegration of disadvantaged people, e.g. Roma, young people, etc.*’ and ‘*Promote job creation for young and disadvantaged people at EU and national level*’ in Hajdúszoboszló LLS, where ‘*The main target of the active employment policy tools has to be the high rate of generations growing up in a passive environment*’; and to ‘*Promote non-discriminative employment of rural people, particularly Roma*’ in Karcag LLS.

### SO4. Develop infrastructure and services

The focus here is on developing the synergies between natural capital and physical capital.

In both the EU-15 and the NMS, the need to **develop infrastructure in rural areas** is noted. The following suggestions apply to transport and communications infrastructure: in the Chelmsford and Braintree TTWA to ‘*Promote the universal coverage of Next Generation Access Broadband*’ via all available technologies and to ‘*Improve transport links to improve access to jobs and education/training, to rural service ‘nodes’ and for leisure/tourism activities*’; in Pazardjik AA to implement ‘*Transport infrastructure improvement (roads etc.)*’ to facilitate access to quality services; in Hajdúszoboszló LLS ‘*The tourism and the area’s infrastructure have to be developed at the same time and built on*’; in Karcag LLS to ‘*Promote infrastructural development in the most disadvantaged settlements*’ to boost the local economy; and in Bistrița-Năsăud county to ‘*Develop physical and ICT infrastructure*’. The high price of houses in the Chelmsford and Essex TTWA (and also in Thames Gateway South Essex) makes it necessary to ‘*Provide substantially more affordable homes in rural areas*’ so that residents of all ages have the option of living and working in their community.

There is also a need to **develop rural services** across the EU, particularly services which are traditionally provided by the public sector such as healthcare, ensuring adequate service levels by adopting innovative solutions where possible in view of the increasing costs of such services. ‘*Promote the co-location of retail with other businesses (such as tourism and leisure attractions) and services (e.g. healthcare)*’

to create rural service ‘nodes’ and ‘*Improve service (such as healthcare) delivery to the locality or to the home*’, where possible via new forms of integrated delivery, are suggested in the Chelmsford and Essex TTWA; ‘*Optimise access to local services*’ is a suggestion from Pays de Guéret; and the need for ‘*Development of public services in rural areas*’ exists in Bistrița-Năsăud county, covering health, education and social assistance to the elderly.

## SO5. Ensure proper implementation of the strategy through support actions

Here the link between natural capital and social capital-related issues is explored.

There is a need to ***mobilise the population around the strategic plan*** which is particularly evident in the NMS. In Pazardjik AA, the suggestions for ‘*Projects realisation on the base of local initiatives*’ (“Leader” approach) and for the ‘*Increase of activity of local inhabitants and facilitation of the administrative barriers on the concession procedure of tourism sites and natural favourites*’ recognise the potential contribution to rural job creation of ‘bottom-up’ initiatives arising from the community. In Hajdúszoboszló LLS the need to ‘*Ensure continuous communication between rural development experts and residents*’ is recognised.

There is also a need to ***valorise rural areas as places to live, work and play*** which is at present mainly recognised in the EU-15 case study areas only, although an even bigger perception problem seems to exist in the NMS. This is linked to the development of the ‘consumption dynamic’ associated with rural areas. In the Chelmsford and Braintree TTWA it is suggested to ‘*Promote rural areas as a place for high quality, short-break tourism and leisure*’ on the basis of their good accessibility from urban centres and their built, cultural and natural heritage including their biodiversity, coast and estuaries, and to ‘*Promote rural areas as a source of high quality, healthy foods*’ (and related services, e.g. restaurants). Two ideas in Pays de Tulle are, firstly, to ‘*Value local direct selling*’ and, secondly, to ‘*Mobilise the local population to improve the attractiveness of the territory*’ by working on the image and the quality of life of the territory and by calling on local investment. In Pays de Guéret it is necessary to ‘*improve the image conveyed by the territory*’ and to ‘*encourage local sales and value creation, and promotion of products and short supply chains*’. ‘*Concentration of the efforts for synergic valorisation*’ is suggested in Pazardjik AA. ‘*Stimulating the settlement of young and middle-aged population in rural areas*’ could be done in Bistrița-Năsăud county by providing cheap houses and building land for urban young people with town-based jobs whilst ‘*Crisis situation management*’ would deal with flood control etc.

## Discussion

Any attempt to define ‘rural employment’ by sector would be both fruitless and misleading as such a definition can lead to a restricted view of the potential for rural job creation. A common theme across the EU, however, is the continuing importance of natural capital to rural employ-

ment, and therefore to creating jobs. In line with Rural Europe 2+2+, this employment, whether through farming, mining, rural tourism or by attracting incomers who set up new businesses, can be based on the ‘production’ or ‘consumption’ roles of rural areas. Thus, policy approaches to ‘rural’ should not be constrained to agriculture and related sectors but should address the broader topic of sustainable development of natural capital.

Policy responses can be targeted at the *pressures* of working age population or number of jobs. For example, government proposals in several EU Member States to raise the retirement age will lead to an increase in the supply of labour. The supply of jobs can also be directly increased by government intervention, such as through subsidies for job creation (the ‘Út a munkához’ (Road to Employment) programme in Hungary (Anon., 2008) being an example of this) although in many such schemes the jobs are not economically sustainable after the funding ends. The strategic orientations proposed here do not include any policy responses targeted at directly manipulating supply of labour or jobs.

Policy responses can also be targeted directly at the *state* of employment (i.e. employment rate and associated factors such as underemployment) by connecting the ‘offer’ with the ‘demand’, one approach being through the funding of job centres. By their very nature, in rural areas there are fewer job opportunities available at any one time in the immediate geographical locality of the worker. Experience in, for example, Pays de Guéret, that a concealed labour market exists in rural areas and operates by word of mouth, confirms reports in the literature (e.g. Defra, 2005). Thus, while rural areas (particularly sparsely populated areas) have the biggest need for measures designed to connect the ‘offer’ with the ‘demand’, the cost of delivery means that it is here that the biggest cutbacks are occurring. Delivery of such services over the Internet is not an adequate solution, particularly where broadband speeds and/or computer ownership rates are low. SO4 specifies the need for innovative solutions such as co-location of services in rural service ‘nodes’ as a means of maintaining adequate levels of such services in rural areas.

However, the strategic orientations for new sources of employment in rural areas are mainly targeted at the *driving forces* in the DPSIR framework, namely natural, financial, human, physical and social capital, and to the interactions between them. An approach which integrates exploiting natural capital in a sustainable way with the development of the other capitals of the territory (i.e. via a place-based or territorial policy approach as advocated by Barca, 2009), such as through improved business practices, business support services and trading environment (SO2), skills development and an inclusive labour market (SO3), infrastructure and service development (SO4) and community engagement (SO5) can create jobs, and encourage working age people either to stay in, or relocate to, rural areas.

This integrated approach should also apply to the utilisation of funding. A consequence of a separate rural development programme (EAFRD) is that many rural development actors tend to only target this funding stream instead of the larger sources of ‘mainstream’ funding (such as Structural Funds and, in the case of many EU-15 countries, national funding) which could be used to the benefit of rural areas.



For example, the improvement of human capital, skills and adaptability, as described in SO3, is necessary in support of rural job creation. This should be funded not only from the vocational training measures of the EAFRD but also from the European Social Fund, via ‘mainstream’ training programmes which are properly designed to ensure that their delivery in rural areas is effective. In view of the linkages between urban and rural areas, eligibility of funds should not be constrained by urban-rural boundaries. Individual projects would define their territories of intervention.

In conclusion, natural capital strongly characterises the profile of rural employment and underpins the central contribution of rural areas to the functioning of the regional economy. Through an employment strategy based on the principles of Rural Europe 2+2+, rural areas in the EU can be part of a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion in line with the priorities of Europe 2020.

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## The role of broadband developments financed from EU Structural Funds in the enhancement of regional cohesion in the NMS-10

This paper examines if broadband Internet access ('broadband') developments enhance regional cohesion in ten New Member States (NMS-10) of the European Union. It focuses on broadband developments in these countries financed from Structural Funds (SF). Broadband developments have a potentially beneficial impact. However, while the existence of this beneficial impact is well established in theory, still there is no conclusive evidence empirically. Broadband is perceived here as an essential part of ICT, enabling the spread and use of ICT. The paper analyses (1) the regional dimension of broadband access in the NMS-10, (2) the recognition of broadband-cohesion links by NMS-10 governments, and (3) the priority given to broadband in SF spending. The impact of broadband developments on cohesion is not presently monitored, however it would be essential in order to evaluate the effective use of public resources in the enhancement of regional cohesion.

**Keywords:** Cohesion Policy, broadband Internet access, ICT, Structural Funds, EU Member States

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### Introduction

Cohesion is a key concept in the European Union (EU). Information and communication technology (ICT) may be of help in reducing social divides, thus it can be perceived as a tool for enhancing cohesion<sup>1</sup>. While ICT does not automatically bridge social divides (it can even increase them as access to it is mainly dependent on wealth), deliberate policies may help non-users to become users and thus increase their opportunities. The level of broadband Internet access ('broadband') development is a specific area of cohesion, which gains increasing importance with the spread of the use of computers and various internet and web-based applications and can be a key factor in decreasing regional disparities in the field of access to information, knowledge, work, goods and services.

In this paper we use the OECD (Organization for Economic Co-operation and Development) definition for broadband, which defines broadband as 256 kbit/s in at least one direction. Broadband technologies are fixed line or wireless. The fixed broadband technologies are: DSL, cable modem, FTTx/LAN, PLC, WLL and satellite. In the examined ten New Member States (NMS-10, i.e. Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia), but also in the whole EU, the most popular technology is DSL. Therefore, although its market share in the EU-27 decreased from the peak of 81% in January 2006 to 79% in 2009 (EC, 2010a), in this paper we concentrate on this technology.

The business impact of ICT is well established, however empirical evidence to date about the development impact of ICT is inconclusive. Hüsing (2004) showed that in the NMS, besides age, education attainment, gender and health status, internet usage is a factor which significantly influences the risk of unemployment, which is the main source of poverty. According to Maignan *et al.* (2003), the increased use of ICT in the economy is accompanied by greater dispersion of economic activity, and thus may lead to lower regional disparities. However, there is a counterbalancing impact: due

to agglomeration effects the shift towards more knowledge and skill-intensive activities might result in less cohesion.

In the context of development, focusing mainly on developing economies, Brown (2001) and Chowdhury (2000) state that ICT will contribute to an even wider economic divergence between developing and developed countries. Sridhar and Sridhar (2004) demonstrate that the impact of telecommunication penetration on total output is significantly lower for developing countries than for developed countries, resulting more likely in regional divergence than in convergence. On the other hand, Hudson (2001) thinks that the use of wireless terrestrial and satellite technologies may enable developing countries to leapfrog stages of development.

As the above contradictory evidence on the impact of ICT on cohesion shows, there is a need for theories which will deepen our understanding of the relationship between ICT and cohesion (Gomez and Pather, 2010). Policies inducing a more intensive use of ICT may increase cohesion, but ICT policies must be thoroughly balanced and take into account all of the potential beneficial and adverse effects. There are two mechanisms through which ICT may be beneficial (Hüsing, 2004). Firstly, ICT can improve people's access to certain services and subsidies, through enabling them to rely on ICT mediated interactions with the government and public services. Secondly, ICT may enable people to participate more fully in the economy, in political, cultural life and in the society through the ability to use ICT at work, at home and in other environment.

Broadband developments provide one possible channel through which ICT can affect growth, development and thus cohesion. Various studies have shown the (potential) positive impact of broadband on growth and cohesion in the EU. Fornefeld *et al.* (2010) used input-output analysis and case studies to analyse the current and future potential positive impact of broadband on growth and productivity in the EU-27. Codagnone (2009) showed through microeconomic studies and input-output analysis the positive social and economic impact of eInclusion. This is without doubt strongly related to broadband developments as an enabling

<sup>1</sup> Regional cohesion and regional convergence are used as synonyms in the text.

factor through which infrastructural improvements can positively impact upon the society and economy. Another study dealing with eInclusion is Bentivegna and Guerrieri (2010), which demonstrated the positive impact of broadband on eBanking, eTrading, eTravelling and employment, and thus on cohesion. According to Koutroumpis (2009), based on the econometric analysis of the EU-15, there are increasing returns to broadband telecommunications investments which are consistent with the persistence of network externalities.

The digital quality divide is empirically demonstrated between urban and rural areas both in developed and developing countries (Cisco, 2009). Less developed rural and remote areas thus can strongly benefit from broadband developments, as demonstrated among others by Anon. (2003) for healthcare in Australia. Dabson and Keller (2008) showed how rural consumers benefit from online access to goods and services that are not available locally. They showed the positive impact of broadband on the rural economy, both on consumers and firms: for every one percentage point increase in broadband penetration rate, employment is projected to increase by 0.2 to 0.3 percent per year in rural areas of the United States. Annis *et al.* (2005) analysed the economic impact of broadband usage in two small Canadian communities, showing the positive return on broadband investments.

Acknowledging this potentially positive impact of ICT and broadband on cohesion, we concentrate on those policy elements in the NMS-10 which enable the wider use of ICT through broadband developments. ICT policies can support information access in rural areas and as we have seen there is evidence that broadband developments can help lagging rural areas to catch up with developed areas. Within these policy elements, we pay special attention to those areas which are financed from Structural Funds (SF).

## Methodology and data limitations

We used data available from the website of DG Regio (EC, 2011). We analysed the 'public aid breakdown of finances by priority areas', because it provides the most suitable data for comparison. The limitations of our methodology and data availability regarding ICT-related and broadband developments financed from SF are as follows:

- At present, comparative data are still limited. As SF are still the most harmonised public investment schemes in the EU, more attention to harmonised collection and analysis of data could provide extremely valuable input for economic impact assessment of broadband investments;
- In the majority of MS there are integrated development programmes, so in many cases the specific broadband developments are part of the framework programmes. Detailed data in most cases are not available for broadband developments<sup>2</sup>;

<sup>2</sup> In some cases there is a dedicated priority for broadband e.g. in Slovakia the OP 'Information Society' includes a specific priority 'Improvement of broadband internet access', but in most cases only wider information society priority data are available, and in these cases we could not estimate the proportion of broadband developments, because detailed data are not given at the level of specific measures. In some MS the amount spent on the development of eGovernment services and the amount for broadband infrastructure differ extremely within the measure.

- In the EU the National Strategic Reference Frameworks and the Operational Programmes (OP) of the MS are not harmonised, MS can prepare them according to their national culture and structures, thus they do not offer data and information on broadband in the same or similar structure<sup>3</sup>. In many cases exact data are not available, because of multiannual planning. The data can change continually and according to the planning phase;
- Many MS had to introduce national Recovery Packages and reorganised spending from SF due to the impacts of the financial crisis. Available data on these reorganisations are not reliable and not comparable for the period 2007-2013;
- Reliable information is limited regarding studies on the effective use of public investment under these programmes. Even though the EU requires the monitoring and analyses of SF investments, there are numerous data and measurement problems when trying to analyse the broadband developments related to SF. Many of the reports are not yet prepared, or not public, or not available in English, or not comparable at all.

In view of the above, in addition to the data available from the DG Regio website, we completed our research with interviews with the representatives of the relevant National Authorities of the examined MS (see acknowledgements).

## Broadband indicators and markets by settlement types

Broadband penetration rates (subscription) in the NMS-10 grew dynamically between 2004 and 2009, however in 2009 the penetration rates were still below the EU-27 average (Table 1). An exception was Estonia, where the number of broadband access lines/100 inhabitants was 26.3 compared to the EU-27 average of 23.9. Among the NMS-10 Slovenia was also close to the EU-27 average. The penetration rate was the lowest in Bulgaria (and in Romania) in 2009, although the country leads the EU in broadband penetration growth with an annual growth rate of over 228% (Anon., 2009).

Alongside the fixed technologies, the market share of (wireless) mobile broadband has grown significantly, the take-up in the EU increased by 115% between January 2009 and January 2010. The number of new mobile broadband products offered by mobile operators doubled in 2009 (EC, 2010a). At the same time the percentage of population using mobile phone via UMTS (3G, third generation of mobile telephony (cellular) technology) to access the Internet in the NMS-10 was relatively low, below the EU average (which was 4%); the two exceptions were Slovakia and Slovenia. Laptop usage was more popular in 2009, the proportion of

<sup>3</sup> The hierarchy of initiatives is as follows: National Strategic Reference Framework/Single Programming Document/National Development Plan defines the overall strategy, then it is divided into OPs. In most cases these exist at a sectoral and/or regional level. OPs are broken down to priorities which include several measures.

**Table 1:** Broadband indicators in the Eastern EU Member States, 2009 (\* 2008).

Broadband indicators	BG	CZ	EE	HU	LV	LT	PL	RO	SK	SI	EU-27
Total DSL coverage (% of total population)	85	92	94	95	89	89	75	74	82	93	94
DSL coverage in rural areas (% of total population)	33	85	80	89	67	69	52	45	54	85	80
Speed (% of broadband subscriptions above 2 Mbps)	96	100	52		82	63	34		81		
*3G+ coverage (% of total population)	50		62	73	48	59	19	30	62	77	
% of households with an internet connection	30	54	58	55	58	60	59	38	62	64	65
% of households with a broadband connection	26	49	54	51	50	50	51	24	42	56	56
% of enterprises with (fixed) broadband access	70	78	88	76	62	58	58	41	78	85	83
% of population using a mobile phone via UMTS (3G) to access the Internet	1	1	2	2	1	2	2	0	10	9	4
% of population using a laptop via wireless connection away from home/work to access the internet	4	3	16	8	9	8	10	2	16	11	17
Broadband penetration (number of broadband access lines per 100 inhabitants)	11.9	17.8	26.3	17.2	17.5	18.2	12.8	12.3	14.3	22.1	23.9

Source: European Commission (2010): Europe's Digital Competitiveness Report ICT Country Profiles Vol II.

population using a laptop via a wireless connection was 17% in the EU-27; regarding the NMS-10 it was between 2% and 16%. The two highest proportions were observed in Estonia and Slovakia.

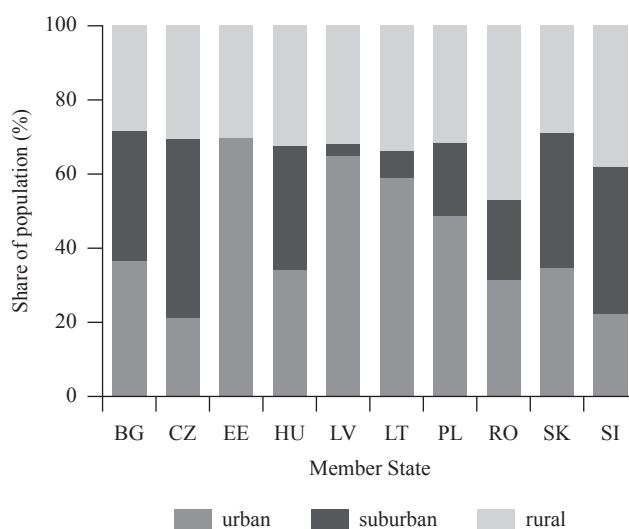
Differences are large not only among MS, but also within a MS. In the NMS-10 there are large gaps between regions in terms of broadband access, which in turn influence their economic and social development. We used the settlement types (at NUTS 3 level) of broadband coverage and take-up in EU 27+2<sup>4</sup> (phase III) project as follows:

- urban area (over 500 inhabitants per square km);
- suburban area (between 100-500 inhabitants per square km);
- rural area (under 100 inhabitants per square km).

We analysed the NMS-10 according to these settlement types (Figure 1). We can distinguish the following types of countries: (1) dominated by urban centres; (2) the role of capital cities is important but not dominant.

### Countries dominated by urban centres

The Baltic States can be characterised by the dominant role of the capital cities (Tallinn, Riga, Vilnius) and some urban regions with medium-sized towns in the centre (Tartu, Narva and Parnu in Estonia; Daugavpils, Liepaja, Jelgava, Rezekne, Jurmala and Ventspils in Latvia; Kaunas, Klaipeda, Siauliai and Panevezys in Lithuania). Over 50% of the total population is settled in the urban centres and the role of capital cities is rather high in terms of total population (30% in Estonia, 35% in Latvia, Vilnius and Kaunas together almost 25% in Lithuania). The high share of larger cities and spatial concentration of the population enable the service providers to build up the high-speed data communication infrastructures of broadband internet use for a large share of population with smaller investments. The innovative nature of the population in capital cities is well documented in the geographical and economic literature in transition studies on NMS-10 which is why the higher concentration of population in urban centres involves higher and more intense use of all types of communication infrastructure and services.



**Figure 1:** Share of population by settlement types in Eastern EU Member States in 2008.

Note: In 2007 the Bulgarian settlement structure was: urban: 36.4%, suburban: 34.7%, rural: 28.9%; the Romanian structure was: urban: 31.3%, suburban: 21.4%, rural: 47.3%, using the original definition of the settlement categories. Based on the data from national authorities.

Source: EC (2010e)

### Countries where capital cities are important but not dominant

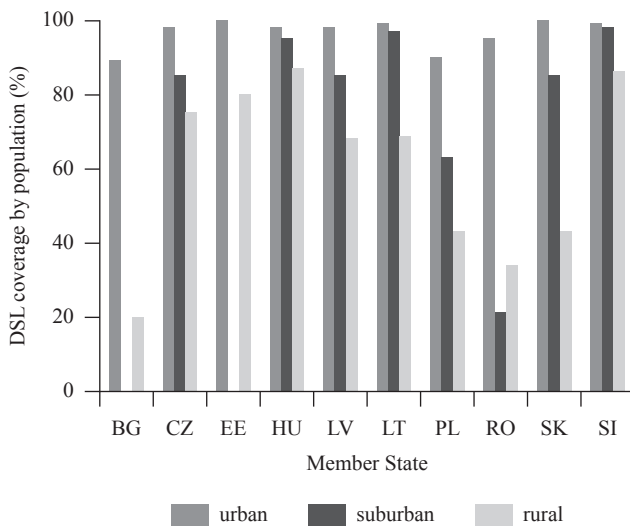
Bulgaria, the Czech Republic, Poland, Romania, Slovakia, Hungary and Slovenia are characterised by a more balanced settlement structure. The share of total population in the capital cities is as follows: Praha: 12%; Warszawa: 5%; Bratislava: 8%; Budapest: 17%; Ljubljana: 14%. There are important large and medium-sized centres in the countryside, forming smaller urban regions. The role of small towns and villages is important in the settlement hierarchy; one-third of total population is concentrated in settlements with less than 5000 inhabitants. The size of countries and the importance of lower levels of settlement hierarchy result in different types of network building and development. In case of Bulgaria and Romania the broadband coverage data and the data for their segmentation into urban and rural categories are mostly estimated. Due to this, data may not reflect the exact state of the development of broadband internet markets in these countries.

<sup>4</sup> EU 27+Iceland and Norway

## Broadband coverage by settlement types

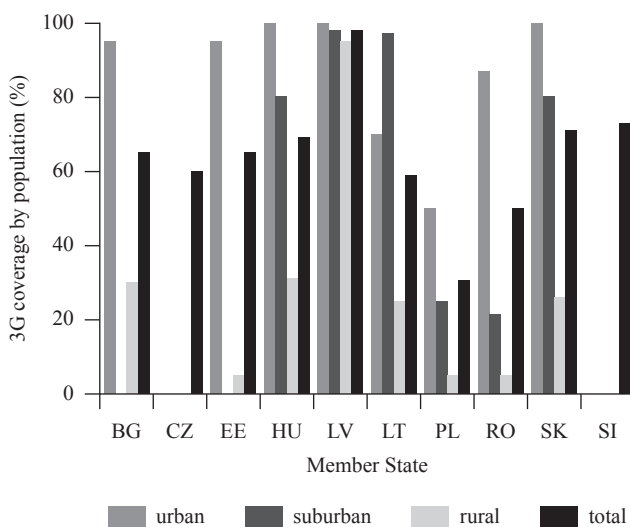
At the end of December 2008, DSL coverage of urban areas was almost 100% in the NMS-10; the three exceptions were Bulgaria, Poland and Romania (Figure 2). DSL coverage of suburban areas was over 80% in Slovenia, Slovakia, Latvia, Lithuania, Czech Republic and in Hungary. In Bulgaria, Romania and Estonia there are no data for 'suburban' category. The DSL coverage of rural areas was over 80% in Slovenia and Hungary; however the low level of coverage in rural areas is still the most important problem in these countries. Based on Figure 2, three types of national markets can be defined:

- Without large differences: Estonia, Hungary, Slovenia
- With sharp inequalities: Bulgaria, Poland, Romania, Slovakia
- With significant, but moderate disparities: Czech Republic, Latvia, Lithuania



**Figure 2:** DSL coverage by population in settlement types in Eastern EU Member States in 2008.

Source: EC (2010e)



**Figure 3:** 3G coverage by population in settlement types in Eastern EU Member States in 2008.

Source: EC (2010e)

The overall level of coverage heavily depends on the settlement structure. The average coverage of the population is around 60-70% (the two extremes being Latvia with 98% and Poland with 31%), however, the accessibility of mobile broadband services is changing from year to year. 3G coverage is increasing. In Latvia the rural, urban, suburban areas are at the same level in terms of 3G (Figure 3). In Estonia, Poland and Hungary the 3G coverage is very low in rural areas. In some MS 3G coverage is relatively low not only in the rural areas, but also in the urban areas, for example in Lithuania and Poland.

## Broadband developments from Structural Funds

Regarding State Aid Policy the European Commission (EC) gives preference to aid measures which target rural and underserved areas, but it is more critical with aid measures in areas where a broadband infrastructure already exists and competition takes place (EC, 2009).

EU resources are widely used for funding broadband developments. Among these SF are the most important alongside private funding. Eastern European MS can utilise these funds for broadband infrastructure, and for various related areas such as for eLearning, eInclusion etc. National funding is very limited, due to several factors, including the heavy burden of co-financing for the incoming SF. The financial instruments for broadband developments usually come from the ERDF (European Regional Development Fund). In addition to the support from SF the EC decided to inject EUR 1.02 billion into the European Agricultural Fund for Rural Development (EAFRD) as part of the Recovery Package. The 35% of the EU Recovery Funds (EUR 360.4 million) which will be used for deploying broadband infrastructures in rural areas was approved between October 2009 and January 2010 (EC, 2010b).

For the 2007-2013 EU financing period, EUR 2.3 billion of SF was allocated to broadband infrastructure investments and EUR 12.9 billion to information society services; and a further EUR 360.4 million via the EAFRD were used for broadband funding in the EU-27. This follows clarification in 2009 of state aid rules on use of public funds for broadband deployment which enables national and regional authorities to plan their own infrastructure projects (EC, 2010c). Furthermore, the European Investment Bank has an important role in broadband developments, it invests EUR 2 billion each year (EC, 2010d) into economically viable broadband projects in Europe and this is likely to increase as part of the wider Europe 2020 strategy.

Thus there are several EU financing sources for broadband projects but as far as the efficiency of these are concerned, we can quote Neelie Kroes (Vice-President of the EC responsible for the Digital Agenda), according to whom, the Cohesion Funds and the Rural Development Funds have not been used efficiently in the past for broadband development, but the Digital Agenda will change this (Kroes, 2010).

Here the NMS-10 broadband related developments from SF are analysed based on evidence from lists and details of projects/policies aimed at broadband developments.



**Table 2:** Operational Programmes relating to broadband Internet developments in the Eastern EU Member States (MS) in the programming periods 2004-2006 and 2007-2013.

MS	2004-2006	2007-2013
BG	Not applicable. Bulgaria joined the EU in 2007.	OP 'Administrative Capacity' (OPAC) Priority axis 'Quality of administrative service delivery and e-government development'. The total amount is EUR 56.04 million: EUR 47.64 million EU contribution, EUR 8.41 million national public contribution.
CZ	'Joint Regional Operational Programme' (JROP) Measure 2.2. The total sum to be paid for the development of information and communication technologies in the regions is EUR 22.5 million.	'Integrated Operational Programme' is relevant in broadband developments. The total amount is EUR 1235.80 million: EUR 1050.43 million EU contribution, EUR 185.37 million national public contribution.
EE	Operational Programme 'Infrastructure and Local development' priority 4.5 targeted the development of the information society, and the improvement of broadband infrastructure. EUR 8.3 million was allocated under this Measure, of which the co-funding of ERDF amounted to EUR 6.2 million and the Estonian match funding to EUR 2.1 million.	Operational Programme 'Development of Economic Environment' Priority 5th 'Promotion of information society'. The total amount is EUR 62.6 million for the information and communication technology accessibility, safety, interoperability, research, innovation, furthermore services and applications for citizens for eHealth, eGovernment, eLearning, eInclusion.
HU	'Economic Competitiveness Operation Programme' (ECOP) under the Priority 'Development of information society and economy' contained a specific action on the development of broadband infrastructure. The EU financial contribution to the programme (ECOP) amounted to EUR 429 million; within this the Priority 'Development of information society and economy' amounted to EUR 137.27 million.	Within the OP 'Economic Development' Priority axis 'Development of a modern business environment', EUR 225.5 million addresses the following: establishing a modern ICT network infrastructure, business site development and providing consulting services to enterprises.
LV	The total amount of OP 'Territorial Cohesion' is EUR 269.2 million; within this the amount for telecommunication and ICT was only EUR 4.01 million.	OP 'Infrastructure and Services', under priority 3.2. 'Territorial Accessibility', Measure 3.2.2. 'ICT Infrastructure and Services' involves broadband developments. For the broadband related developments the total budget is EUR 239.85 million.
LT	Among the priorities under 'Productive Sector and Services', the amount allocated for 'Development of Information Services' was EUR 46.3 million EU contribution and EUR 17.02 million national public contribution.	OP 'Economic Growth', Priority axis 'Information society for all' involves EUR 240.08 million EU contribution and EUR 42.37 million national public contribution.
PL	'Integrated Regional Operational Programme' is relevant regarding broadband developments. Poland spent EUR 124 million for ICT development.	OP 'Innovative Economy' Priority axis 'Information society – increasing the innovativeness of the economy' and the OP 'Development of Eastern Poland' priority axis 'Information Society Infrastructure' is relevant. The planned amount for broadband developments within these axes is EUR 1716 million.
RO	Not applicable. Romania joined the EU in 2007.	The priority 'Increasing of economic competitiveness and development of the economy based on know-how' of the Romanian National Development Plan, third priority axis includes 'The Information and Communications Technologies for private and public sectors'. Almost EUR 445 million of funds will be invested in developing modern broadband networks and e-services for business and citizens in Romania.
SK	Operational Programme 'Basic Infrastructure' Priority 3 'Local infrastructure' was relevant in broadband developments. The amount of this priority was EUR 122.314.834 and a part of this amount (the exact amount is unknown) was used for broadband developments.	There is one dedicated OP 'Information Society Operational Programme for Slovakia' that deals with ICT and broadband issues. Priority 3: 'Improvement of broadband internet access' (approximately 9.7% of total funding) is relevant in broadband developments.
SI	Priority no. 1 'Promoting Productive Sector and Competitiveness', more specifically its measure 1.4 'Economic Infrastructure and Related Services' objective was 'establishing ICT infrastructure that secure high speed broadband, internet connectivity for research, education and business environments'. The exact amount spent for broadband is unknown.	For the period 2007-2013 operational programmes of Slovenia are: OP Strengthening Regional Development Potentials, OP Development of environment and transport infrastructure. The amount allocated for telephone infrastructures (including broadband networks) were EUR 70.01 million.

Source: DG Regio, European Commission, information from the National Agencies

## Overview of broadband objectives and policies in NMS-10

Most of the NMS-10 determined specific OPs which include broadband developments, but some did not specify such a programme, and in this case the broadband developments are part of a wider Information Society OP (Table 2). Thus, although the improvement of ICT infrastructure is a key priority in all NMS-10, in some of them the overall broadband strategy is missing, or only a wider information society strategy exists.

In *Bulgaria*, in November 2009 the new Government adopted a National Broadband Strategy for the period 2010-2013, which defines broadband as access to voice, data and video at a recommended minimum speed of 1 Mbps. However a more detailed programme concerning regional broad-

band availability, the overall scope of broadband projects and private sector co-financing is still not prepared. The most important project financed from SF is the 'National Electronic Communication Network', the optical infrastructure among regional and major cities and integration of Bulgaria's network with European optical infrastructures by 2015.

In the *Czech Republic* the current strategy for development of electronic communications appeared in January 2010, with the title of 'Digital Czech Republic' The strategy will lay down the measures for facilitating access to broadband Internet throughout the country. It will address the topics of digital television broadcasting and spectrum management, and take into account the implementation of the EU telecoms rules into Czech law. It should give impetus to the use of various services such as eGovernment, eLearning and eHealth services and support the development of digi-

tal interactive TV. One of the specific aims of the strategy is to address the issue of the digital divide by proposing a procedure through which the Government could effectively reduce the phenomenon, after having first identified its extent in the country.

In *Estonia* the Information Society Strategy was launched for the period 2007-2013. The Government approved the amended version of the 'Estonian Information Society Strategy 2007-2013' in July 2009. The update concerns measure 4.1.1. 'Broadening technological access to digital information', to which a chapter was added on the development of broadband internet. The most important project financed from SF was the nationwide superfast broadband network. The main aim is that the 90% of the country have access to the 100 Mbps network by the end of 2012, with the remainder of the population to be connected by 2015.

In *Hungary* the National Broadband Strategy was approved by the Government in 2005. Its main aims are the development of broadband communication targeting the improvement of life quality, the increase of competitiveness, as well as strengthening social cohesion between 2007 and 2013. Access to broadband networks receives support in the underdeveloped and disadvantaged regions, resulting in extended coverage and improved information security in Hungary. The main objectives of the strategy are divided into the following intervention areas:

- The increase of the use of broadband Internet – population, enterprises, public institutions;
- The widening of the relevant choice of contents – public institutions, enterprises;
- The assuring of equal opportunities – disadvantaged groups.

The website [www.broadbandsearch.eu](http://www.broadbandsearch.eu), operated by an independent foundation and called HBSE (Hungarian Broadband Search Engine), was set up to provide updated information on broadband offers and related conditions nationwide. The engine was developed as part of an 'INTERREG 3B' project, with the aim to address the European market and strengthen eInclusion.

In *Latvia* the current broadband strategy is the 'Broadband network development strategy 2006-2012'. Its objective is to ensure, by 2012, broadband access at affordable price for several target audiences (natural persons, state administration institutions, businessmen, schools, hospitals) covering 80 % up to 95 % of the country's territory.

Under the OP 'Promotion of Territorial Cohesion', the main aim of the measure 'Development of Information and Communication Technologies' is to develop the conditions for competitive and socially inclusive use of information and communication technologies over the territory of Latvia, setting the basis for development of the information society. It targeted support to the development of nation-wide information systems for public use (e.g. municipal, education, library, archive and museum information), including digitalisation in order to improve the quality of provided services. It supports the development of public internet access points (e.g. in public libraries, municipalities, education institutions) and the development of information and communication in peripheral areas by extending high quality broadband network.

*Lithuania's* broadband strategy entitled 'Development Strategy of the Broadband Infrastructure of Lithuania for 2005-2010' was approved in 2005. Its main objective was the development of broadband networks and access in those locations where such services are unavailable or in such locations which are uncompetitive in terms of provision of wideband connection networks. The main broadband projects financed from SF and other public resources in the country are:

- *The Rural Area Information Technology Broadband Network projects (RAIN 1, RAIN 2 and RAIN 3)*. The strategic aim of RAIN 1 was to decrease the digital divide between urban and rural areas and thus accelerate the development of the knowledge society in Lithuania. The value of the project amounted to EUR 21.5 million, half of this sum was granted by the ERDF under measure 3.3. 'Development of Information Technology Services and Infrastructure'. The other half was granted by the Republic of Lithuania. The main objective of RAIN 2 was to create an infrastructure of electronic networks to allow all public administration institutions and agencies in rural areas, as well as all interested small and medium sized business enterprises and all residents, to use the services of broadband at an affordable cost. The broadband infrastructure is planned to be used by different departments for the promotion and development of various activities in rural areas. These issues are scheduled to be discussed within the framework of RAIN 3.
- *Project Establishment of Broadband Data Transmission Network in the Municipalities of Lazdijai and Alytus Regions*. The project was also financed by ERDF measure 3.3. which covered more than 75% of the project cost of EUR 1.94 million.
- *Project Information Society Development by Installing Broadband Wireless Radio Communications Network in Neringa*. Of the total project cost of EUR 1.7 million 70% were covered by the PHARE programme. The remainder came from the national budget. The aim of the project was to install a broadband wireless radio communications system and provide the opportunity for townships that belong to Neringa municipality, Nida, Preila, Pervalka and Juodkrante, to have high speed Internet, telephone communications and data transmission.

In *Poland* the National Development Strategy 2007-2015 defines six main priorities, one of which emphasises that implementation of SF should promote the information society for all. In particular it is important that an appropriate broadband communication infrastructure be available across the country at an accessible cost.

In Poland there are also Public-Private Partnership (PPP) projects in the field of broadband developments, for example 'PPP Project Malopolska Broadband Network in Poland'. The main objective of the Malopolska Broadband Network (MBN) project is to increase the coverage of broadband in the region so it reaches at least 90.5% of households and 100% of private companies and public institutions by mid-2012. The MBN project will be carried out by the local authorities

**Table 3:** Public resources of broadband developments in Eastern EU Member States, EUR.

Member State	Total funding for Structural Funds + Cohesion Fund (EUR million)		Funding for broadband developments, (EUR million)		Funding for broadband developments/capita (EUR million)
	2004-2006	2007-2013	2004-2006	2007-2013	2007-2013
Bulgaria		6,853		89	11.70
Czech Rep.	1,270.758	26,692	22.5	1,235.8	118.06
Estonia	804.44	3,456	8.3	62.6	46.70
Hungary	2635.4	25,307	429	225.5	22.48
Lithuania	1,360.792	4,620	4.01	239.85	106.07
Latvia	1,812.807	6,885	63.5	282.45	84.32
Poland	11,563.819	67,284	124	1716	45.00
Romania		19,668		445	20.70
Slovakia	1,372.232	11,588	122.32	113.18	20.91
Slovenia	523.226	4,205	n.a.	70.013	34.45

Source: Regional Policy – Inforegio; Poland: <http://www.fundusze-strukturalne.gov.pl/English/>; Hungary: [www.nfu.hu](http://www.nfu.hu); Division of resources by MS: [http://ec.europa.eu/regional\\_policy/policy/fonds/index\\_en.htm](http://ec.europa.eu/regional_policy/policy/fonds/index_en.htm); Population data: [www.oistu.org](http://www.oistu.org)

of Malopolska Region and its total budget is around EUR 40 million. The project consists of deployment by the Malopolska Region of broadband infrastructure in the areas where market forces do not and will not provide such infrastructure due to a lack of profitability. The network will complement the existing, belonging to various operators, infrastructure, and will be open access, i.e. available to all telecommunication operators under transparent and non-discriminatory conditions. The infrastructure will comprise passive elements (ducts, chambers, dark fibres, etc.) as well as co-location facilities (where operators will be able to install their equipment) necessary to establish and maintain the broadband network. The infrastructure will altogether form the MBN. The project does not *a priori* favour any specific technology. However, the preliminary analysis suggests that the optical fibres are an optimal choice. The scope of investment will be determined for each county separately and will depend on the size of the market failure in the specific area. The created infrastructure will be owned by the Malopolska Region and the private partner will be selected in an open tender. The latter will be responsible for designing, building and operating the MBN, and will be an infrastructure operator.

**Romania** did not take part in SF between 2004 and 2006, but for the period 2007-2013 it receives more than EUR 30 billion for investments in almost all the economic sectors. The broadband development is one of the categories which can be financed from SF. There is no dedicated strategy for the broadband developments.

In **Slovakia** the broadband strategy was adopted in 2005, titled 'National Strategy for the Broadband Access'. Its main objective is to achieve the level of developed European MS within the next 5 to 8 years. Slovakia is one of the least developed EU MS in terms of broadband access. One of the main reasons for this is the inadequate development of networks. The relevant OP concentrates on the least commercially attractive areas as a means of ensuring universal access.

In **Slovenia** the main aim of the National Broadband Strategy was to ensure broadband for all by 2010, and access speeds of at least 2 Mbps to 98% of the population by 2012. The Single Programming Document for Slovenia defines the development of information society as a horizontal priority; all measures have to take full advantage of IS services in terms of eligibility and in terms of improving access, use

and affordability of ICT. Measures: modernising the public sector; stimulating demand in the private sector; developing content; raising digital skills. The only vertical priority relevant to the development of the information society has been priority no. 1 'Promoting Productive Sector and Competitiveness', more specifically its measure 1.4. 'Economic Infrastructure and Related Services'. Its objective has been 'establishing ICT infrastructure that will secure high speed broadband, internet connectivity for research, education and business environments'. For the period 2007-2013 the OPs of Slovenia are: OP Strengthening Regional Development Potentials, and OP Development of Environment and Transport Infrastructure. The amount allocated for telephone infrastructures (including broadband networks) was EUR 70.013 million.

In most NMS-10 broadband related developments increased in 2007-2013 (Table 3). The two exceptions were Hungary and Slovakia, but in these countries the amount for broadband developments for the period 2004-2006 included other information society related developments, so in fact we cannot really speak about a decrease.

For the period 2007-2013 broadband related developments represented a significant proportion of the available funds, amount to 1-9% of the total amount of SFs (and Cohesion Fund). For the period 2004-2006 Slovakia spent the biggest proportion of SF on broadband developments (8.9%), and in the period 2007-2013 the Czech Republic, Latvia and Lithuania will spend the largest proportion of SF on broadband developments.

With respect to population, the amount for broadband developments/capita in the period 2007-2013 is the highest also in the Czech Republic, Latvia and Lithuania. The lowest broadband developments/capita indicator in this period was noticeable in Bulgaria, Hungary, Romania and Slovakia.

## Discussion and conclusion

The role of capital cities in the economies of NMS-10 is crucial, more important than in the EU-15. This is also true for Internet use and access to broadband. The share of rural population and its importance in the country's settlement structure is significant, although the rural population seems



to be less innovative and lagging behind in broadband coverage and the use of more developed service packages. Different settlement structures call for different IT development strategies, regional and IT policies, particularly concerning broadband. The key questions are: how to bridge the digital gap among settlement types, hierarchical levels and in some cases among regions and localities; how could broadband developments influence the cohesion, the level of employability, access to the information, access to the eServices including health, education and vacancies. Projects financed from SF assist these targets.

Our research is a work in progress. In this paper we collected on the one hand data on regional disparities in broadband and, on the other, we tried to put together details in all NMS-10 of projects/policies aimed at broadband developments, but our opportunities were limited to a great extent.

Regional disparities regarding broadband access and the spatial structure of broadband markets in NMS-10 were and are still huge. There is a spatial hierarchy in broadband developments as well, where there is a decrease of broadband access from the top of the hierarchy (usually the capital cities) to the bottom (rural areas). Moreover, until now broadband developments financed from public resources supported outdated technologies and, according to Neelie Kroes, the Cohesion Funds and Rural Development Funds have not been used efficiently for broadband developments. Thus a decline of the relative digital divide could not result, even though the broadband related expenditures increased in the period 2007-2013 in most NMS. On the basis of our analysis, in the future it is important to invest only in the state-of-the-art technologies, if we are to support under-served rural areas.

Regarding the type of the broadband developments the most important fields of funding from SF in the NMS-10 are: the development of rural areas, Next Generation Access networks, superfast broadband networks. In some countries there were specific projects related to broadband, e.g. in Bulgaria the development of optic infrastructure among regional and major cities and integration Bulgaria's network with European optical infrastructures by 2015. The development of superfast broadband networks received priority in Estonia, but it is important everywhere.

We conclude that without effective national sectoral and regional policies, the gap between rural and urban areas will not decrease. The relative digital divide is this persistent, even though in most of the NMS-10 broadband related expenditures increased in the period 2007-2013.

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## Rural areas development as a field of intervention of the European Union Cohesion Policy after 2013

Sustainable rural development is one of the social, economic and territorial cohesion aspects of the European Union. In the current financial perspective 2007-2013 rural areas development is supported by the Common Agricultural Policy, which does not always contribute to improvement of their vitality and cohesion with urban areas. The main theses organising the analyses presented in this paper are as follows: The problem lies in the division of the funds into particular priorities of rural development and the rural development is still dominated by the agriculture approach. The European Commission and the Member States' approaches to rural development focus on agricultural production and improving its conditions or environment protection. Cohesion Policy instruments intervention will be an essential condition for sustainable rural areas development. One of the key research issues concerned with rural areas development is territorial orientation in programming of the Structural Funds in the next financial perspective 2014-2020. Integrated rural development requires different instruments of development in order to stimulate non-agricultural economic, social and cultural activity of rural residents.

**Keywords:** European Union, rural areas, Common Agricultural Policy, Cohesion Policy, Structural Funds

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### Introduction

Starting in the second half of 2011, negotiations on a new financial perspective 2014-2020 in the European Union (EU) provide an opportunity to review and assess the functioning of many policies aimed at contributing to the harmonious development of the EU's regions and Member States (MS). Sustainable rural development is one of the social, economic and territorial cohesion aspects of the EU. Because rural areas cover 91 percent of the EU territory, inhabited by more than 56 percent of the population, it is worth being interested in their condition. This distribution is different in the individual MS, some such as Denmark, Ireland, Sweden and Finland are of typical village character, while others such as Malta, Belgium, the Netherlands and United Kingdom are relatively more urban.

Irrespective of the percentage share of rural areas in the state's spatial structure, these areas are often characterised by social and economic backwardness, which can be observed by analysing specific indicators in relation to the development of urban and metropolitan areas. Lower ratios of GDP and employment, higher levels of unemployment, which are connected with the sectoral structure of the rural economy, demographic problems with a bigger percentage of people over 65 years of age in the population structure, female migration in the direction of urban regions, a low birth rate, as well as low quality of human capital constitute a barrier to the sustainable development of many European villages. The population living in rural areas is increasingly threatened by social exclusion and poverty due to lower revenue, but it also has a limited access to social and commercial services such as health, education and banks (EC, 2008). Especially regions more remote from the urban centres have a problem with accessibility.

At the same time, rural areas play important roles in society due to their diversity and their internal capacity. The most important one still concerns agriculture and food production, industrial raw materials and energy but, besides that, important roles are related to the state of the environment, landscape, settlements, tourism and recreation. They

offer Europeans goods and services that do not exist in the city areas. Rural areas development is a challenge for the EU's policies, which should reduce developmental barriers and promote the unique, specific rural potential in the interest of all citizens (Garzon, 2006).

This paper attempts to assess the EU's Common Agricultural Policy (CAP) that has been conducted towards the rural areas between 2007 and 2013, and the Cohesion Policy tasks planned for the rural areas in the near future. The actions taken for the rural areas at Community level do not always contribute to improvement of their vitality and cohesion with urban areas. The paper does not refer to the sustainable development of agriculture issue nor environmental protection. In this aspect, the EU conducts the active and effective policy in the second pillar, whereby it influences the development of rural areas.

### Rural areas – the weakness of the Common Agricultural Policy 2007-13

Rural development has been the subject of the second pillar intervention of the CAP of the EU since 2007. Establishing a pillar equivalent to the first (market) pillar proved to be a not very successful attempt to implement the idea of integrated rural development. The market-price policy is focused on the direct support of agriculture, while rural areas development is implemented according to the three thematic axes:

- improving the competitiveness of agricultural and forestry sector - economic axis
- land resource management - environmental axis
- improving the quality of life in rural areas and promoting diversification of rural economy - social axis (Michalewska-Pawlak, 2010)

The Leader approach has been added to the three thematic axes as Axis IV. It focuses on the development and implementation of projects by local partnerships in order to

stimulate the bottom-up activity of rural communities. Local Action Groups created under the initiative have the power to adjust policy development to their local needs. The EU has introduced a strategic approach to rural development by developing Community Strategic Guidelines for Rural Development and obliging the MS to prepare national rural development plans, taking EU priorities into account (EC, 2009).

This model appears to encourage the sustainable development of European rural areas, but only theoretically. The problem lies in the division of the funds into particular priorities of rural development. The European Agricultural Fund for Rural Development (EAFRD) has operated since 2007, to which over EUR 96 billion will be allocated until the end of 2013 (EC, 2005). Only 8 percent of total CAP funds have been directed to the country pillar, which means that rural development is still dominated by the agricultural approach. The main beneficiaries of the CAP are still farmers, forest owners and food processing enterprises. It is noted that the proportion of people working in agriculture, forestry and fisheries is only 8.3 percent of total employment in the EU. Although their number is steadily decreasing, the policy is justified on the basis of the important functions of the agriculture in society.

The problem is that most of the funds in the second pillar have been dedicated to reforms in agriculture and forestry sector, marginalising issues related to the development of non-agricultural economic activities, services, education, culture, human and social capital. The development of agriculture, food security, environmental protection, fighting climate change and conserving biodiversity are priorities for development across the EU. Still, the reduction of rural areas only to those aspects will result in the maintenance of the sectoral nature of European rural areas and outflow of other social groups that will not find in rural areas sufficient conditions for living, implementation of forms of economic activity alternative to agriculture and improvement of the quality of life. To maintain a balance between the individual elements of rural development, a minimum level of funding for the axes was established: 25% for axis II, 10% for axes I and III, and 5% for LEADER (EC, 2005). An analysis of expenditure by all of the MS shows that for implementation of each priority axis they will allocate: axis I - 33.7%; axis II - 43.9%; axis III - 13.4%; and axis IV - 6.1%.

It means that only 19.5 percent of EAFRD resources available in the second pillar will be spent on non-agricultural and non-environmental rural development aspects (EU, 2009). Malta (35 percent), the Netherlands (33.7 percent), Bulgaria (27.9 percent), Germany (28.5 percent), Romania (25.6 percent), Poland (23.2 percent), Latvia (20.1 percent) and Estonia (19.4 percent) have the highest levels of expenditure on axis III. Axis IV is most supported by Spain (11.3 percent), Portugal (10.1 percent), Ireland (10 percent), the Netherlands (9.9 percent), Denmark (9.6 percent) and Estonia (9.6 percent). Despite the great importance of agriculture and the environment to the condition of the European countryside, the problems and needs of other social groups must not be forgotten. Sustainable development implies not only care for the environment and its resources, but also economic development which can be used by all rural residents,

measured by their access to educational services, health or information. Development cannot be considered as restricted to the heritage that we leave to future generations, without due attention to solving the current problems of rural communities.

The current CAP predominantly supports agricultural or agro-forestry functions in rural areas, condemning the non-agrarian, the economically mixed, the typical residential, or tourist areas to marginalisation. This sectoral approach to rural areas causes the development gap between rural and urbanised regions and among different types of rural regions. According to ESPON (2007), the CAP supports the central and rich regions more strongly than the less developed and peripheral regions.

## Rural development in the light of the reform of the CAP after 2013

The current pan-European debate on the reform of the CAP also defines the future direction of operations relating to rural development. An analysis of the positions of the MS, European Commission (EC) and European Parliament shows that there is general agreement to maintain the second pillar of the CAP associated with rural development. The conclusions of the successive Presidencies include statements concerning states aiming at the growing importance of rural development in EU agricultural policy. On 13 December 2007 11 MS signed the Declaration on the CAP after 2013 initiated by Poland, which stressed the desire to 'strengthen the second pillar' after 2013 (PAP, 2011). Still, the main model for rural development has to be implemented based on investments in the agricultural and environmental sector. Rural development will be ensured by the innovative, competitive and sustainable agriculture that will provide consumers with quality food and other public goods. An equally important aspect of development remains the quality of the environment and biodiversity, while the conclusions ignored the issues related to the diversification of business lines and development of services in rural areas. This implies that the MS continue to promote the sectoral approach to rural development.

Analysing the content of the debate and the positions of individual MS, it can be noted that the subject is dominated by the conflict concerning direct subsidies and other market instruments, supporting farmers' incomes. However, the current system of direct subsidies not only does not support the development of agriculture, but also preserves the rural development backwardness. It causes the hidden unemployment and the strengthening of the disadvantaged, fragmented agrarian structure, especially in the Central and Eastern Europe countries. For example, 2 hectare farms constitute 46 percent of farms in Poland and direct payments only intensify this fragmentation (CSO, 2010). The current system of direct payments encourages unprofitable farms and does not support farmers' motivation for entrepreneurship and innovation. Direct payments are transferred regardless of directions of agricultural production, the size of farms and their contribution in the production of public goods. It does not

take into account the regional differences and the different needs of agriculture of the MS. This model of development has an exogenous character and makes the agriculture sector depend on social transfers (Grosse, 2007; Hardt, 2010). Sustainable rural development and sustainable development of agriculture are the common interests of all European citizens but the system of payments is too complicated, based on historical criteria and not transparent (Halmai and Vászary 2010).

The EU's institutions, both the Parliament and the EC, similarly interpret the path of development of rural areas, indicating in each of the CAP documents after 2013 that the future of rural areas depends primarily on the dynamics of growth and competitiveness of the agricultural sector. Rural areas are a source of supply of adequate quantities of safe food, and other public goods, including the quality of the environment. Integrated rural development remains marginal to the sectoral approach focused on agricultural production and improving its conditions. The EC's Communication of 18 November 2010 (EC, 2010) indicates the need to strengthen the Leader initiative through increased funds for its implementation; simultaneously it will make attempts to increase the results orientation and quantify the goals. This announcement aims at increasing the effectiveness of Leader: however, it should not be forgotten that the initiative also brings 'soft' effects that are not measurable through quantitative indicators, which affect the relationships and trust between local authorities, the business sector and rural civil society organisations. The Leader approach is particularly important for the post-communist MS where passive attitudes among the rural residents predominate. The 'hard' effects generated by the Leader axis are as important as the idea of decentralisation of public policies and the method of activating local communities. The main aim of this approach is promotion and popularisation the bottom-up model of rural development (Chevalier and Maurel, 2010; Futymski and Kamiński, 2008). Research shows that local authorities try to dominate the structures of the Local Action Groups but even so the principles of operations of the LAG form strong links between authorities, the community and local firms (Zajda, 2011).

EC (2010) stresses that the development of other sectors of the rural economy, such as food processing, tourism and trade can be carried out only in the context of a strong and competitive agricultural sector. Adverse demographic changes in rural areas are of critical concern to the EC in the context of an aging rural population. Therefore, the EC plans to take several actions to enhance the attractiveness of agriculture as the economic activity of young people. A positive aspect concerns the indication by the EC of the need for sustainable rural development in the territorial aspect of strengthening human capacity at local level and to link rural areas with urban centres more strongly. However, there is a lack of specific actions that would serve the above objectives. Although the EC is responsible for making policy proposals, the Agricultural Council has the final word (Fouilleux, 2004).

A European Parliament resolution concerning the future CAP points out that, next to the development of agriculture, it should also contribute to the maintenance and development

of rural communities and their cultural diversity. In contrast to the EC, the Parliament recognises the need 'to reduce economic and social disparities between rural and urban communities so as to avoid increasing abandonment of land and the depopulation of rural areas, which intensifies the isolation of rural areas'. Referring to the adverse demographic change, the Members indicate the need to attract especially the younger generation and women to the rural areas, by creating various opportunities for their economic and social development. The Members also proposed specific measures intended to encourage these groups to settle in rural areas: low-cost loans for investment and training (EP, 2010). They can be a source of income diversification in rural communities in the future.

## Rural areas – a challenge for cohesion policy after 2014

The new budget perspective, financial crisis and demographic problems in Europe will force EU decision-makers to review their approach to rural development and promote greater involvement of Cohesion Policy in their economic, social and cultural revitalisation. That will not be an easy process since it requires coordination with other policies, mainly with the CAP, but also environmental, social and innovation policies. Cohesion Policy has the necessary instruments in the form of Structural Funds – the European Regional Development Fund and the European Social Fund – which can be directed to finance regional development programmes prepared specifically for the needs of rural areas. Territorial orientation will allow a more flexible approach to rural areas. In the 2007-2013 financial perspective the Cohesion Policy funds are also designated for rural areas, but there is no objective separately dedicated to these areas. The effectiveness of implementation of this policy is determined by many factors. According to the subsidiarity principle, Cohesion Policy must to be completed with a state economic policy and be implemented in the appropriate institutional environment (Cappelen *et al.*, 2003; Bradley, 2006). Its results will be more positive if public authorities, entrepreneurs and R+D institutions are partners and participate together in its implementation.

The programmes prepared by the MS, in consultation with regional and local authorities, should take into account the specific developmental needs of each region, based on its internal capacity. Only introducing the obligation to draw up a separate rural development programme can be a guarantee that the Community's money will be designated for rural development. Implementation of this request would require a deviation from the rule of one funding operational programme. Only the development of rural infrastructure, innovation and entrepreneurship in individual and social dimension will enable sustainable rural development. It would force a start to the coordinated working between Structural Funds and the EAFRD and European Fisheries Fund. Moving away from the sectoral understanding of rural development policy in favour of integrated and bottom-up operations is a precondition for the effectiveness of this policy (Hardt,



2008; Puślecki *et al.*, 2010.). Specific legislative and administrative solutions should be designed to achieve the goal, not the other way round.

Involvement of Cohesion Policy in rural development would enable a significant expansion of the circle of beneficiaries of assistance, in relation to the status quo. It is all about local communities, local authorities, rural community organisations, and the non-agricultural business sector. Development should focus on economic aspects and should not marginalise the cultural dimension of the functioning of the village. European villages are culturally diverse and this wealth should be maintained by preventing the unification and assimilation of these areas into urban areas. The culture of the village is very broad, covering both tangible and intangible assets. Rural architecture, local food products, handicrafts and folk art represent only a fragment of the rich cultural achievements of the European countryside. It includes also local traditions related to customs and ordinances including songs, dances and language (Błąd, 2010). The cultural layer of the rural areas can have a role in raising the incomes of rural residents through an appropriate marketing policy, for instance through the development of tourism.

Rural development should be implemented in the light of the Europe 2020 economic strategy and should be intelligent, balanced and conducive to social inclusion. Intelligent development means fostering knowledge and innovation by increasing the level of education, using information and communication technologies and their contribution to boosting entrepreneurship and job creation (Anon., 2010). Sustainable development refers to the full potential of rural areas, through investments in the environment, biodiversity preservation, animal welfare and the fight against climate change. Inclusiveness is associated with increased employment, social and spatial cohesion.

The future priorities of rural areas development and Cohesion Policy have strong ground in neo-endogenous development theory. According to some authors, the unique local resources such as climate, environment, landscape, social, cultural and intellectual capital are the background for long-term rural development. The internal forces for improving local capitals are needed simultaneously. The links between rural areas and their institutional, political and economic surrounding are so important. This theory emphasises that the key driving force of development is local institutional capacity for mobilising local resources and benefiting from interactions with the external environment (Ray, 1999; Shucksmith, 2010). In the light of these ideas the priorities are:

**1. Entrepreneurship development** which has not only individual but also social importance in rural areas. Rural areas are characterised by limited access to many services, compared to urban areas; therefore a part of the newly emerging economic entities not only provides jobs, but depending on the profile of their activity, contributes to increasing the quality of life in rural areas. There is special significance in the development of rural clusters and social enterprises. The main sectors of development are: small construction services, commercial, social, educational and consulting services, as well as tourism. It is also necessary to create local networks and advisory services for rural entrepreneurs and those wishing to undertake such activities in order to ensure

their proper development and functioning. People leaving agriculture should have several opportunities to change their profession, which is conditioned by access to training, and career and business counselling.

**2. Improvement of human and social capital** is needed because only 15 percent of rural residents have higher education; hence there is a lack of qualifications for employment in sectors that require specific knowledge and skills. Lack of qualifications is not only a problem in taking up employment in the local labour market but it is also a source of social and digital exclusion. In this context the access to new technologies is as much crucial as the ability to use these technologies.

Citizenship education is as important as professional education. It should include activities stimulating local bottom-up activity, shaping the rural communities' awareness and responsibility for their own existence. The effectiveness of the implementation of rural development policy depends on the inclusion of local communities in these processes, not only as recipients, but simultaneously as subjects of this policy (Wieruszewska, 1999). The success of many local initiatives is dependent on bottom-up activities of local civil society, strong system of information exchange, resources, and mutual cooperation (Triglia, 2001).

**3. Development of social infrastructure**, which will contribute to increasing the quality of life and will encourage social and economic development of rural areas. It is necessary for the efficient conduct of business and for preventing rural areas from turning into dormitories for neighbouring cities. Kindergartens, schools, health centres, educational and cultural centres should create the rural infrastructure. This is a major challenge, especially in the terms of depopulation noted in rural areas and the limited ability of local authorities to cover the costs of use. On the other hand, due to the population ageing special facilities for senior citizens are required.

**4. Improvement of communication links with urban areas**, especially in a situation where rural areas are located near large cities, and providing them with residential and recreational facilities. Rural areas are the locations of industrial investment, hence in order to better integrate urban and rural areas there is a need to expand the transport networks. Improved communication links also facilitate increased access to employment for rural residents in neighbouring cities (Wellemans, 2010). Investments in information and communication technologies facilitate the location of 'urban' economic activities in rural areas. Scientific literature confirms the positive influence of the new technologies on rural areas development (Olechnicka, 2004; Galloway *et al.*, 2011) but it has numerous limitations as well. The Internet plays a special role in stimulating rural business activity (online transactions, relationships with customers and suppliers, access to extended markets).

**5. Changing the image of rural areas as attractive places to live and work** - should seek to disseminate knowledge among society, promotion of rural areas, facilities resulting from living in the country, related to the high quality of life, access to the natural environment, clean air and good water and food quality, as well as peace and quiet. Only through real growth in the quality of life in rural areas and

promoting rural areas, not only areas of the agricultural sector domination, will we be able to stop the outflow of young people from villages to cities and to encourage Europeans to choose the village as a place to live. It not only requires real development activities, but also debunking stereotypes about rural areas.

## Conclusion

To ensure the sustainable development of rural areas the simultaneous involvement of the CAP and Cohesion Policy is essential. While the development of agriculture, environmental protection and conservation of biodiversity are priorities of the CAP, the social, cultural, service aspects of rural development are marginalised in current policy. This leaves an area for future policy intervention which should focus on reducing disparities between rural and urban areas. Integrated rural development requires different instruments of development in order to stimulate non-agricultural economic, social and cultural activity of village residents. An increasing range of activities should be accompanied by the increase in funds for the implementation of rural development policy. In the light of the positions of the MS regarding the budget of the EU after 2013, it seems impossible; therefore, a realistic solution is to change the stress distribution in the current CAP and Cohesion Policy in line with a sharper focus on rural issues in the regional dimension.

Integrated and sustainable rural development can contribute to the greater social, economic and territorial cohesion of Europe, which will bring tangible benefits not only for rural people. Perceiving the rural areas development solely as an area of intervention of the CAP can encourage agricultural sector development but can also cause social and territorial marginalisation of rural areas.

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# The convergence process of the European regions: the role of Regional Policy and the Common Agricultural Policy

The study investigates the convergence of labour productivity in 204 NUTS2 regions of the EU-15 between 1995 and 2006. The main objective of our work was to assess whether and to what extent European Union (EU) policies (Regional Policy and the Common Agricultural Policy) have been effective in promoting economic growth and fostering the process of convergence of EU regions. These policies can have an asymmetric spatial impact, even if some concrete steps have been taken to avoid an excessive concentration of costs or benefits. To verify the effects of EU policies we compare different scenarios: with/without EU policies. Under a methodological profile, we adopt the Solovian model proposed by Mankiw *et al.* (1992). For the estimates we used an econometric approach based on spatial filters with characteristics similar to *Geographically Weighted Regression* (GWR) in order to obtain consistent estimates of both the convergence parameters  $\beta$  and the impact of the conditioning variables, policy measures in particular. Our technique allows the estimation of different convergence rates for each region and management of both the presence of spatial spillovers and structural differences in the regional economies. The results indicate that global convergence rates are comparable to those obtained in some other studies, while local coefficients help to interpret the regional growth paths in a more realistic way. Finally, we utilise a quasi-experimental design, the Regression Discontinuity, for comparing the results of policy interventions, in terms of regional  $\beta$ -convergence rates, with a 'counterfactual' scenario.

**Keywords:** Regional growth, Structural Funds, CAP subsidies, productivity convergence, spatial filters.

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## Introduction

Currently a large share of the European Union (EU) budget is directed toward two policies with different implications at territorial level. The financial resources of the Cohesion Policy (CP)<sup>1</sup> represent about one third of the total EU budget while the Common Agricultural Policy (CAP) accounts for over 40%. The main operational tools of Cohesion Policy are the Structural Funds (SF) whose aim is reducing regional disparities in terms of income, wealth and opportunities. On the other hand, the CAP has a more sectoral focus and is configured with an only partial spatial dimension (EC, 2010), despite the fact that since 1992 it increased its effects on the cohesion process. This means that the territorial impacts of these policies could be asymmetric, not allowing overcoming of territorial disparities.

In considering the distribution of CAP subsidies we should take into account that 'growth in poorer regions is greatly hampered by an unfavourable industrial structure (dominated by agriculture)' (Cappelen *et al.*, 2003, p.640) and that according to Montresor and Pecci (2008) in some regions CAP subsidies were far higher than those of the CP and focused mainly in the more developed regions. Loosely speaking the issue consists of choosing if the distribution CAP subsidies must follow criteria based on efficiency or on equity.

Starting from these previous findings, the main objective of this study is to answer this question: how effective has the EU regional development policy supported by the SF and the CAP been in promoting economic growth and in fostering the convergence of EU regions?

It should be recalled that in 1989, when the EU CP began, there were strong doubts about its effectiveness. These low expectations were mainly related to the poor performances of regional development policies carried out in the Member States (MS) and to the fear that the less developed areas

would not be able to sustain the competition levels of the core areas of the EU (Rumford, 2000; Leonardi, 2006).

In spite of these initial hesitations, it is objective that 'a strong overall regional convergence has taken place in the EU in the last 25 years, in the EU-15 only until the end of the 1990s, with a change of trend since then, in the EU-27 between 2001 and 2005. In the current decade employment rates have been slowly converging in both areas, while productivity of labour has converged only in the EU-12 area' (Barca, 2009, p.105).

It is still difficult to sustain that economic growth was induced from CP rather than from other factors, considering that the effects of CP were not uniform among regions with similar economic conditions. In any case, CP helped to change the nature of European integration: from an integration based mainly on the creation of the single market, it allowed integration based on mutual solidarity. Another important contribution is linked to the rediscovery of the territorial dimension rather than sectoral one. Nevertheless in the Fourth Report on Economic and Social Cohesion (EC, 2007), the European Commission (EC) points out (p.x) that 'In spite of this [economic] progress [of less developed regions], absolute disparities remain large. This is partly as a result of recent enlargement and partly as growth tends to concentrate - during the initial phases of development - in the most dynamic areas within countries'. These doubts about the effectiveness of CP are also reported by Barca (2009) when emphasising the necessity to modify the CP.

In our work we adopt the  $\beta$ -convergence model proposed by Barro and Sala-i-Martin (1992) and by Mankiw *et al.* (1992) for evaluating the effects of SF and CAP subsidies on the convergence of labour productivity in 204 NUTS2 EU-15 regions<sup>2</sup>, between 1995 and 2006<sup>3</sup>. This model sug-

<sup>2</sup> The regions in the sample are shown in Appendix.

<sup>3</sup> In the database of the European Farm Accountancy Data Network (FADN) the information on subsidies at regional level is incomplete before 1995. This is the reason why the beginning of the analysed period does not coincide with 1994, the starting year of the second operational period of SF.

<sup>1</sup> Cohesion Policy in the study stands for Regional Policy.



gests that the regions with lower values of productivity grow faster than those with higher values (less developed regions would catch up with more advanced regions): this implies a negative correlation between growth rates of productivity and the initial levels of this variable. This model has some limitations related to its inability to manage both structural heterogeneity of the economies (Durlauf *et al.*, 2005) and the spatial dependence (Baumont *et al.*, 2003), that can be overcome using a methodology based on spatial filters (Griffith, 2008).

To exceed the limited capacity of this cross-country regression model to take into account structural heterogeneity, we use a model that can be considered a generalisation of the model proposed by Solow (1956) in which each country/region follows this model, but their aggregate production functions are free to change (Brock and Durlauf, 2001). As a consequence, the steady states are free to vary across regions without imposing a preliminary hypothesis about the type of convergence (absolute, conditional or clubs).

The inclusion of spatial filters, derived from a spatial weights matrix, is able to manage both spatial correlation in residuals and spatial interaction among variables and then the spatial spillovers effects (Griffith, 2003). In addition, this spatial econometric tool allows estimating regional parameters that are decomposable into a global trend effect and a local one. In this way we obtain a double indication: the general impact of the variables (shown by their coefficients like in classic ordinary least square – OLS – output) and a regionally targeted effect (a local and univocal coefficient). This represents a decisive step forward for understanding and assessing the specific effects of public policies on growth and socio-economic dynamics.

For evaluating the effects of CP on the convergence process of European regions, we utilise a quasi-experimental design, the Regression Discontinuity (RD), to compare the results of policy interventions, in terms of regional  $\beta$ -convergence rates (the output of the spatial filtering model), with a ‘counterfactual’ scenario to estimate what would have happened in the absence of such interventions.

In order to give a better contextualisation of our results, we highlight some significant outcomes of previous studies on convergence of European regions. A first set does not consider the spatial dimension of the regional economies. Among these, Cuadrado-Roura (2001) tested the hypothesis that regions with an initial level of GDP per capita below the EU average had an above-average growth rate in the period 1977-1994. The estimated convergence rate was less than 2%. López-Bazo (2003) reached similar results examining the period 1975-1996. Among the authors whose aim is to verify the conditional convergence, Fagerberg and Verspagen (1996), Cappelen *et al.* (2003) and Geppert *et al.* (2005) detected a low or absence of the convergence process, while Neven and Gouyette (1995), considering two different regimes for northern and southern EU regions, found a significant convergence rate. Basile *et al.* (2001) identified a significant convergence process; finally Martin (2001) distinguished various groups of regions among Objective 1 regions, in different sub-periods.

The most recent contributions take into account the spatial dimension (Baumont *et al.*, 2003; Fischer and Stirböck,

2005; Dall’Erba and Le Gallo, 2006; Arbia *et al.*, 2010). The inclusion of spatial effects causes a reduction of the estimated speed of the global convergence process to be reduced, but it highlights that the speed of convergence is higher in the EU’s poorest regions.

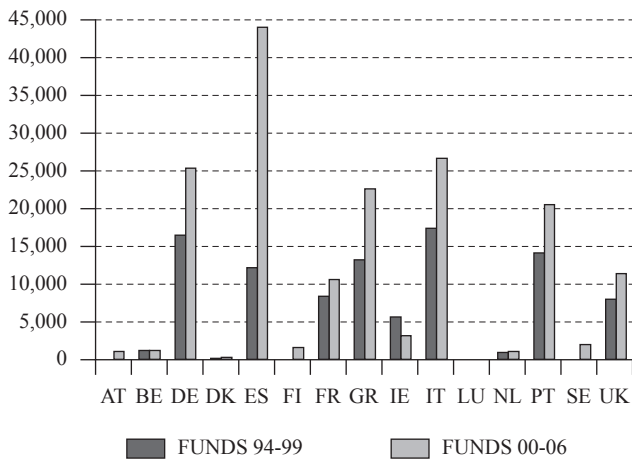
Some authors adopted the  $\beta$ -convergence model to analyse the effect of CP on convergence. Cappelen *et al.* (2003) found that the 1988 reform of SF increased its effectiveness in the poorest regions. Rodríguez-Pose and Fratesi (2004) examined how SF support was allocated among different development axes in Objective 1 regions for the period 1989-1999. They found no significant impact of SF on infrastructures or business support, while investment in human capital had medium-term positive effects and support for agriculture had short-term positive effects on growth.

Ederveen *et al.* (2006) attempted to assess the efficacy of SF following the approach proposed by Burnside and Dollar (2000). Their findings pointed to the absence of a globally significant impact of SF on regional growth but the support allocated in the regions with high quality of institutions was effective, leading to the conclusion that SF are conditionally effective. Dall’Erba and Le Gallo (2007) included the spatial effects in the estimation of a conditional  $\beta$ -convergence model, analysing separately each of the five SF objectives. The results indicate that their impact was insignificant, very small and even, in some cases, negative. In particular, support under Objective 1 was found to have a positive impact in the core regions but an insignificant one in the peripheral regions.

Among the few authors who considered the impact of CAP subsidies in the estimation of the convergence process of EU regions, we recall Esposti (2007) who assessed the consistency of CAP measures with Objective 1 funds for the period 1989-2000. This study found a positive impact of Objective 1 funds on the convergence process of 206 EU Regions and that CAP expenditure did not have a counter-treatment effect, although its positive impact on growth was in fact negligible.

The economic and social cohesion in the EU has become even more important since the accession of Spain and Portugal in 1986 and the adoption of the programme to complete the internal market in 1992. The necessary financial resources for achieving the objectives were obtained through the SF reform. This reform, completed at the end of 1988, identified five objectives to assist the least-favoured regions and to reduce disparities in development in comparison with the most advanced regions.

Objective 1 consisted in promoting the development and structural adjustment of the regions whose development was lagging behind; Objective 2 aimed to convert declining industrial regions; The goals of Objective 3 were combating long-term unemployment; the target of Objective 4 was facilitating the occupational integration of young people; that of Objective 5a was speeding up the adjustment of agricultural structures, while with Objective 5b the intent was promoting the development of rural areas. Objective 1 and other Objectives were mutually exclusive. SF were allocated within operational periods: the first running from 1989 to 1993, the second from 1994 to 1999, the third from 2000 to 2006 and the fourth from 2007 to 2013. During the second



**Figure 1:** Amount of Structural Funds (Objectives 1, 2, 5b) per EU Member State (MECU).

period the Objective 6 (sparsely populated area) was added. The Agenda 2000 agreement reduced the objectives from six to three. Objective 1 was unchanged, while the new Objective 2 brought together the former Objectives 2 and 5b. In our work we consider only the regionally targeted Objectives: 1, 2 and 5b for the second period and Objectives 1 and 2 for the third period<sup>4</sup>.

The absolute value of the resources in millions of Euro (MECU) for each country in the two considered programming periods are shown in Figure 1. Naturally the SF increased significantly in MS with Objective 1 regions: Germany, Greece, Italy, Portugal and Spain, but, excluding for Objective 1, they represented a very small percentage of GVA.

The total CAP subsidies considered in the study<sup>5</sup> are shown in Figure 2. The MS that received the largest shares of subsidies, in absolute terms, were in order: France, Germany, UK and Italy. Generally the amounts of CAP subsidies were 50% bigger than SF. Therefore, at least for the amount of devoted resources, the role of CAP support cannot be considered separately from CP support in evaluating regional development.

The paper is organised as follows: in the next section we describe the empirical and spatial models, and in the following one the estimation result. In the final section we discuss the application of the Discontinuity Regression.

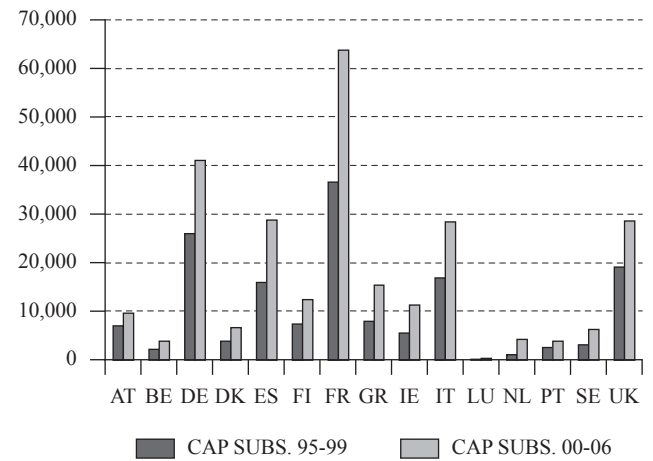
## The empirical and spatial model

In our work we estimate the convergence process on labour productivity by the well-known cross-sectional  $\beta$ -convergence model defined as follows (Durlauf *et al.*, 2005):

$$\frac{(\ln y_{it} - \ln y_{i0})}{t} = \alpha + \beta \ln y_{i0} + Z\varphi + \varepsilon \quad (1)$$

<sup>4</sup> The SF for Objective 2 and 5b, when assigned at national level, were reassigned to eligible regions on the base of their population.

<sup>5</sup> In our study we consider the value of total subsidies, extracted from Standard Result database, that are contained in the variable SE605 of the European FADN. In particular the variable SE 605 covers total subsidies – European and national, I and II pillar of the CAP, coupled and decoupled – excluding subsidies on investments.



**Figure 2:** Amount of Common Agricultural Policy funding per EU Member State (MECU).

where  $\alpha$  represents the constant term,  $i$  is the region index,  $y_{i0}$  is the initial productivity level ( $GVA\_EMP95$ ) (the variables are described in Table 1),  $y_{it}$  is the final productivity level ( $GVA\_EMP06$ ), and  $Z$  is a matrix of explanatory variables.  $\beta$  is the so called convergence coefficient,  $\varphi$  is the vector of the parameters and  $\varepsilon$  the i.i.d. error term<sup>6</sup>.

**Table 1:** The variables entered in the models.

Variable	Description
$GVA\_EMP06_i$	logarithm of local rate of GVA per worker in 2006
$GVA\_EMP95_i$	logarithm of local rate of GVA per worker in 1995
$DISC\_GVA_i$	logarithm of local rate of employment growth (mean between 1995 and 2006) + 0.03
$INV\_GVA_i$	logarithm of local rate of investment on GVA (mean between 1995 and 2006) as proxy of saving rate
$EMP\_AGRI_i$	logarithm of local rate of employment on agriculture on total employment (mean between 1995 and 2006)
$EMP\_SERV_i$	logarithm of local rate of employment on services on total employment (mean between 1995 and 2006)
$LL\_LEAR_i$	logarithm of workers participating in lifelong learning programmes on total workers (mean between 1995 and 2006)
$OBI\_GVA_i$	logarithm of yearly average local level of Objective 1 Fund for the whole period divided by the level of GVA at the beginning of the period
$OB2-5\_GVA_i$	logarithm of yearly average local level of Objective 2 Fund for the whole period plus Objective 5b Fund for period 1994-1999 divided by the level of GVA at the beginning of the period
$SUBS\_GVA_i$	logarithm of yearly average local level of CAP subsidies for the whole period divided by the level of GVA at the beginning of the period

The parameter  $\beta$  is expected to be negative and approximates the speed of convergence towards the steady state: less productive regions should grow faster than more productive. The inclusion of the set of control variables ( $Z$ ) in the model (1) tests the conditional  $\beta$ -convergence hypothesis, which takes place if each region reaches its own steady state, converging in the long run to different levels of per worker

<sup>6</sup> The data about GVA, employment and investment are taken from Cambridge Econometrics' database, while data about lifelong learning participants from Eurostat Regio. Data on Funds allocation are taken from EC (1995a, 1995b, 1999 and 2006).

output. As in Mankiw *et al.* (1992), we included in  $Z$  the physical capital investment rates ( $INV\_GVA$ ) and the term  $DISC\_GVA$  to take into account the variable  $(n+g+\delta)$ , where  $n$  is the employment growth,  $g$  the technological progress, and  $\delta$  the depreciation rate. As suggested by Mankiw *et al.* (1992) we fixed  $g+\delta$  equal to 0.03 while we estimated  $n$ .

In our cross-section growth models (with and without SF and CAP subsidies), in addition to mentioned variables, we added some control variables related to the *social filter* (Crescenzi *et al.*, 2007) able to catch the structures of the regional economies. These variables are somehow connected to the SF and CAP subsidies, as they depict the ‘state of the economy’ where the policy instruments are implemented. We considered the share of services employment ( $SERV\_EMP$ ) and agricultural employment ( $AGRI\_EMP$ ) to capture respectively the sector with higher and lower productivity. We also included the participants of lifelong learning programmes ( $LL\_LEAR$ ) for representing both the degree of accumulation of knowledge and the human capital investment rate.

We estimated two models (where the parameters are free to vary locally) specified as follows:

1 - Base model:

$$(GVA\_EMP06_i - GVA\_EMP95_i)/12 = \alpha + \beta GVA\_EMP95_i + \varphi_1 DISC\_GVA_i + \varphi_2 INV\_GVA_i + \varphi_3 EMP\_AGRI_i + \varphi_4 EMP\_SERV_i + \varphi_5 LL\_LEAR_i + \varepsilon_i$$

2 - Base model + SF + CAP subsidies:

$$(GVA\_EMP06_i - GVA\_EMP95_i)/12 = \alpha + \beta GVA\_EMP95_i + \varphi_1 DISC\_GVA_i + \varphi_2 INV\_GVA_i + \varphi_3 EMP\_AGRI_i + \varphi_4 EMP\_SERV_i + \varphi_5 LL\_LEAR_i + \varepsilon_i + \varphi_6 OBI\_GVA_i + \varphi_7 OBI\_5\_GVA_i + \varphi_8 SUBS\_GVA_i + \varepsilon_i$$

For implementing the spatial filtering model stated above we need to specify a spatial weights matrix able to take into account the institutional, socio-economic and spatial relations among regions. This kind of matrix is a way

to model the externalities as conceived by Krugman (1991). Our spatial weights matrix is based on a *Gravity Model Indices* (Keeble *et al.*, 1981, 1988) because using this indicator we are able to take into account both the distance and potential attraction among regions. The influence (relative economic potential) of a certain region on another, in fact, is directly proportional to the product of the economic activity (or ‘mass’) of the two regions, and inversely proportional to the distance  $dist$  (measured in kilometres) separating them. In the obtained square matrix every row shows the ‘relative economic potentials’ of a determined region with respect to the others. The ‘total economic potential’ of each location is found by summing by row all the ‘relative economic potentials’. In the study, the mass  $m$  for each region is assumed to be equal to the log of employment productivity in 1995, which is the main variable of the used cross-sectional growth model<sup>7</sup>.

The spatial weights matrix for  $n$  regions, with zero on the principal diagonal, is defined as:

$$SW = \begin{pmatrix} 0 & \frac{m_1 \times m_2}{(dist_{1,2})^2} & \dots & \frac{m_1 \times m_n}{(dist_{1,n})^2} \\ \frac{m_2 \times m_1}{(dist_{2,1})^2} & 0 & \dots & \frac{m_2 \times m_n}{(dist_{2,n})^2} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{m_n \times m_1}{(dist_{n,1})^2} & \frac{m_n \times m_2}{(dist_{n,2})^2} & \dots & 0 \end{pmatrix} = \begin{pmatrix} \sum_{i=1}^n \frac{m_1 \times m_i}{(dist_{1,i})^2} \\ \sum_{i=1}^n \frac{m_2 \times m_i}{(dist_{2,i})^2} \\ \vdots \\ \sum_{i=1}^n \frac{m_n \times m_i}{(dist_{n,i})^2} \end{pmatrix} \quad (2)$$

The map of the regional economic potential in Figure 3 is quite similar to that of Copus (1997).

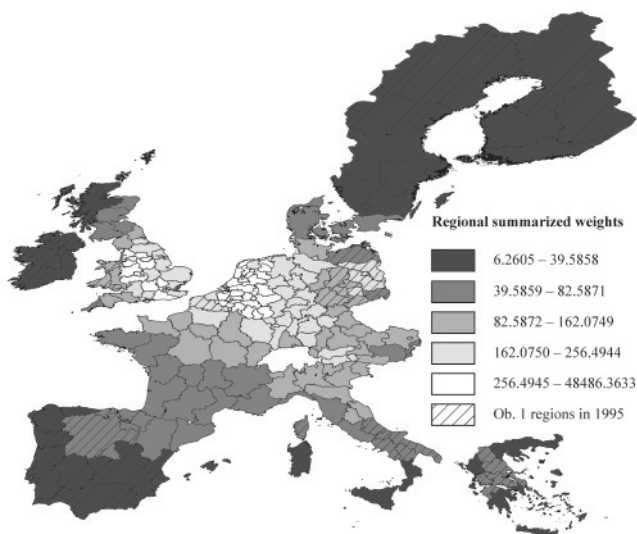
The  $SW$  matrix is standardized using a W coding-scheme (Tiefelsdorf *et al.*, 1999) that keeps the ‘relative economic potential’ of every region with respect to the others standardizing them by row. Testing the presence of spatial autocorrelation among variables using Moran’s test we can exclude the classical assumption of independence of observations for each variable (Tiefelsdorf and Griffith, 2007), justifying the choice of using spatial filtering technique, through which we can restore the assumption of independence of observations for each variable. While Getis’ spatial filters (1995) separately filter each variable splitting its spatial component from the non-spatial one, our spatial filters model is based exclusively on the spatial weights matrix and on its Moran Coefficient ( $MC$ ) defined as:

$$MC = \frac{n}{\sum_{i=1}^n \sum_{j=1}^n w_{i,j}} \frac{\sum_{i=1}^n \sum_{j=1}^n (y_i - \bar{y}_i)(y_j - \bar{y}_j)}{\sum_{i=1}^n (y_i - \bar{y}_i)^2} = \quad (3)$$

$$\frac{n}{1'W1} \frac{Y'M(SW)MY}{Y'MY}$$

where  $i$  and  $j$  refer to different spatial units (i.e. cell centroids) of which there are  $n$ , and  $y$  is the data value in each. The right side of equation (3) represents the matricial form

of  $MC$  where  $M = \left(I - \frac{11'}{n}\right)$  is the matrix in which  $I$  is the



**Figure 3:** Economic potential of the location according to Gravity Model Indices used in our model (EU NUTS2 regions).

<sup>7</sup> Keeble *et al.* (1981, 1988) chose GDP or GDP in PPS like mass variable. In our case, we chose the log GVA per worker in 1995 like mass because it is the main variable of the growth model.



identity matrix of size  $n$ -by- $n$ ,  $I$  is a vector of one dimension  $n$ -by- $1$  and the superscript  $t$  points the transposed matrix. The peculiarity of the  $M$  matrix is that it centres the vector of data value  $Y$ .

Tiefelsdorf and Boots (1995) demonstrate that each of the  $n$  eigenvalues of expression

$$M(SW)M \tag{4}$$

is a  $MC$  value, once it is multiplied by the left-hand term of expression (3), namely  $\frac{n}{1'SW1}$

This allows the extraction from the  $n$ -by- $n$  matrix of uncorrelated orthogonal components (Tiefelsdorf and Boots, 1995). This nonparametric approach has the aim of managing the presence of spatial autocorrelation by introducing a set of variables, the eigenvectors, able to catch the latent spatial association of georeferenced variables (Getis and Griffith, 2002). A set of candidate eigenvectors, that can be selected from the  $n$  eigenvectors on the basis of their  $MC$  values exceeding a pre-fixed threshold value of 0.25 (Griffith, 2003), can be used as predictors instead of not explicitly considered variables (Fischer and Griffith, 2008). In our case the candidate eigenvectors with  $MC > 0.25$  are 27. Since the eigenvectors are both orthogonal and uncorrelated, a stepwise linear regression can be used to achieve this end.

The spatial model used is a transformation of the GWR model (Fotheringham *et al.*, 2002) proposed by Griffith (2008). The model exploits the spatial filters through the construction of a new set of variables created by the product between the spatial filters and the spatial variables.

In a regression model where  $Y$  is a  $n$ -by- $1$  vector that represents the dependent variable,  $\beta_j$  is the  $i$ -th regression coefficient and  $\varepsilon$  is an  $n$ -by- $1$  vector of the random error terms, the linear model with spatial filters incorporates a set  $P$  of regressors,  $X_p = (p = 1, 2, \dots, P)$ , with a  $k$  set of selected eigenvectors,  $E_k = (k = 1, 2, \dots, K)$ , which represent different spatial models, in order to consider the residual spatial autocorrelation in the dependent variable and has the following form:

$$Y = \beta_0 1 + \sum_{p=1}^P X_p \bullet 1\beta_p + \sum_{k=1}^K E_k \beta_{E_k} + \sum_{p=1}^P \sum_{k=1}^K X_p \bullet E_k \beta_{pE_k} + \varepsilon \tag{5}$$

where  $\bullet$  denotes element-wise matrix multiplication (i.e. Hadamard matrix multiplication), and each  $k$  identifies the eigenvector numbers that describe the attribute variable  $p$ , with  $K$  being the total number of these vectors. The regression coefficients, like in OLS model, stand for global values while the eigenvectors represent local modifications of global values. The first two terms (i.e. the global attribute variable coefficients) are multiplied by the vector  $I$ , which also is a spatial filter eigenvector. More precisely, the global values are the coefficients needed to construct linear combinations of the eigenvectors, in order to obtain GWR-type coefficients. The sum of the first and third terms corresponds to the GWR intercept while the sum of the second and of the fourth elements represents the local parameters of the variables. Estimation of equation (5) needs to be followed by collecting all terms containing a common attribute variable and then factoring it out in order to determine its GWR coefficient. The GWR coefficients are linear combinations of

a subset of the  $K$  eigenvectors, with those not in the subset having a regression coefficient value of 0; the GWR coefficients are  $n$ -by- $1$  vectors.

## Estimation results

The global values (i.e. the average of parameters estimated for each region (local values)) of the parameters estimated for each model<sup>8</sup> are presented in Table 2. The convergence rate in model 1 is lower than in model 2: the adding of SF and CAP subsidies has a positive impact on the convergence process, by increasing significantly the global convergence rate, even if the values of their parameters are very low. In both models a negative and significant coefficient is associated to the variables *DISC\_GVA* and *LL\_LEAR*, while *EMP\_SERV* has a positive and significant coefficient. The capital depreciation, as expected, negatively affects economic growth. The negative sign of the variable that catches the participants of lifelong learning programmes could be associated to the short term inability to productively employ high skilled workers. In the more developed regions the investments in lifelong learning are higher but, following

**Table 2:** Global parameters of spatial filtering models (standard errors are shown in parentheses).

Variables	Base model	Base model+ SF+ CAP subsidies
<i>Intercept</i>	0.0185 (-0.0143)	0.0344 *** (0.0129)
<i>GVA_EMP95</i> ( $\beta$ )	-0.0167 *** (-0.0028)	-0.0216 *** (0.0025)
<i>DISC_GVA</i>	-0.0179 *** (-0.0019)	-0.0141 *** (0.0019)
<i>INV_GVA</i>	0.0054 ** (-0.0026)	-0.00003 (0.0024)
<i>EMP_AGRI</i>	0.0005 (-0.0005)	-0.0009 (0.0006)
<i>EMP_SERV</i>	0.0264 *** (-0.0030)	0.0267 *** (0.0030)
<i>LL_LEAR</i>	-0.0045 *** (-0.0008)	-0.0059 *** (0.0009)
<i>OBI_GVA</i>		0.0008 *** (0.0003)
<i>OB2-5_GVA</i>		0.0002 (0.0002)
<i>SUBS_GVA</i>		0.0010 *** (0.0004)
<b>Test against heteroskedasticity</b>		
Studentized Breusch-Pagan test	65.4328	44.249
<b>Spatial autocorrelation of residuals</b>		
Moran's I	0.2926	0.5153
<b>Fit</b>		
R-squared (adj.)	0.9163 (0.8742)	0.9251 (0.8873)
Residual Std. errors	0.0034	0.0032
AIC	-1686.539	-1709.072

Significance: \*\*\* 1%, \*\* 5%, \* 10%

<sup>8</sup> Table 2 shows the values of the coefficients of the variables before to add their associated eigenvectors.



the Solovian model, these regions grow more slowly, hence the negative value of the parameter. The ratio of employment in services sector has a positive and significant impact on economic growth, increasing the convergence rate. The SF for Objectives 1 and CAP subsidies are also positive and significant, while the SF for Objectives 2 and 5b are not significant. As shown in the introduction, the resources for Objectives 2 and 5b were very low and this may be the reason for their lack of effectiveness in terms of economic growth.

The impact on the convergence process of the CAP subsidies is a little greater than Objective 1 funds. This result is rather surprising and should be deeply investigated taking into account the structure of regional economies.

The two models show a high fit with both  $R^2$  above 0.90 and a low Akaike Information Criterion (AIC) and residual sum of square (RSS). These indicators show a strong improvement in comparison with the OLS estimation (for each model the  $R^2$  are about 0.40 and the AIC are higher). Furthermore, the residuals, in both models are not normally distributed<sup>9</sup>, not spatially autocorrelated and homogeneous.

The dominant geographic scale of the collected eigenvectors associated with each variable gives us its geographic scale (Table 3). The sets of eigenvectors connected with the independent variables have mainly a local scale; the only exceptions are *EMP\_SERV* and *LL\_LEAR* in model 2 with a clear regional scale.

The local values, by quintile, of the local  $\beta$ -convergence rates are in Figures 4 and 5. In both models the macro-regions with similar values of rates of convergence do not coincide

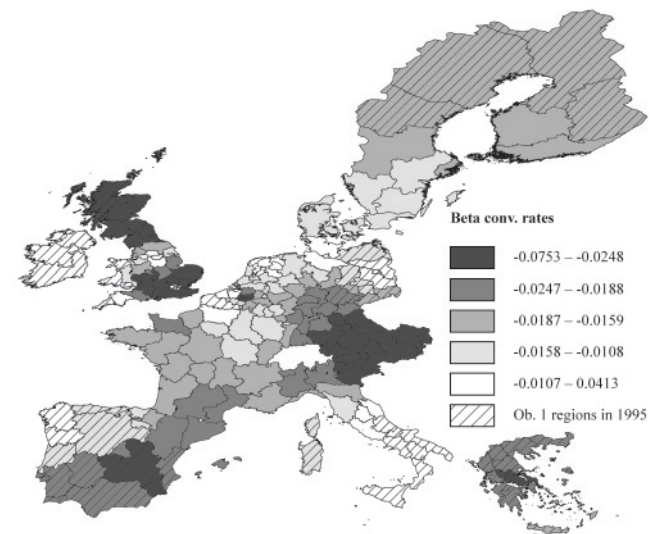
with the national boundaries emphasising the uniformity among neighbouring regions rather than within MS. In the two models the distribution of convergence rates among regions changes: while in the base model the regions with higher convergence rates do not coincide with the Objective 1 regions, in model 2 it happens; the only exception involves the Scandinavian regions which had already reached a high development level in 1995.

The density kernel of the local parameter of convergence is in Figure 6. In model 2 the top peak corresponds to higher convergence rates than in model 1. However we observe a double peak configuration mainly in model 1 in correspondence to 1% of divergence. In model 2 a just evident peak corresponds to a convergence rate of roughly 0.7% and 5%.

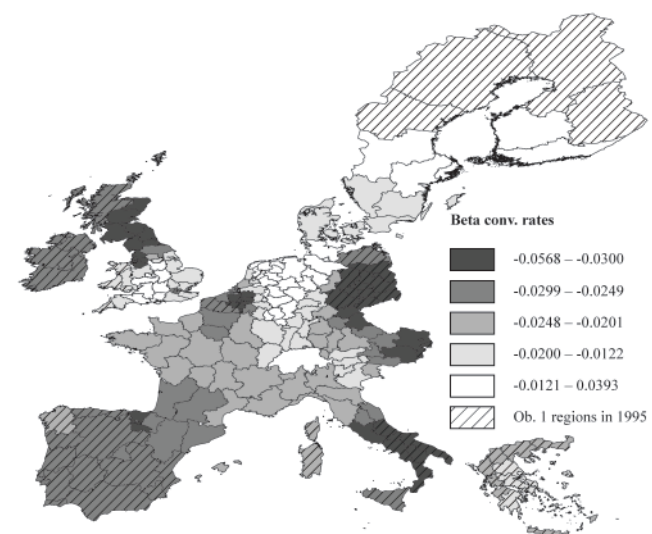
**Table 3:** Selected eigenvectors associated with the explanatory variables of each model.

Variables	Eigenvectors associated to explanatory variables		
	Global scale (MC > 75) from eig. 1 to 4	Regional scale (75 > MC > 50) from eig. 5 to 11	Local scale (50 > MC > 25) from eig. 12 to 27
<b>Base model</b>			
<i>Intercept</i>	E1	E8	E13, E23
<i>GVA_EMP95</i> ( $\beta$ )	-	E8	E26
<i>DISC_GVA</i>	E1	E10	E12, E26
<i>INV_GVA</i>	-	E5, E10	E17, E20, E21, E23, E25, E26
<i>EMP_AGRI</i>	E1, E2, E3	E7, E8	E14, E17, E21, E25, E27
<i>EMP_SERV</i>	E1	E5, E11	E16, E20, E21, E22
<i>LL_LEAR</i>	-	E5, E7, E10, E11	E12, E16, E20, E23
<b>Base model + SF + CAP subsidies</b>			
<i>Intercept</i>	E2	-	-
<i>GVA_EMP95</i> ( $\beta$ )	-	E7	E13, E18, E23
<i>DISC_GVA</i>	E1, E2	-	E18, E26
<i>INV_GVA</i>	E2	-	E23, E25
<i>EMP_AGRI</i>	E2	E8, E11	E18, E25, E26, E27
<i>EMP_SERV</i>	E1	E11, E12	-
<i>LL_LEAR</i>	-	E5, E7, E11	-
<i>OB1_GVA</i>	-	E6, E7	E23, E24
<i>OB2-5_GVA</i>	E3	-	E21, E23, E27
<i>SUBS_GVA</i>	-	E6, E11	E18, E24, E26

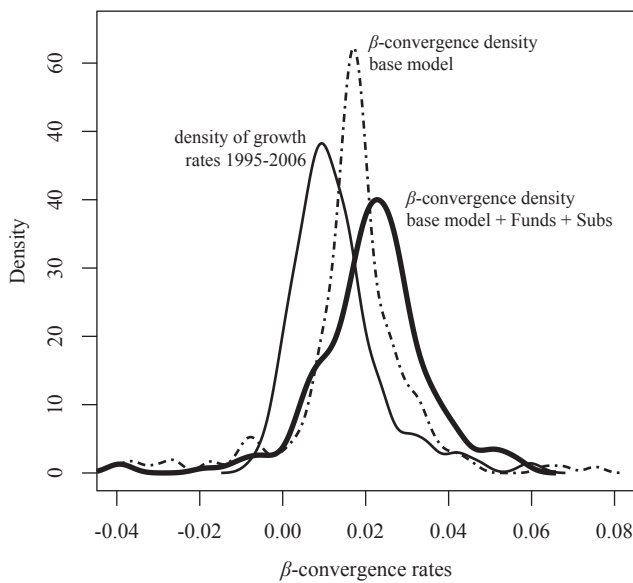
<sup>9</sup> It is interesting to observe that the used spatial weights matrix is able to weigh the regression eliminating hetehoskedasticity. Using other spatial weights matrix it often happens that only spatial autocorrelation is corrected while the problem of non-homogeneity of error terms is not solved.



**Figure 4:** Spatial distribution by quintile ranges of the local  $\beta$ -convergence rates of GVA per worker in the Base model (EU NUTS2 regions).



**Figure 5:** Spatial distribution by quintile ranges of the local  $\beta$ -convergence rates of GVA per worker in the Base model + SF + CAP subsidies (EU NUTS2 regions).



**Figure 6:** Density kernel of estimated convergence rates.

## The Regression Discontinuity analysis

As already seen, the previous analyses on the effectiveness of EU Regional Policy for reducing gaps among EU regions, are unable to reach unambiguous conclusions. This depends on several factors: different periods covered, different techniques used, different empirical and convergence models adopted.

The evaluation of the impact of CP on growth and on convergence processes involves considerable methodological problems, related both to the availability of time series data comparable across countries, and to the difficulty of estimating the counterfactual hypothesis, that is the economic growth achieved in the absence of the Objective 1 SF. In addition, it is not easy to separate the effects of the other factors influencing growth.

As argued by Morton (2009) a counterfactual analysis is essential to identify the effects on regional economies of the EU policies. This approach has been little used, especially when the goal was to compare the Objective 1 regions (defined as ‘treated’ because they receive the Objective 1 SF) to non-Objective 1 regions (‘not treated’). A helpful technique is the Regression Discontinuity (RD), which allows assessing the impact of some policies in case of non-experimental design, i.e. when it is not possible to conduct randomised experiments to determine the effects of these policies. The RD estimates the effects of a policy (in our case the regional parameter of  $\beta$ -convergence rate, the outcome of the model) when the treatment allocation is determined by the level of an observed variable (per capita GDP in 1995, the forcing variable), and in particular whether or not this variable exceeds a certain threshold (cut-off point).

The basic concept of RD is that the average score of the subjects (in our study the EU regions) which fall marginally above (below) the cut-off point, is a valid comparison for the group which falls marginally below (above) the threshold. If the association of the forcing variable and the outcome is continuous, any discontinuity in the forcing variable at the

cut-off point can be interpreted as empirical evidence of the effect of the random treatment: the presence or absence of the Objective 1 SF (Imbens and Lemieux, 2008).

The discontinuity in the RD is based only on the relationship between the outcome and the cut-off point. As a result, close to the cut-off point, we may compare the units in the treated and untreated groups<sup>10</sup>. Moreover, this can be extended to the regions with probability to be close to the cut-off (Lee, 2008). From a methodological point of view, the inference on the RD is comparable with the results of randomised experiments.

In our analysis the RD approach is used for estimating the effects of Regional Policy on the convergence process of the EU regions (see Lee and Lemieux (2009) for a survey on the RD and its main applications in economics). Regions whose per capita GDP is less than 75% of the EU average (Objective 1) are compared with those above the 75% threshold (not eligible for funding); the forcing variable is regional GDP per capita, the cut-off point is the 75% threshold and the treatment is EU Objective 1 funds<sup>11</sup>. Let us here remark that, in line with the basic idea of RD, the treatment (i.e. the Objective 1 funds) is assumed to depend only on whether in region  $i$  the level of GDP per capita is below the fixed threshold. This is a case of ‘sharp design’: the treatment only depends on the level of GDP per capita (Imbens and Lemieux, 2008).

In our case the hypothesis is that the average outcome for regions just above the cut-off point can represent a valid counterfactual for those just below the threshold. The comparison of the  $\beta$ -convergence rates of regions receiving EU funds with that of unassisted regions at the cut-off point allows us to identify the locally average policy effect at the threshold. Nevertheless, in our analysis, the RD suffers two main disadvantages. Firstly, the low number of observations close to the threshold determines a trade-off between the size of the interval in the neighbourhood of the cut-off point and the accuracy of the statistical estimates. Secondly, the convergence rates present a high variability with respect to the initial level of the GDP per capita. The limited number of observations close to the cut-off point might identify a group of regions with features that differ markedly from those of unassisted regions, compromising the accuracy of estimates. In the light of these problems, at this stage, we only propose a graphical analysis.

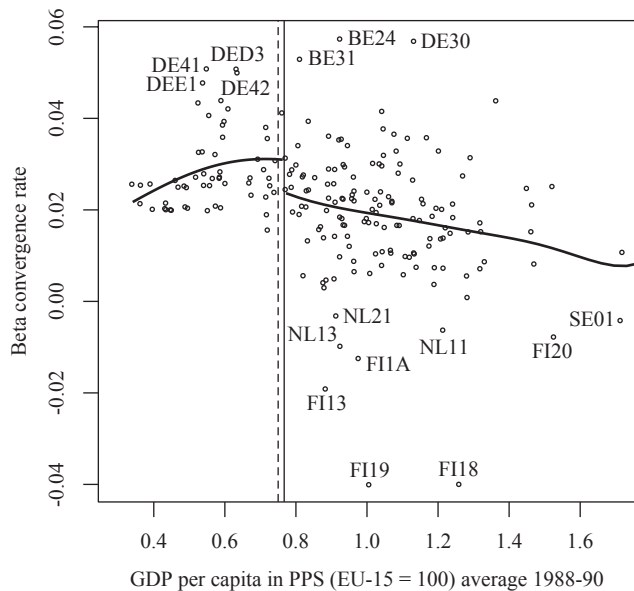
Lee and Lemieux (2009) argue that a simple way to evaluate the effects of the treatment (the presence of Objective 1 funds) is to plot the relationship between the outcome variable (the regional  $\beta$ -convergence rates) and the forcing variable (the levels of GDP per capita) per region, on either sides of the cut-off point. If there is no visual evidence of a discontinuity in the graph, it is unlikely that more sophisticated regression methods will yield a significant policy effect.

<sup>10</sup> Lee (2008) shows that the RD is equivalent to a local random assignment around the cut-off.

<sup>11</sup> According to this division, 56 regions are below the threshold of 0.75 and 148 above. For coherence with the previous analysis, the calculation of average GDP in PPS was carried out using the Cambridge Econometrics database whose data cannot be fully compatible with those used by EU in the determination of the Objective 1 eligible regions. According to our calculations 7 of the 56 regions below the threshold were not eligible for the Objective 1, while, among the 148 regions above 75% there were 14 regions: (i) eligible for the Objective 1 only in 2000-2006, (ii) phasing-out in 1994-1999 or in 2000-2006; (iii) with only part of their territory eligible for the Objective 1.

**Table 4:** Average incidence in Objective 1 and other EU-15 regions: (i) SF Objective 1 (1994-2006) per inhabitants and as percentage of total GVA; (ii) CAP subsidies (1995-2006) per person employed on agriculture and as percentage of total GVA.

		Obj. 1 funds 1994-2006 / inhabit. 1995 (euro/inhabit.)	CAP subsidies 1995-2006 / agric. empl. 1995 (euro/agr. empl.)	Obj. 1 funds 1994-2006 / GDP 1995 (%)	CAP subsidies 1995-2006 / GDP 1995 (%)
Below	56 regions	2,435	56,308	22.50	18.10
Cut-off point	only Ob. 1 regions	2,783	56,039	25.80	19.30
Above	148 regions	107	68,863	0.62	6.88
Cut-off point	only non Ob. 1 regions	0	67,672	0	6.10



**Figure 7:** A comparison of the  $\beta$ -convergence rates of Objective 1 and other EU-15 regions (Base model + SF + CAP subsidies).

The results of the nonparametric technique proposed by Bowman *et al.* (2006) are shown in Figure 7. The regional  $\beta$ -convergence rates of the model 2 are plotted against the level of GDP per capita (in PPS), average 1988-1990<sup>12</sup>, standardized with respect to the EU-15 mean value (equal to 100). The presence of discontinuity is significant (p-value 0.033) at the cut-off point 0.767 (solid line), which is very close to 0.75 (dashed line), the separation level of ‘treated’ and ‘not treated’ regions. On average, regions with GDP per capita less than 0.75 present higher  $\beta$ -convergence rates than other EU-15 regions. The existence of a clear discontinuity at the cut-off point is supported by the graph. The non-parametric regression line shows a negative jump moving from regions with GDP per capita less than 0.75 to the ones with GDP per capita above the 75 per cent threshold.

Finally, using this division between regions, we calculated the total SF Objective 1, for the period 1994-2006, per 1995 inhabitants and the incidence on 1995 total GVA; the total of CAP subsidies (I and II pillar), for the period 1995-2006, per 1995 agricultural employee and the incidence on 1995 total GVA (Table 4). The two groups of regions are characterised mainly by the presence, or absence, of the Objective 1 SF, while the CAP subsidies for agricultural employment are comparable between the two groups of

regions, although their impact on total GVA, as expected, is much higher in Objective 1 regions.

## Discussion

Our study allows some final considerations. In terms of  $\beta$ -convergence rates, our results are in line with the ones of Ederveen *et al.* (2006) and show an improvement in comparison with the study of Cappelen *et al.* (2003). Furthermore, the analysis confirms the results obtained in other recent studies (e.g. Arbia *et al.*, 2010). In the period 1995-2006 a weak convergence process of labour productivity occurred in the 204 EU-15 regions analysed, although with significant differences among the European regions.

According to the results of model 2 the relative positions of the regions in term of convergence rates change with respect to model 1: in model with SF and CAP subsidies the more economically disadvantaged regions at the beginning of the considered period show (with respect to the other regions) the highest relative  $\beta$ -convergence rates. This is in line with what is suggested in previous studies on the effects of CP, in particular Leonardi (2006). In addition to this finding we must add that, with respect to the base model where the regions with parameter of  $\beta$ -convergence less than -0.025 number only 39, in model 2 we observe that all regions with GDP per capita lower than 75 (Objective 1 regions) increase, in absolute terms, their convergence rates: the 80 regions with  $\beta$ -convergence rates less than -0.025 are almost always located in peripheral areas of the EU. They include nearly all of the Austrian and Belgian regions, a number of German regions, especially those belonging to the former DDR, many Spanish regions, four regions of France, Irish regions, almost all the regions of central and southern Italy, a Dutch region, the Portuguese ones and half of the UK regions.

These aspects confirm the effectiveness of the two support measures but do not allow to determine which is the most appropriate without looking at the regional economic structure.

The number of regions that diverge is notably reduced (from 17 to 9) when CAP and SF are included.

Through the Regression Discontinuity approach it is possible to compare the results of less-favoured regions (mainly Objective 1) with those of the most developed. First of all Objective 1 regions reached a higher speed of convergence but the contribution of SF to the convergence process, in relation to regionally targeted Objectives 1, 2 and 5b, is not unequivocal. Only Objective 1 SF has a positive and significant impact, although very limited, while the contribution of Objectives 2 and 5b SF is not significant. The absence of significance for these SF can be explained by looking

<sup>12</sup> To define regions receiving SF the indicator of GDP per capita is measured by the EC in the last three years at the time of closing of the negotiations. For the period 1994-1999, the years were: 1988, 1989, 1990.



from one side at the limited amount of resources allocated to these regions, and from the other at the eligibility criteria of Objective 2 areas: although the 'regionalised' target, it differs among different regions and countries because the eligibility depends on a population ceiling and other specific criteria. This means that the socio-economic conditions are not uniform across eligible EU regions.

Contrary to expectations, CAP subsidies have a positive impact on the convergence process little bit higher than Objective 1 funds. This result is not a foregone conclusion. In absolute terms the highest CAP subsidies refer to regions outside Objective 1, where the impact of the CAP subsidies on economic growth at territorial level may be almost irrelevant when we consider only the primary sector. On the other hand this result confirms the findings of Montresor and Pecci (2008) but also gives new and important indications about the interpretation of the effects of CAP subsidies. If the analysis moves to the complex system of interdependencies between agriculture and the food industry, it can be inferred that the impact of CAP subsidies may be positive also for the less developed economies, as the increasing relationships allow a better exploitation of agricultural production. We could here recall a sort of 'big push' due to the indirect effect of CAP subsidies on less developed economies: the spatial spillovers exerted by (not necessarily poor) regions may help the other regional economies to overcome deficiencies in private incentives that prevent firms from adopting modern production techniques and achieving scale economies. As a consequence the effects of CAP subsidies are not only restricted to the rural and agricultural sector, but they affect the entire economy.

In light of these results, the recent EC budget proposal (EC, 2011) to not significantly reduce the resources for the CAP from 2014 to 2020 and to propose a change designed to lead to a fairer and more equal system of support across the EU and to ensure a more equal distribution of direct support, suggests that, in the future, these positive effects on growth processes of EU regions will be further developed.

It can also be assumed that in less economically advanced regions (to follow Cappelen *et al.*, 2003) the CAP subsidies, even if smaller, since the agri-food sector is important in their economies, have been a significant support to economy of those regions.

Under a methodological profile the spatial econometric technique used in our study allows a clear progress for analysing the convergence process and the estimation of local  $\beta$ -convergence rates. This technique permits, *inter alia*, examining the convergence process without identifying *a priori* the type of convergence, i.e. conditional or convergence clubs. As a consequence, for the interpretation of the results, beside the structure of the economies, we must take into account the existence of spatial interactions related to spatial weights matrix. In addition to the SF impact, in fact, there are the effects induced in the economies of each region from the economies of surrounding regions.

Finally, these results show that the path for analysing the economic convergence in the EU is still long. In particular, doubts about the ability of the SF to ensure sustainable economic growth and to reduce the gaps between centre and periphery of Europe still seem to be well founded.

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## Appendix

The EU NUTS 2 regions in the sample.

NUTS	$\beta$ model 1 (%)	$\beta$ model 2 (%)	NUTS	$\beta$ model 1 (%)	$\beta$ model 2 (%)	NUTS	$\beta$ model 1 (%)	$\beta$ model 2 (%)	NUTS	$\beta$ model 1 (%)	$\beta$ model 2 (%)
AT11	-6.32	-3.90	DED1	-1.82	-4.30	GR12	-1.98	-2.03	PT16	-1.38	-2.55
AT12	-6.76	-4.09	DED2	-1.60	-3.56	GR13	-1.97	-2.08	PT16	-1.38	-2.55
AT13	-7.53	-4.35	DED3	-1.46	-5.03	GR14	-2.30	-1.99	PT17	-1.97	-2.58
AT21	-3.32	-2.71	DEE1	-1.36	-4.74	GR21	-1.88	-2.13	PT17	-1.97	-2.58
AT22	-4.10	-3.11	DEE2	-1.74	-4.03	GR22	-1.93	-2.14	PT18	-2.08	-2.63
AT31	-3.41	-2.92	DEE3	-1.53	-3.19	GR23	-2.45	-2.01	PT18	-2.08	-2.63
AT32	-3.26	-2.64	DEF0	-1.07	-0.80	GR24	-2.53	-1.95	SE01	-1.62	0.39
AT33	-3.58	-1.81	DEG0	-2.02	-3.24	GR25	-2.41	-2.00	SE01	-1.62	0.39
AT34	-2.59	-2.01	DK	-1.45	-1.53	GR30	-2.26	-1.98	SE02	-1.59	-0.39
BE10	-2.57	-5.38	ES11	-0.81	-2.48	GR41	-1.92	-2.00	SE04	-1.50	-1.83
BE21	-1.93	-3.27	ES12	-1.11	-2.52	GR42	-1.82	-2.04	SE06	-1.60	-0.75
BE22	-1.72	-1.63	ES13	-1.36	-2.70	GR43	-1.88	-2.06	SE07	-1.63	-0.73
BE23	-0.79	-3.51	ES21	-1.42	-3.06	IE01	4.13	-2.78	SE08	-1.67	-0.11
BE24	-2.91	-5.68	ES22	-1.66	-2.97	IE02	3.73	-2.68	SE09	-1.55	-1.39
BE25	-0.50	-2.97	ES23	-1.52	-3.09	ITC1	-1.91	-2.15	SE0A	-1.55	-1.52
BE31	-2.77	-5.25	ES24	-2.08	-2.69	ITC2	-1.89	-2.12	UKC1	-4.14	-3.52
BE32	-1.28	-3.54	ES30	-2.39	-2.76	ITC3	-1.84	-2.16	UKC2	-4.58	-3.59
BE33	-1.64	-1.33	ES41	-1.58	-2.67	ITC4	-2.23	-2.01	UKD1	-3.29	-3.63
BE34	-1.58	-1.56	ES42	-2.60	-2.70	ITD1	-3.75	-1.61	UKD2	-1.18	-3.55
BE35	-1.86	-2.86	ES43	-1.89	-2.55	ITD2	-3.28	-1.66	UKD3	-1.07	-3.74
DE11	-2.43	-2.10	ES51	-2.07	-2.52	ITD3	-2.73	-1.94	UKD4	-1.78	-4.12
DE12	-2.17	-1.72	ES52	-2.46	-2.57	ITD4	-2.85	-2.38	UKD5	-1.45	-3.91
DE13	-2.00	-1.77	ES53	-1.96	-2.37	ITD5	-1.79	-2.13	UKE1	-1.46	-1.70
DE14	-2.48	-2.03	ES61	-2.16	-2.49	ITE1	-1.13	-2.32	UKE2	-1.84	-2.70
DE21	-3.05	-2.46	ES62	-2.49	-2.52	ITE2	0.73	-2.88	UKE3	1.14	-1.39
DE22	-2.91	-2.95	FI13	-1.70	1.87	ITE3	0.57	-2.87	UKE4	-0.19	-2.39
DE23	-2.60	-3.17	FI18	-1.69	3.93	ITE4	0.93	-3.00	UKF1	0.79	-1.09
DE24	-2.36	-3.26	FI19	-1.68	3.93	ITF1	1.81	-3.38	UKF2	-2.06	-0.99
DE25	-2.52	-2.73	FI1A	-1.69	1.21	ITF2	2.65	-3.78	UKF3	-1.88	-1.43
DE26	-2.28	-2.28	FI20	-1.65	0.75	ITF3	2.62	-3.83	UKG1	-2.74	-0.51
DE27	-2.76	-2.23	FR10	-1.22	-2.50	ITF4	3.07	-4.18	UKG2	-1.80	-1.84
DE30	0.74	-5.63	FR21	-1.47	-2.19	ITF5	3.54	-4.35	UKG3	-2.44	-0.60
DE41	0.48	-5.04	FR22	-0.85	-2.69	ITF6	0.91	-3.25	UKH1	-3.11	-1.66
DE42	-0.20	-4.95	FR23	-1.78	-2.23	ITG1	-0.43	-2.68	UKH2	-2.79	-1.49
DE50	-1.30	-0.83	FR24	-1.61	-2.40	ITG2	-1.39	-2.31	UKH3	-3.60	-1.66
DE60	-0.82	-0.24	FR25	-1.96	-2.07	LU	-1.51	-1.08	UKI1	-1.01	-2.78
DE71	-2.20	-1.52	FR26	-1.57	-2.24	NL11	-0.01	0.60	UKI2	-1.00	-2.79
DE72	-2.12	-1.43	FR30	-0.53	-2.86	NL12	-0.79	-0.42	UKJ1	-3.20	-0.88
DE73	-2.01	-1.74	FR41	-1.57	-1.57	NL13	0.17	0.95	UKJ2	-2.56	-1.81
DE80	-1.18	-2.82	FR42	-1.82	-1.62	NL21	-0.43	0.29	UKJ3	-3.12	-1.06
DE91	-1.65	-2.10	FR43	-1.69	-1.98	NL22	-1.08	-0.48	UKJ4	-3.23	-1.81
DE92	-1.49	-1.05	FR51	-1.82	-2.25	NL23	-1.00	-0.58	UKK1	-2.85	-0.76
DE93	-0.91	-0.32	FR52	-1.62	-2.06	NL31	-1.26	-1.22	UKK2	-2.15	-1.21
DE94	-1.14	-0.66	FR53	-1.81	-2.43	NL32	-1.24	-1.38	UKK3	-0.71	-1.89
DEA1	-1.44	-0.57	FR61	-1.86	-2.56	NL33	-1.26	-2.18	UKK4	-0.95	-1.67
DEA2	-1.59	-0.74	FR62	-1.98	-2.55	NL34	-0.87	-2.99	UKL1	-0.88	-1.90
DEA3	-1.34	-0.62	FR63	-1.80	-2.48	NL41	-1.55	-1.72	UKL2	-1.36	-1.86
DEA4	-1.65	-1.07	FR71	-1.75	-2.22	NL42	-1.58	-0.98	UKM1	-3.79	-3.12
DEA5	-1.70	-0.97	FR72	-1.76	-2.41	PT11	-0.87	-2.53	UKM2	-4.33	-3.54
DEB1	-1.75	-1.05	FR81	-1.91	-2.44	PT11	-0.87	-2.53	UKM3	-3.37	-3.38
DEB2	-1.55	-0.89	FR82	-1.78	-2.24	PT15	-2.07	-2.51	UKM4	-2.97	-2.99
DEB3	-1.93	-1.37	FR83	-1.48	-2.27	PT15	-2.07	-2.51	UKN0	1.65	-2.75
DEC0	-1.62	-1.12	GR11	-1.88	-2.02						

## Book review

Andrew F. FIELDSEND and Julie M. BOONE

# A Practical Guide to Stimulating Entrepreneurship in Rural Areas\*

\* Essex County Council 2007. 68 pp.

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The Interreg IIC project 'PRAXIS – Making Rural Entrepreneurship Work' published a handbook entitled 'A Practical Guide to Stimulating Entrepreneurship in Rural Areas', also known as the PRAXIS Rural Entrepreneurship Toolkit. The target groups for the toolkit include rural development practitioners (such as regional and economic development agencies), policy and decision makers at local, regional and national level, non-governmental organisations, academic institutions and training organisations, and organisations representing businesses (such as chambers of commerce).

The toolkit is structured into nine sections, of which section 1 is the introduction. Section 2 defines the target groups for the toolkit, whilst section 3 includes definitions of 'rural development', 'sustainable development', 'rural', 'rural economy' and 'entrepreneurship'. Section 4 stresses that the best approach to stimulating rural entrepreneurship will depend on the circumstances in the region. The main body of the toolkit, however, is sections 5 (Good practice in promoting rural entrepreneurship) and 6 (Integrated list of policy recommendations), the preparation of which drew on work carried out by partners during the PRAXIS project. Completing the toolkit are sections 7 (Sources of European funding), 8 (Contact details of the 13 PRAXIS partners) and 9 (A list of other European projects relevant to rural entrepreneurship).

For each of seven issues related to rural entrepreneurship the toolkit provides two examples of good practice from across the EU and a case study of an entrepreneur who has benefited from such good practice. The issues are as follows:

- Communication – effective rural partnerships
- Strategy – regional and local and sustainable rural development strategies
- Support – Innovation support through sharing good practice

- Awareness – Promoting the correct understanding of entrepreneurship in rural areas
- Funding – maximisation of the use of European funding including alignment with core funding
- Customer focus – creating an environment in which rural entrepreneurship can flourish
- Education – creating an entrepreneurial mindset

The toolkit presents 17 policy recommendations aimed at promoting rural entrepreneurship, cross-referenced to the issues listed above. The recommendations cover topics such as simplifying bureaucracy, developing support services for businesses, encouraging links between higher education and industry, formulating rural strategies and encouraging good local governance. The toolkit should ensure that the accumulated experience of the PRAXIS project will have a sustainable, long-term impact on stimulating rural entrepreneurship across the EU.

This is a valuable introduction to European rural development in general, and specifically to awakening the entrepreneurial spirit in areas which, in the wake of momentous changes to agricultural policy, badly need it to maintain prosperity, population and culture. It is erudite without being stuffy, and the many case studies help to bring the text to life and show clearly the potential impact of thoughtful policy, effectively implemented.

*Copies of A Practical Guide to Stimulating Entrepreneurship in Rural Areas can be obtained free of charge by emailing [studies@aki.gov.hu](mailto:studies@aki.gov.hu).*

**Reviewed by:** Martyn F. Warren, University of Exeter, Exeter, UK. [m.f.warren@exeter.ac.uk](mailto:m.f.warren@exeter.ac.uk)

## Abstracts of AKI publications

The results of AKI's research work are presented in detail in a series of Hungarian language publications. English language abstracts are reproduced below. The publications may be downloaded from the AKI website ([www.aki.gov.hu](http://www.aki.gov.hu)) or requested in printed form from [aki@aki.gov.hu](mailto:aki@aki.gov.hu).

**MERKEL Krisztina and TÓTH Kristóf**

### Taxation of agriculture, with special regard to private farms

Published February 2011

The study investigates the legal background of agricultural taxation in Hungary and performs calculations for detecting any anomalies deriving from the taxing peculiarities of the private farms. It also presents the agricultural tax systems of the individual EU Member States with the purpose of drawing conclusions therefrom concerning the Hungarian system. In its calculations, the study relies partly

on international data and partly on the database of the APEH (Hungarian Tax Authority). In the last part, the study puts forward suggestions divided into two categories. The first category includes taxation schemes that require minor modifications, while the other group includes taxation methods requiring considerable transformation of the existing system.

**KEMÉNY Gábor, VARGA Tibor and colleagues**

### Problems and further development possibilities of the Hungarian agricultural insurance system

Published March 2011

The study is divided into two main parts: the first investigates the problems of the Hungarian agricultural insurance system and the second reviews the possible take-off points of the system. The study identifies the low number of insurable weather hazards, the low penetration rate, the farmers' low inclination to premium assumption, increasing climatic hazards and the tough competition amongst insurers as the principal problems of the current system. These causes together have led to a situation that some insurers have contemplated their withdrawal from the Hungarian market, thus imperil-

ling even the maintenance of the current low level of risk management. Intervention by the state has been identified by the study as a take-off point from this situation, and this could be executed in two ways: firstly, the current damage mitigation system would have to be transformed into an all-risk system and, secondly, an insurance premium supporting scheme would have to be launched, where the state would specify the insurance of hazards until now not insured (such as drought, internal water, flood and spring frost) in exchange for premium supports.

**JUHÁSZ Anikó and WAGNER Hartmut**

### Effects on foreign trade of German hard-discounters' global expansion

Published May 2011

In our study we have demonstrated the existence of a direct relationship between the international expansion of the German owned discount chains (Aldi and Lidl) and the simultaneous and continuous improvement of the food industrial foreign trade balance of Germany on their target

markets. According to our calculations, a sales revenue increase of the discount chains in the order of EUR 100 million generated a growth of the German food industry's imports of roundly EUR 75 million in the average of the 15 selected target markets.



**BIRÓ Szabolcs, KAPRONCZAI István and colleagues**

## **Water use and irrigation development in Hungarian agriculture**

Published May 2011

One of the greatest challenges of agricultural commodity production in Hungary is the country's exposure to the growing weather extremes that might become a restricting factor of Hungary's agricultural competitiveness. Presently, the main function of the agricultural water use and irrigation development consists in enhancing yield security and improving quality, i.e. preventing damage due to extreme weather conditions. Our research has evaluated domestic agricultural water management, water use and irrigation

principally from the point of view of agricultural production, but simultaneously in a wide overview, considering also the economic, environmental and social aspects, for preventing water from becoming a factor restricting the efficiency of production. Our research shows that rational extension of the irrigated areas could contribute to increasing Hungary's market share. Fragmented land structure and, in irrigation development, the lack of strong state involvement may be identified as the main impediments.

**POTORI Norbert, POPP József and colleagues**

## **Production of biomass for energy generation in Hungary**

Published August 2011

Our study focuses on the current situation and on the opportunities for the production and energetic utilisation of biomass in Hungary. The scope is unequivocally determined by our commitments made as a Member State of the European Union and by the current market conditions. The quantity of biomass required for the fulfilment of the goals set is

already available. Implementation of biogas power plants is motivated by injection of the upgraded biogas into the natural gas-grid and by waste management considerations. Additional ethanol production and vegetable oil esterification capacities would be required for the satisfaction of the internal market's demand for biofuels from domestic sources.

## Studies in Agricultural Economics

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Divide your article into clearly defined sections but do not use section or subsection numbers. Each heading should appear on its own separate line. For research papers you are urged to consider using the following structure:

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- **Abstract.** A single paragraph of 100-250 words should state the purpose of the research, the principal results and major conclusions.
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- **Reference to a chapter in an edited book.** Mettam, G.R. and Adams, L.B. (1999): How to prepare an electronic version of your article, in Jones, B.S and Smith, R.Z. (eds), *Introduction to the Electronic Age*. New York: E-Publishing, 281–304.

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