ESPON

ECR2
Economic Crisis: Resilience of Regions

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This report presents a more detailed overview of the analytical approach to be applied by the project. This Applied Research Project is conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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This basic report exists only in an electronic version.

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Executive Summary

The ESPON project Economic Crisis: Resilience of Regions examines the geography of the economic crisis across the ESPON territory, and explores why some regions are more able to withstand an economic downturn than others, or are able to recover faster. The project began in April 2012 and produced its Inception Report in August 2012.

This Revised Interim Report sets out progress since the Inception Report and updates the Interim Report (submitted in January 2013) on the basis of comments received from the ESPON CU and Sounding Board. The TPG is in the process of assessing the economic resilience of regions in the face of economic shocks and crises. Project progress is broadly on schedule. There has been an impressive effort across the TPG to maintain the programme of research set out in the Inception Report. Partners have:

- Completed the initial collection of comparable data across the ESPON territory.
- Made an assessment of the availability and value of wider datasets
- Begun the process of analysing the data sets
- Made good progress on the undertaking all the planned case studies

It is too early to report on the results of this other than in the most tentative manner. However, there are some important insights already emerging. These tie in well to the more generic literature, and to typologies of resilience developed for places such as the US and more global indexes.

Most people have an intuitive notion of resilience - the capacity to sustain a shock, recover, and continue to function and, more generally, cope with change. Within the developing literature on regional economic resilience, a broad distinction can be made between two different conceptions of the term, firstly the speed with which a system returns to a pre-shock situation and, secondly, the manner in which a system adapts to new circumstances. From this perspective Regional economic resilience embraces not only *recovery*, but also *resistance*, or the ability of regions to resist disruptive shocks in the first place; *re-orientation*, or the extent to which the region adapts its economic structure; and finally, *renewal*, or the degree to which the region resumes the growth path that characterised its economy prior to the shock (Martin, 2012).

As well as shaping the definition of resilience, this systems-based perspective also extends to its measurement and analysis. Thus, from this perspective economically resilient and non-resilient regions are identified by examining the system's overall economic performance over a period of time, with criteria for a negative economic shock defined, and pre- and post-shock growth rates and trajectories of output and employment measured.

Whilst valuable in highlighting the potential for resilience to illuminate how regional economies respond to economic disruptions, this system and structure emphasis has resulted in much less attention being paid to understanding the role of human agency in the adaptation at the heart of regional economic resilience. Developing a fuller understanding of the role that the different actors in regional economies - including local and regional governments - can play in shaping their resilience to economic shocks requires that the systems-oriented perspective outlined above be supplemented with a *people-oriented* perspective. Resilience then is not simply an end point or performance outcome: it is a process or an ongoing development capacity to adapt to change and thrive.

At the EU level the recent economic crisis is regarded as an opportunity for change rather than a one-off hit that allows the resumption of business as usual, emphasising the potential for reorientation and renewal. Thus the emphasis is upon encouraging *sustainable recovery* with the Europe 2020 strategy document explicitly stating 'our exit from the crisis must be the point of entry into a new economy' (p. 10). At the same time, European policy-makers are also aware that crisis induced austerity measures are likely to present significant difficulties for some regions in terms of finding resources to invest in appropriate innovation and regional development policies.

More broadly, it is also acknowledged that different regions are affected by crises in different ways. Regions are understood to be highly diverse and evolutionary entities. Thus according to the Territorial Agenda 2020, 'local endowments and territorial characteristics have growing importance for regions in order to cope with and recover from external shocks' (p. 5). Furthermore, resilience is here conceived as a place-based capacity shaped both by a territory's inherited resources and structures, as well as its people and the agency of its individuals, businesses and institutions. This territorially-embedded approach introduces the final fundamental component of resilience: the importance of *place*.

In recent years there have been a small number of studies which seek to measure the economic resilience of particular territories. These provide interesting insights in terms of methodological approach and their underlying hypotheses. Some are also instructive in terms of their potential predictive power, particularly where they were developed prior to the current economic crisis. Examining the various approaches to date it is apparent that most of the indicators identified focus on innate characteristics of resilience, rather than measures of the adaptive capacity of a region. Overall, there is a degree of consistency in what is regarded as significant in determining resilience, put broadly this relates to business characteristics, population characteristics and the nature of society (or community). Place-based considerations are less prevalent. The other area of variation is in the level of significance ascribed to macro-economic conditions. Whilst this latter element may have less significance in assessing relative

resilience between geographical units within a national economy it might be expected to play a stronger role in cross-national comparisons.

Across the European territory there is only one year since 1990 when no national economy has experienced a decline in levels of gross employment. There is less volatility in the number of economies experiencing a year-on-year decline in GDP, but, even here, there have only been 4 years when no economy has experienced a decline. Thus, it is clear that economic downturns are highly prevalent. Looking at the wider picture though there appear to have been two European-wide downturns in the period 1990-2012. One around the period 1992-93 and the other starting around 2008-09. For the purposes of this study's terms of reference these are regarded as 'economic crises', with the latter representing the 'last crisis'. In addition there have two other identifiable periods of downturn affecting an important proportion of national economies: one around 1997-99 and the other around 2003.

The complex temporal and physical geography of the last economic crisis is clearly illustrated in available data. This demonstrates the significance of national patterns as well as some strong regional variations. The data provides a rich resource through which to explore patterns of resilience in the forthcoming stages of this study. The perceptual geography of the crisis complements the available economic data, albeit only at a national level at present. This provides a useful resource for further analysis. Using the performance measures generated by recessionary analysis the study will look to build a stronger understanding of the components of economic resilience at a regional level. The study team has made good progress in collecting statistical resources which will assist in informing this future workstream. Analysis of the literature suggests the following:

- That prevailing endowments of physical capital and human capital can all positively influence levels of resilience
- That the prevailing condition of the economy is influential, with stronger economies more resilient than those that are weaker,
- That the sectoral structure of an economy can play an important role in levels of economic resilience, and that more diverse economies tend to exhibit greater levels of resilience
- That access to markets, and the size of these markets can positively affect the resilience of an economy
- That levels of social capital, informal institutions and network capital exert a positive influence on levels of economic resilience
- That governmental structures can influence levels of economic resilience, with greater levels of fiscal or legislative autonomy supporting economic resilience at a sub-national level

However, the literature also suggests that each of these factors, whilst broadly supportive of economic resilience, can also act to weaken resilience. So, greater

market access can leave an economy vulnerable to increased levels of competition; higher levels of human capital can reduce competitiveness through increasing wage levels, and so on.

Economic resilience is also about the decisions that are taken by firms, residents and governance bodies. In that respect measures that shed a light on these choices, such as levels of entrepreneurship, or constraints on such choices, such as barriers to starting a business, also provide insights into levels of economic resilience. Some indicators of choices taken, which intuitively appear to form potential measures of resilience, such as migration rates, prove on further analysis not to be so.

In examining potential indicators of components of resilience we are guided by the four-fold classification identified in the Inception Report for this study; that is: Business, People, Community, and Place. We have explored further the potential offered by the indicators initially identified in the Inception Report together with potential measures suggested by the Sounding Board. The main report provides a summary of the indicators identified, the data available and their potential value to the study.

The quantitative data will be supplemented by qualitative research undertaken in eight case study regions. Good progress has been made on all eight case studies. Interim reports have been produced by each of the teams responsible for the individual case studies. These provide an important qualitative dimension to our work. They provide an opportunity to explore the potential components of resilience in more detail, together with the policy context in each of the selected regions. As the research in each region is at an early stage it would be inappropriate to provide a detailed analysis of each study. However, initial review of the material illustrates a number of common features emerging that have influenced the observed resilience of each of our study areas. These include:

- Diverse economic base
- Sectoral composition
- Education and skills
- Labour market flexibility
- Urban structures and infrastructures
- Entrepreneurship
- Governance

One of the elements we have been asked to consider is the extent to which the crisis has led to the adoption of new development paths, particularly green growth strategies. The initial evidence of this from the case studies is mixed. Certainly economic crisis provides opportunities for development paths that break with the past. There are some signs of this occurring. There is also evidence of the development of green-based strategies being developed in some instances. However, there is also

evidence of how tighter fiscal conditions are leading to concerns about the relative cost of such approaches at a time when stimulating growth is a strong priority.

The TPG has not only been progressing its programme of research but has also been actively involved in communication and dissemination activities. These include work with the NCP in the UK and participating in workshops of practitioners in the UK and Ireland. As the project continues it is anticipated that this aspect of our activities will continue to increase.

It is rather early in the development of this project to be drawing strong policy conclusions. However, there are some preliminary conclusions that emerge from the study results to date. Clear indications are emerging of the importance of a flexible and adaptive workforce and labour market; of the important role innovative firms can play; of the complex nature of entrepreneurial development in stimulating resilience; of the value of an open and diverse economy, and of the role of expectations of the future in influencing behaviour. The presence of a critical mass of activities also appears to be significant. The increasing integration of economic activity across regional economies is exacerbating the difficulties faced by local policy makers, but also suggests that the reduction in the 'localisation' of economies may offer opportunities to build resilience over the longer-term. Evidence is also pointing to the effects of economic downturn on the long-term prospects for economic resilience and growth.

There is some evidence that public policies can make a difference to the economic resilience of regions. These actions can be considered at three levels:

- Anticipatory actions - that seek to build a stronger understanding of the components of the local economy
- Reactive policies - which seek to respond to economic downturn to mitigate the effects in a region, generally a series of shorter-term actions
- Transformative actions – that seek to bolster the resilience of an economy over the medium to long-term

The TPG is also beginning to consider the form that useful tools might take to be of assistance to sub-national actors. One of the key tools is likely to take the form of an assessment grid, assisting policy actors to assess the potential resilience of their region. This will consider elements developed and tested in the latter stages of this study under the categories of business, people, community and place.

1 Introduction

1.1 Project status

The ESPON project Economic Crisis: Resilience of Regions examines the geography of the economic crisis across the ESPON territory, and explores why some regions are more able to withstand an economic downturn than others, or are able to recover faster. It is a project with a high policy-relevance and also contributes to an emerging theme of academic debate.

The project was initiated in April 2012. The Inception Report was provided in August 2012 and agreed following discussion with the Sounding Board and the ESPON CU at the end of September 2012. In the four months since the agreement of the Inception Report the TPG have continued to progress the project to the schedule agreed. This includes further refinements to our conceptual thinking including a deeper analysis of available policy documentation; the collation of data for the indicators identified in the Inception Report, together with some suggestions made by the Sounding Board; undertaking a very preliminary analysis of available datasets, and initiating the case study research programme.

We are now deeply immersed in the process of assessing the economic resilience of regions in the face of economic shocks and crises. It is too early to report on the results of this other than in the most tentative manner. However, there are some important insights already emerging. These tie in well to the more generic literature, and to typologies of resilience developed for places such as the US and more global indexes.

The TPG submitted its Interim Report in January 2013, in line with the proposed schedule. The current Revised Interim Report amends this work in line with the response received from the ESPON CU and the Sounding Board. This response was received in draft format on the 29th March 2013 and formally on the 24th April 2013. We are grateful for the constructive advice, comments and assistance provided by both the ESPON CU and the Sounding Board which serves to strengthen the project overall. The principal modifications requested were as follows:

1. Providing a greater coherence in the report between analytical concepts and findings in literature, data and case studies
2. Further reflection on and refinement of the hypothesis;
3. A more targeted focus on the sub-national/regional dimension of the crisis and resilience:
4. Inclusion of defined project objectives/research questions and project scope in the introduction;
5. Inclusion of a plan and draft table of content for the Draft Final Report;
6. Improvement of the map presentation; and

7. Address the issue of missing data for the 31 ESPON countries.

The revised Interim Report has been restructured to reflect the comments made but has not been fully updated to reflect activities undertaken since February 2013. It retains all those elements identified in the agreed Inception Report, namely:

- The results of our recessionary analysis, together with maps and figures illustrating these results
- An initial hypothesis for a typology of regions
- Preliminary findings on the analysis of the components of regional resilience
- Report on data collection achieved
- Preliminary results of the case study analysis
- First indications of emerging conclusions and policy relevant recommendations

We do not attempt to draw inferences from this material as to the absolute, or relative, resilience of different territories. It is too early in the project for that. However, the work does illustrate the rich resource that we are developing for further analysis and, we hope, provides a valuable basis for debate and discussion.

We include updated material to contribute to the ESPON capitalization and communication strategy as a separate deliverable.

In terms of the 'missing data', our partners, Experian, state that they have collected as full as time series as possible from the raw source. The time series availability from raw sources does, however, vary dramatically across indicators and across countries and regions.

They state that there will always be a lag between the reference period and the publication date, and the length of the time lag varies from one month to multiple years, according to:

- the source or the statistics. For example, the frequency with which surveys are collected varies between different surveys and different countries.
- the time dependency between different surveys or different statistics. For instance, National Accounts or Short Term Statistics require for their elaboration weights derived from Structural Business Survey data.
- method changes: for example, change of base years, change in sampling frames, coupling with other methodological changes.

Where data is not available for a certain indicator prior to/or after a certain year this will reflect a lack of availability from the original data source, unless stated otherwise in the metadata.

Example issues - GDP data for Norway and Switzerland

Looking specifically, at the issues raised for Norway and Switzerland (though this often is the case for much of Europe) they argue that the lag in the data is due to the

industry classification changes. During 2012 many national statistics authorities began publishing data only on NACE rev. 2 which is not comparable with the previous classification (NACE rev 1.1). Due to the econometric forecasting techniques used by the ERFS[1] and the objectives of the ESPON Resilience project, we require time-series data. At the time of the project, the national statistics offices were only publishing the latest data on the new classification (e.g. 2008-2009) – this was not sufficient for our purposes and so we were limited to using the dataset on the older classification. (Full details of the industry changes and publishing timelines can be found here: http://epp.eurostat.ec.europa.eu/portal/page/portal/nace_rev2/introduction)

For Norway the primary source of our data is Statistics Norway (www.ssbno). For Switzerland the primary source of our data is Swiss Statistics (www.bfs.admin.ch).

Due to the industry classification changes, we were only able to source:

- 1995-2007 data on the NACE rev 1.1 classification
- 2008-2009 data on the NACE rev 2 classification (2010 data has also now available)

As the 2 datasets are not directly comparable, we were only able to use NACE rev 1.1.

1.2 Project progress

Project progress is broadly on schedule. There has been an impressive effort across the TPG to maintain the programme of research set out in the Inception Report. Partners have:

- Completed the initial collection of comparable data across the ESPON territory. The process of collecting this data has taken a little longer than anticipated limiting the level of analysis that we have been able to complete for inclusion in this Interim Report.
- Made an assessment of the availability and value of wider datasets, based on an initial assessment of the potential components of resilience. There remains an ongoing debate as to how certain 'gaps' in the data series might best be filled.
- Begun the process of analysing the data sets, particularly in terms of identifying the effects of asynchronous business cycles across the ESPON space
- Made good progress on the undertaking all the planned case studies. No significant issues have arisen in initiating these case studies and good contacts have been developed in all the regions involved. The case study work will continue in the forthcoming phases of the project

[1] European Regional Forecasting Service

A broad assessment of progress against the planned work schedule suggests the following:

Activity	***Progress***
Activity 2	Minor delays in compiling key data sets. Most data now collated and primary evidence base now predominantly in place. There remain some gaps in the data which Experian argue are not able to be filled. Typology development work underway
Activity 3	Data for this Activity now available from Activity 2. Initial analysis underway
Activity 4	Good progress made in delivering all case studies. On schedule.
Activity 5	Underway, based on initial analysis of materials and data
Communication activities	Good progress. The TPG has been engaged in a variety of communication activities, some in co-operation with NCPs, and has a range of further activities already planned

The minor delay in accessing comparable data sets under Activity 2 has had a knock-on effect in terms of Activity 3 and, to a lesser extent, Activity 5. This has limited some of the analysis available at the time of this Interim Report. It is not believed that this will have a significant impact on the delivery of the Draft Final Report. The TPG is, however, pleased to be able to deliver on its commitments in terms of the proposed content of this Revised Interim Report.

1.3 Project scope

The proposed study resonates strongly with the territorial challenges identified for ESPON 2013 projects. What makes some regions more resilient in the face of economic crises, and others less so, is a question which has strong traction in the present economic circumstances. The overall aim of the project is:

"To expose territorial evidence that supports policy-makers at different administrative levels in making the economic structure(s) in Europe and its countries, regions and cities more resilient to economic crises and a sudden economic downturn."

In essence this leads us to three, inter-related, hypotheses:

1. That some territories exhibit greater levels of economic resilience in the face of an economic crisis than others
2. That more (or less) resilient territories exhibit particular (sets of) characteristics
3. That there are actions which policy-makers can take that lead to more (or less) resilient outcomes.

In delivering this aim, and testing these hypotheses, our objectives for the project are to deepen our understanding of:

- The impact of the current economic crisis and other recent crises such as the one in the early 1990s;
- The resilience of economic structures;
- The capacity (of regions and territories) to adapt to new socio-economic realities.

The Brief for the study sets out a number of key policy questions and a related series of research questions under three common headings. We group these questions around the three broad objectives for the study, identifying a series of associated subsidiary objectives. These are:

1. To identify the territorial impact of the last economic crisis
   - To identify indicators which present a robust measure of the territorial impact of the economic crisis.
   - To measure the territorial impact of the economic crisis at different geographical scales, to identify and map the distribution of these impacts across the European territory and to identify whether specific types of region have been more affected than others.
   - To identify whether particular economic activities/sectors were particularly impacted by the economic crisis, and the location of these effects
   - To identify the spatial and temporal distribution of the territorial impact of economic crises across the European territory.

2. To estimate the territorial resilience of regions
   - To identify what elements in economic structures and policy responses made a difference to regions' ability to recover from the economic crisis.
   - To identify the qualitative and quantitative factors which form territorial characteristics enabling some regions to resist, or move out of, economic downturn more effectively than others.
   - To identify which regions and which types of territories tend to be more resilient and adaptive to economic crises in Europe.

3. To understand the role of territorial policy responses in promoting economic resilience
   - To identify the potential role that territorial development policies can play, and are playing, in promoting regional resilience and economic recovery.
   - To estimate the contribution that integrated and place-based actions can play in complementing macro-economic measures aimed at stimulating economic recovery.
   - To consider how policy-makers can enhance the resilience of regional economies for future economic downturn.

We set out below a summary of the relationship between key policy questions, research questions and the three objectives of the study.

	Policy questions	**Research questions**
Territorial impact of the last economic crisis	What is the territorial impact of the last economic crisis? What economic activities/sectors were particularly impacted by the crisis and where are these located in Europe? How could this be mapped?	**How can the territorial impact of the economic crisis be measured at different levels of geographical scale?** **What are good indicators?** **What is the territorial impact of the economic crisis (situation before and after) in different parts of the European territory and have specific types of region been more affected?** **How do economic crises impact territories in Europe in terms of spatial distribution and in terms of time (sequence of events – spatial cause-effect-relationships)?**
Resilience of regions	What quantitative and qualitative factors allow regions to move faster out of economic downturn? What elements in economic structures and policy responses made a difference for territories in order to be able to recover from the crisis? What (types of) regions and territories turn out to be more resilient and successfully adaptive to the latest economic downturn and why?	**What regions tend to resilient to crises and which are not?** **What territorial and other characteristics make regions resilient and why?**
Policy responses	What can regional policymakers do to complement macro-economic measures stimulating economic recovery? How can policymakers enhance the resilience of regional economies for future economic downturn? Is part of better resilience to be found in integrated and place-based policy action?	**Is or can territorial development policy impact on regional resilience and economic recovery and increase economic resilience?** **How is and how can this be achieved?**

2. The Territorial Impact of the Economic Crisis

One of the key questions facing policy-makers is why some regions are more strongly affected by economic crisis than others, and why some are able to recover more rapidly than others. This goes to the heart of our first hypothesis and so an initial stage of our research has been to explore the geography of economic crises across the ESPON territory. A first stage in this process is to identify what constitutes an economic crisis, and when these have occurred across the European territory. We then consider the last economic crisis, and begin to develop a picture of its territorial implications. An important feature of this latter element is our consideration of normative perspectives, in line with our wider consideration of the role of individual decision-making ('agency'), alongside objective economic data. In forthcoming work we will include a stronger reflection on the effects of the crisis in particular regions, drawing on case study material, but we restrict ourselves here to consideration of the broad geography of the crisis.

2.1 Determining the incidence of economic crises

There is no standard definition of an economic crisis. Most definitions identify economic crisis as a period, often long-term, of low or declining economic growth. Some definitions also include increasing levels of unemployment and/or falling prices. Most definitions are aspatial, or take a national economy as their territorial unit.

The most accepted measure of economic growth is a change in the level of Gross Domestic Product (GDP), which is also sometimes termed Gross Value Added (GVA). Typically, a decline in this measure for two consecutive quarters (3 month period) constitutes a recessionary event. Of course, GDP does not capture the full operation of the economy. In particular increases in productivity can result in increasing levels of output but declining levels of employment. Employment is also the most visible indicator for a population as to whether their economy 'feels' resilient or not, and has a tangible impact on the absolute and relative well-being and welfare of communities.

Thus, in developing our key indicators for geography of the last economic crisis we consider the following (see also Box 2.1):

- A fall in gross annual GDP/GVA – measured in domestic currency to avoid the impact of currency fluctuations
- A fall in levels of gross employment on an annualized basis

Alongside these economic indicators we also consider the breadth of any changes. The proportion of States registering falls in economic performance in any one year

varies across the EU, and the number of regions even more so. Our third key indicator is thus to examine the number of economies experiencing decline in any single year.

Box 2.1 Defining economic crisis

We take two standard measures of economic performance as indicators of economic growth or decline.

The first is economic output, measured in terms of GDP at constant prices. We have used constant prices in the domestic currency rather than a purchasing parity standard measure. GDP is the conventional indicator used to measure economic decline, with a recession typically defined as two consecutive quarters of negative growth. For the purposes of this work we amend this to a year-on-year decline in economic activity. This provides a stronger measure of longer-term effects, which is more appropriate when considering resilience, and where data availability is stronger.

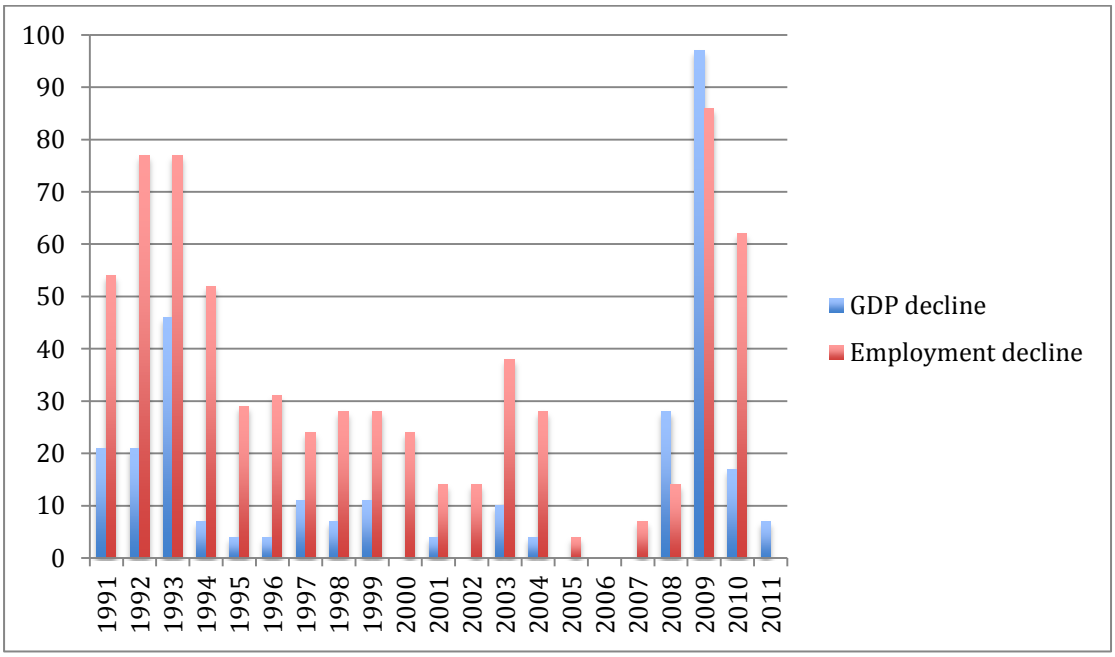
The second is total employment. Here there are two standard measures: one based on the location of the workplace, and the other on residence. Our preferred measure here is workplace-based, although we test both measures to assess whether significant differences occur. Again, we look to a year-on-year decline in in employment numbers as a measure of economic decline in the territory concerned, partly to avoid short-term fluctuations and partly for reasons of data availability.

The study examines the correlation between these two measures to examine whether the two indicators may lag or lead each other in a consistent manner. At present, however, we consider employment as our prime indicator of economic activity, owing to the significance of this to residents within the territories concerned. We argue that a territory that maintained levels of GDP but with rapidly declining levels of employment is unlikely to be considered to be resilient by the local population.

As Figure 2.1 illustrates, across the EU there is only one year since 1990 when no national economy has experienced a decline in levels of gross employment. There is less volatility in the number of economies experiencing a year-on-year decline in GDP, but, even here, there have only been 4 years when no economy has experienced a decline.

From Figure 2.1, certain patterns can be discerned and it appears that there are two European-wide downturns within the period 1990-2012, one around the period 1992-93 and the other starting around 2008-09. For the purposes of this study's terms of reference these are regarded as 'economic crises', with the latter representing the 'last crisis'. In addition there have two other identifiable periods of downturn affecting an important proportion of national economies: one around 1997-99 and the other around 2003.

Figure 2.1 Proportion of economies in decline across the ESPON space 1991-2011



n=22-29 depending on year and data set.
Source: adapted from study data

Table 2.1 illustrates that broad geographical groupings suggest that it is only the economic crisis of the late 2000s that has affected the ESPON territory as a whole, as might be expected from the data in Figure 2.1. However, distinctive 'geographies' of crisis can be identified in the 1990 and early 2000 crises.

Table 2.1: Summary of Major Employment Downturns

Country	1990s	Early 2000s	2008	dataseries
EU15	1		1	1988-2010
EU12		1	1	1995-2009
EU27			1	1995-2009
ESPON31			1	1995-2009
Eurozone			1	1995-2009
Non Eurozone		1	1	1995-2009
EFSF	1		1	1980-2011

Source: Experian file 2. Headcount Employment - Final.xls.
Series Description: The geographies are as follows:

- EU15 = UK, France, Belgium, Netherlands, Luxembourg, Spain, Italy, Greece, Finland, Sweden, Denmark, Portugal, Ireland, Germany, Austria
- EU12 = Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Cyprus, Malta, Slovenia, Hungary, Romania, Bulgaria
- EU27 = EU12 + EU15 (all members of the EU)

- ESPON 31 = EU27 plus Norway, Switzerland, Iceland, Lichtenstein
- Eurozone = Germany, Belgium, Netherlands, Luxembourg, Austria, France, Spain, Portugal, Italy, Greece, Ireland, Cyprus, Malta, Slovenia, Finland, Slovakia (as Estonia joined in 2011 we are going to consider them as non-Eurozone for the purposes of this analysis).
- non-Eurozone = EU27 minus Eurozone
- EFSF = Greece, Ireland, Portugal, Spain (European Financial Stability Facility).

Extending this analysis to individual countries and NUTS2 regions suggests that the effects of each crisis was not evenly distributed within countries, some regions did not enter into decline (were resilient) and some declined less than the national average (were relatively resilient). This is illustrated in Table 2.2, where the total number of regions is identified by country in the first column, the denominator of each fraction is the number of each regions that experienced a decline in overall employment and the numerator is the number of regions that declined at a rate lower than the national average.

Table 2.2: Summary of NUTS2 Employment Change Major Recessions

Country (X)	1990s	Early 2000s	2008	Dataseries
Austria (9)	0/7		4/8	1988-2011
Belgium (11)	2/8	1/7	4/9	1980-2010
Bulgaria (6)	2/6		2/6	1996-2010
Czech R. (8)	3/8	0/7	2/7	1993-2010
Croatia (3)			1/3	2000-2011
Denmark (5)	1	2/5	2/5	1993-2011
Finland (5)	3/5		4/5	1980-2011
France (22)	11/22		6/22	1980-2011
Germany (39)	21/38	19/39	0/26	1991-2011
Greece (13)	2/13		7/13	1988-2011
Hungary (7)	3/7	1/6	2/7	1992-2011
Ireland (2)			1/2	1995-2011
Italy (21)	9/21		7/20	1982-2011
Netherlands (12)		6/11	5/12	1987-2011
Norway (7)		1/7	1	1990-2007
Poland (16)		6/16		1995-2011
Portugal (7)	4/7	1/6	2/7	1988-2011
Romania (8)	5/8	1/7	0/7	1985-2011

Slovakia (4)	2/4	0/3	1/4	1995-2011
Slovenia (2)	1/2	0/1	1/2	1995-2011
Spain (19)	7/19		10/19	1980-2011
Sweden (8)	3/8	4/8	2/8	1985-2011
Switzerland (7)		2/4		1995-2011
UK (37)	17/37		9/37	1982-2011

Source: Experian file 2. Headcount Employment - Final.xls.

Note: where X = total number of NUTS 2 regions. An empty cell indicates the national aggregate employment did not experience a recession. The fraction shows how many of the regions experiencing recession are resilient (so had a sensitivity index less than 1 which indicates the region had a smaller percentage decrease in employment than national employment over that recession).

2.2 The territorial impact of the last economic crisis

2.2.1 Timeline to crisis

For many, the trigger for the last economic crisis was the 'credit crunch' that emerged in the latter part of 2007, although this had its own origins in multiple events of the preceding decade. As investors became wary of the exposure of banks to sub-prime mortgages so levels of interbank lending dried up leading to an increase in the interbank lending rates and precipitating the collapse of several major financial institutions, and led to significant levels of intervention by national governments and international institutions to secure the future of many others.

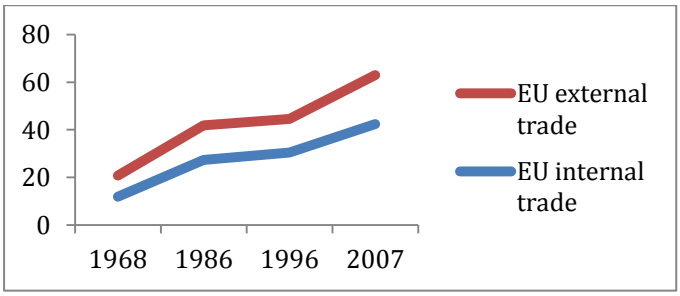
The tightening of the credit markets did not only impact on the financial institutions but also on the availability of finance for domestic producers and led the World Bank to predict that global economic growth would slow in 2008. However, the World Bank also argued that the "resilience" of developing countries would cushion the slowdown. As economic conditions within the European economy tightened, and concerns for future income levels rose, demand for products also fell.

The final element to the crisis has been the fear of a sovereign debt crisis across large parts of the European economy. This has arisen through two principal causes, firstly, where the private debts emanating from the property-led credit crisis have been transferred to the public sector, and, secondly, where public expenditure commitments have raised fears of the ability of these governments to service levels of debt, particularly in the face of falling fiscal receipts and increasing social obligations. This has led to increases in the interest rates being charged for public debt and significant reductions in public sector expenditure in order to rebalance public finances, further exacerbating the economic crisis in some parts of the European territory.

One of the crucial factors underpinning the economic crisis of 2007/2008 was the interconnection of the global financial markets. Whilst the sub-prime mortgage crisis was initiated in the US, the repercussions were felt rapidly throughout the whole financial system, owing both to the exposure of non-US banks to sub-prime mortgage risks, either due to their ownership of US subsidiaries or to their ownership of US mortgage backed assets/liabilities, and to the fear of unknown levels of exposure to this risk within banking portfolios. As the crisis spread and other economies ran into their own debt-led crises so the effects of these were felt in non-domestic economies. It is, for example, estimated that around a fifth of the funds invested by the UK Government in the Royal Bank of Scotland and Lloyds Bank were transferred to subsidiaries operating in Ireland[2].

The transmission effects of external trading links are not confined to the financial sector. The importance of trade across the European single market and with external trading blocks has increased significantly in recent decades. What happens in one country now affects trading conditions in many others. Data produced by the ESPON TIGER project demonstrates this increasing openness and interdependence, across all the major global trading blocs (ASEAN, CIS, EU, GCC, MERCOSUR and NAFTA). The position for the EU is illustrated in Figure 2.2.

Figure 2.2 Proportion of trade undertaken with other EU economies and external to the EU



Source: adapted from data published by ESPON project TIGER (p.11)

These trading links are not just in terms of finished products, but rather are the function of increasingly globalised supply-based value-chains, where components are sourced from many locations before being assembled into a finished product. One illustration of these global value chains is the example of the enquiry into technical problems with the Boeing 787 Dreamliner. The enquiry is focusing on the lithium battery, produced in Japan, and the battery charger, produced in the US by a British-owned company, assembled into the aircraft by Boeing in the US, which then ships the finished product to airlines around the world. Similarly, the European aircraft manufacturer Airbus sources parts from numerous geographical locations before assembling their aircraft in Toulouse, France. Thus, regions might no longer

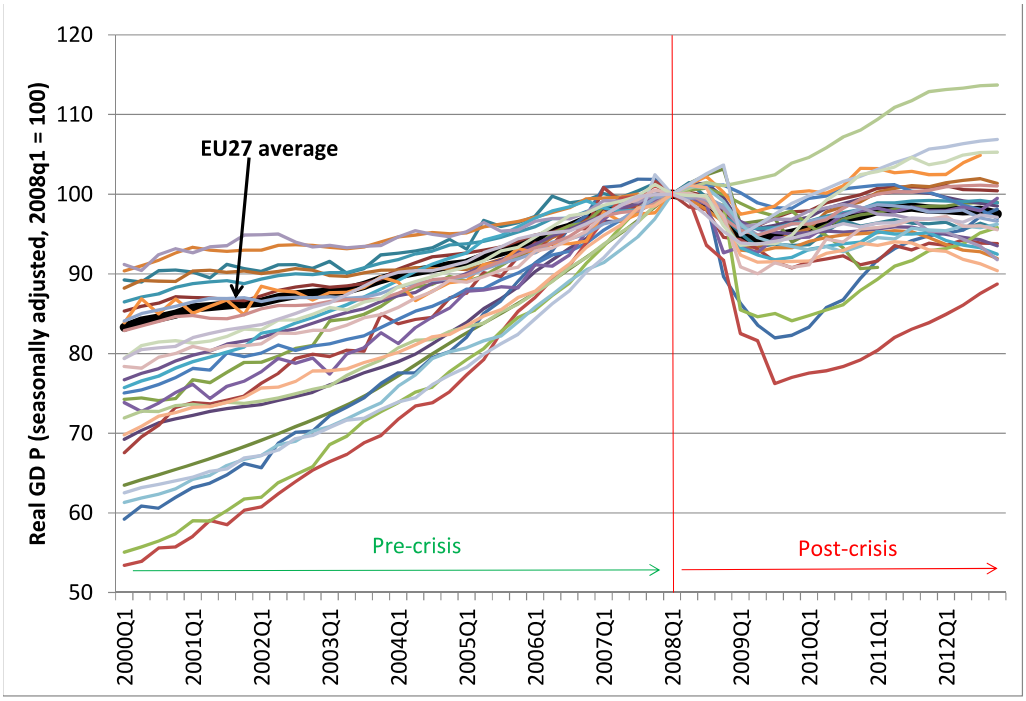
[2]http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/9813358/British-taxpayers-funded-Irelands-14bn-bail-out.html

specialise in an industry but rather in a Key Enabling Technology (KETs), which can be incorporated into a variety of finished products in a variety of export locations.

2.2.2 Impact on economic output

The economic crisis did not begin in all regions, or national economies, in a single year. Economic decline was first experienced in NUTS 2 regions in 2007 in Denmark, France and Finland (Figure 3.3). By 2008 this initial geography had expanded to cover regions in 16 countries. Analysis by Cambridge Econometrics (Figure 2.3) highlights that following a period of uniform growth in the early years of the century, the period since the crisis has shown a marked divergence in performance, with only 6 Member States achieving pre-crisis growth rates (Austria, Belgium, Germany, Poland, Slovakia and Sweden). This is an indication of the 'hysteresis' referred to by Martin (2010) whereby economies may recover from an economic decline but may not renew their pre-crisis growth rates.

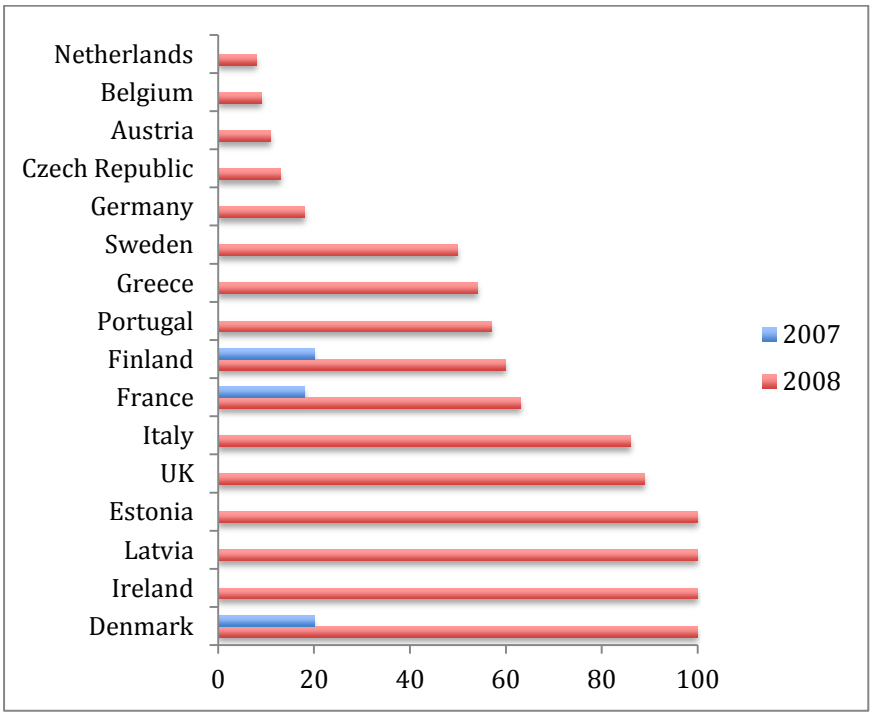
Figure 2.3 GDP change in EU economies



Source: Reproduced by permission of Cambridge Econometrics (2013).

By 2009, the crisis was endemic and affected all economies across the ESPON territory to some extent. Of the 21 countries for which comparable GDP figures were available at the time of analysis, only four contained NUTS 2 regions which did not experience economic decline in 2009. These were: the UK (North Eastern Scotland), Sweden (Stockholm), the Slovak Republic (Bratislavsky Kraj) and, most significantly, Poland (where 9 out of 15 regions still recorded GDP growth). In short, of the 226 NUTS 2 regions for which data is currently available, just 12 had positive economic growth between 2008 and 2009.

Figure 2.4 Proportion of NUTS 2 regions experiencing decline in GDP

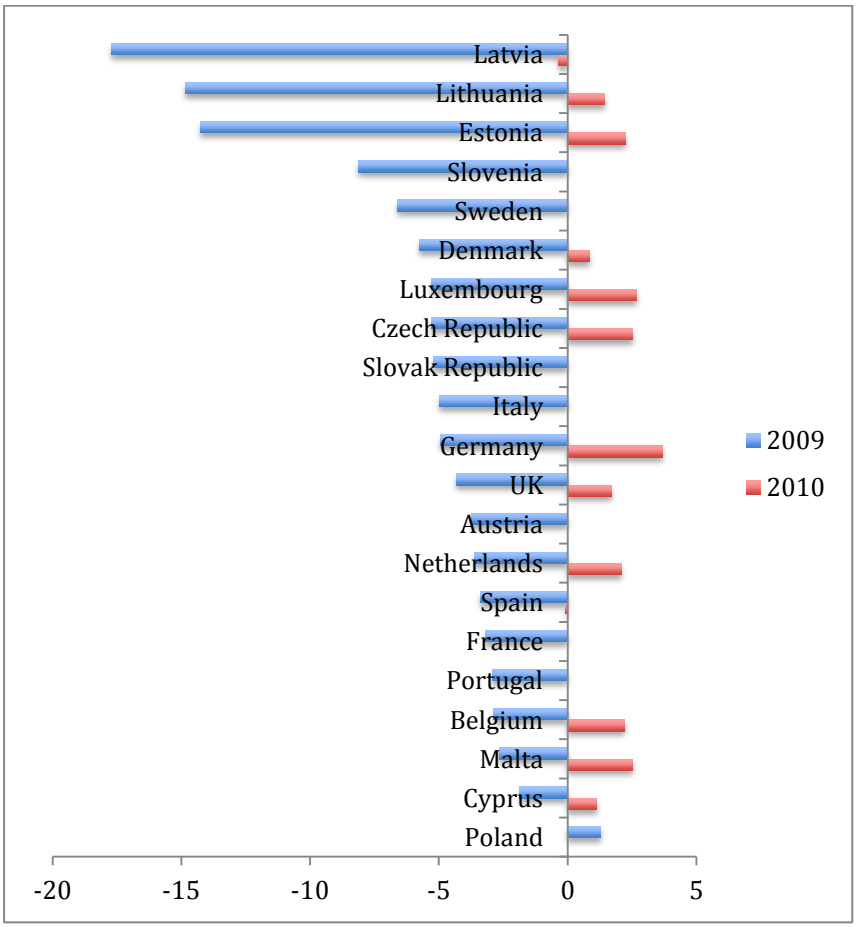


Source: adapted from study data. Data not available for BU, RO, CH, NO, HU

National economic output data can be skewed by the over or under performance of a particular regional economy. For the purposes of this study the following data is based on the aggregate performance of each NUTS 2 region within a national economy. At a national level, Poland was the only economy to record positive economic growth in 2009. The economies that recorded the smallest fall in economic growth were the small island economies of Malta and Cyprus. At the other extreme, it was the small Baltic economies of Latvia, Lithuania and Estonia that recorded the most extreme falls in output levels, as measured by GDP. The north Scandinavian economies of Denmark and Sweden also registered strong levels of decline.

GDP data for 2010 was not available for most economies at the time of analysis. This will be further developed in the later stages of this study. Where data is currently available for 2010 most economies have recovered and recorded positive growth rates (Figure 3.4). The exception to this is Latvia. However, those economies that are supported by the European Financial Stability Facility and the European Stability Mechanism are not well represented in this data and so no strong conclusions can be drawn. This remains an area to be explored further in the next phase of this study.

Figure 2.5 Average GDP growth across NUTS 2 regions (% change on previous year)



Source: adapted from NUTS 2 data tables

At a regional level we have been able to access data which covers the start of the economic crisis. Initial analysis of this data demonstrates between 2007 and 2009, broadly the onset of the economic crisis, most regions experienced a fall in GDP. Regions with the greatest decline in GDP were mainly, but not exclusively, to be found in the Baltic States, Finland, UK and Italy (Map 2.1, see Annex A). In contrast those few regions which recorded positive GDP growth (or only marginal decline) were primarily located in Poland. There appears to be a strong national dimension to regional performance, but this remains to be explored.

2.2.3 Impact on employment

At a national level, most European economies have experienced a decline in employment alongside the decline in economic output. With more recent data available for employment levels we are able to also identify the scale and duration of the adverse impacts of the economic crisis more clearly.

As with economic output, the impacts of the 2008 financial crash began to resonate across European economies in 2009, although Ireland, Lithuania and Spain all

recorded falls in overall levels of employment in 2008 (Table 2.3). Unusually, Hungary entered into a period of employment decline even prior to this, in 2007. The average duration of the crisis has been two years (broadly 2009-2011) but six economies remain in a situation of employment decline in 2011 (the date of latest data availability). These economies are all experiencing the most significant effects of the crisis, and it is likely that economies for which comparable data is not available in 2010 and 2011 (identified as na in Table 2.3) may also be in a similar situation. Three economies have avoided decline in employment at a national level.

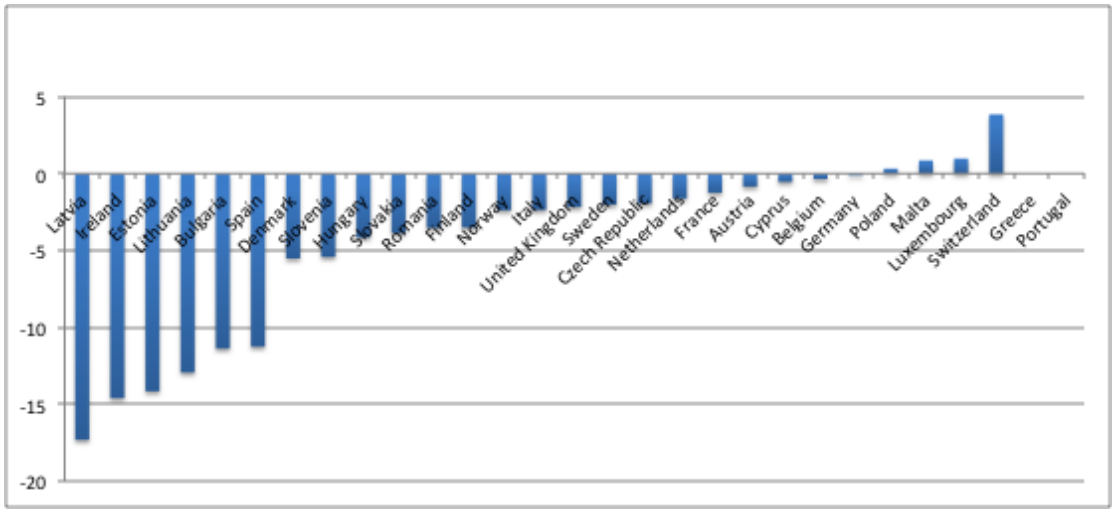
Table 2.3 Start of employment downturn and duration across national economies

	Year decline starts	Year growth starts	Duration (years)
Ireland	2008		4
Spain	2008		4
Denmark	2009		3
Finland	2009		3
Hungary	2007	2010	3
Slovenia	2009		3
Bulgaria	2009		3
Italy	2009	2011	2
Netherlands	2009	2011	2
United Kingdom	2009	2011	2
Czech Republic	2009	2011	2
Slovakia	2009	2011	2
Latvia	2009	2011	2
Estonia	2009	2011	2
Romania	2009	2011	2
Norway	2009	2011	2
Austria	2009	2010	1
Belgium	2009	2010	1
Germany	2009	2010	1
France	2009	2010	1
Sweden	2009	2010	1
Cyprus	2009	2010	1
Luxembourg			0
Poland			0
Switzerland			0
Greece	2009	na	na
Portugal	2009	na	na
Lithuania	2008	na	na
Malta	na	na	na

Source; adapted from study data

Examination of the scale of the change in headline employment starkly illustrates the significant falls which have occurred in the Baltic economies of Latvia, Lithuania and Estonia, alongside Ireland Bulgaria and Spain (Figure 2.6). In contrast, modest employment gains have been recorded in Poland, Malta, Luxembourg and, more substantially, Switzerland. Comparable data is not yet available for Greece or Portugal.

Figure 2.6 Employment change during crisis (%)



Source: adapted from study data

Coverage of data for levels of employment is more comprehensive than GDP. Analysis of available data for NUTS 2 regions between 2007 and 2010 (broadly the breadth of the crisis for most economies) illustrates some clear patterns (Map 2.2, Annex A). Again, national patterns are significant. Employment effects of the economic crisis have been greatest in Spain, Ireland, Portugal, the Baltic States and Bulgaria. The employment effects have been least in Central Europe and Poland.

Analysis of the data since the peak of the crisis, illustrates strongly where the employment effects of the crisis are ongoing, and which areas are recovering most strongly (Map 2.3, Annex A). The rebound has been strongest in the Scandinavian and Baltic economies and parts of Central Europe and weakest in more peripheral economies, particularly Ireland, Spain, Portugal and South-eastern areas of Europe including Greece and Bulgaria. In these areas employment decline is still occurring.

2.2.4 Perceptions of crisis

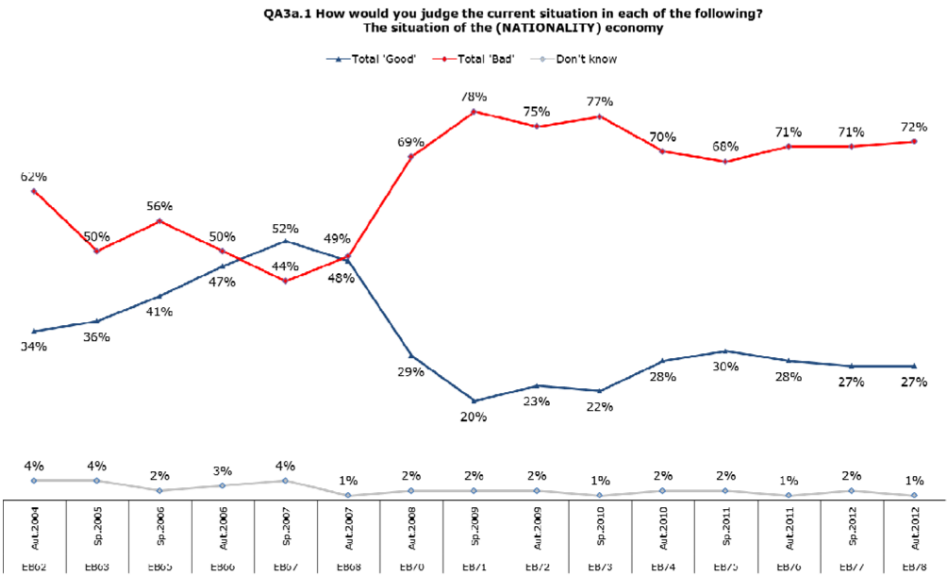
One of the under-reported elements of the economic crisis is individuals' perceptions of the economic climate they face. These perceptions can have an important influence on individual and household consumption patterns, as people make decisions on what they anticipate the duration and severity of an economic downturn

may be. Qualitative data can also provide insights into the effects of the crisis on the incomes available to households.

Although data is not available at a regional (NUTS 2) scale across the ESPON territory, Eurobarometer has undertaken a series of valuable surveys at a national level across the EU. We report on some of these results here, with further material set out in Annex B.

The onset of the crisis can be starkly seen in Figure 2.7. Taken from the Standard Eurobarometer 78 (Autumn 2012), it clearly illustrates the gradual increase in public confidence in the national economies of the EU from Autumn 2004 until a sudden reversal of confidence in 2007. The peak of the public's negative perceptions of the EU economy was reached in Spring 2009, although the gap between those who feel the current situation is good and those who feel it is bad has remained around 40% since Autumn 2010.

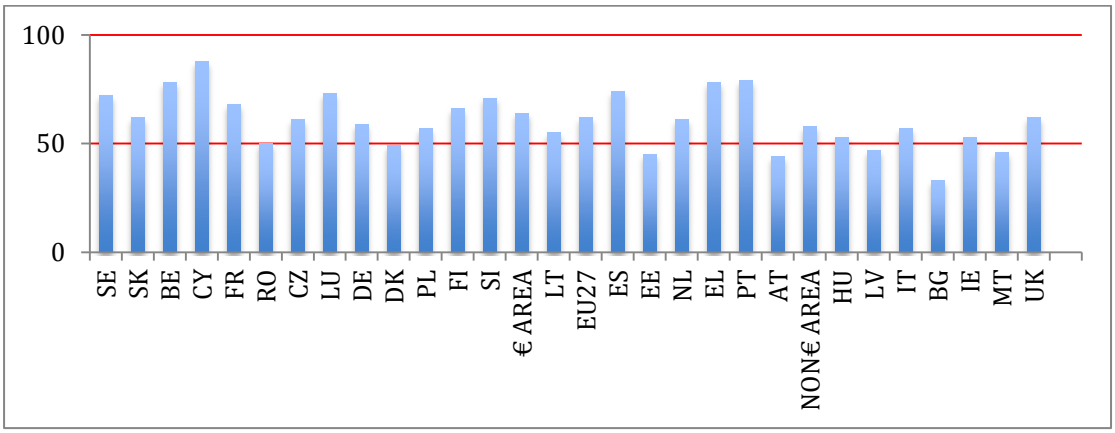
Figure 2.7 Public perceptions of their national economy



Source: Eurobarometer (2012) Standard Eurobarometer 78 (Autumn 2012) p. 6

Looking forwards from the current time, most citizens of the EU believe the worst of the crisis remains ahead of us. This is particularly the case in Spain, Greece, Portugal and Cyprus, but also includes citizens of Sweden, Belgium and Luxembourg (Figure 2.8). Only in seven countries do most citizens believe that the worst is now past, and even here it is, on the whole, a fairly slim majority.

Figure 2.8 Proportion of residents who believe worst of crisis is still to come (%)



Source: adapted from Standard Eurobarometer 78 (2012 Autumn)

2.3 Towards a typology of resilient regions

In considering the resilience of regions to economic shocks we are guided by the conceptual work of Martin (2012) who identified four components to resilience: resistance, recovery, renewal and re-orientation. In our work we consider resilience to be comprised of the first three of these, namely:

- Resistance – the ability to resist (or withstand) an economic shock
- Recovery – the ability to recover (or bounce back) from an economic shock
- Renewal- the ability to renew pre-shock growth rates

The notion of re-orientation is, we believe, more closely attuned to the ability of an economy to adapt and so facilitate one of these three states.

The response of an economy to an economic shock can be broken down into various components. These are illustrated in Figure 2.9 and 2.10. In Figure 2.9 we see the stylized growth path of the economy over a period of time (typically a year) and where e is a measure of the size of the economy (typically GDP or employment). The scale of economic activity at any particular point in time is represented by the curve V. The peak in economic activity occurs at P_1, which is the point that the economy reacts to the economic shock with a subsequent economic decline to a lowest point of activity (T) before economic recovery begins culminating in a second peak in activity at P_2, followed by a subsequent second decline in economic activity.

Figure 2.9 Stylised Recessionary event

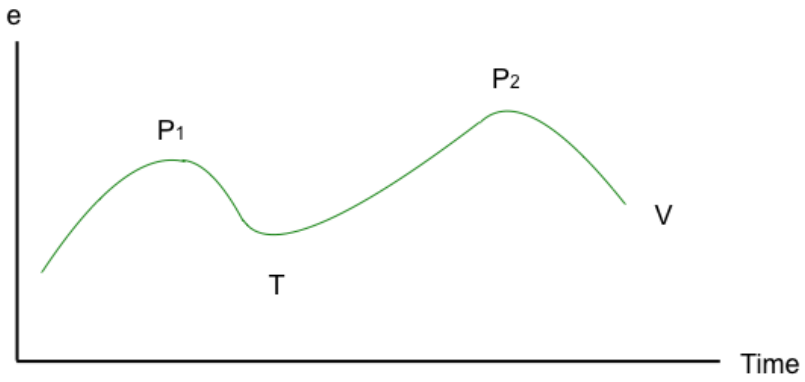
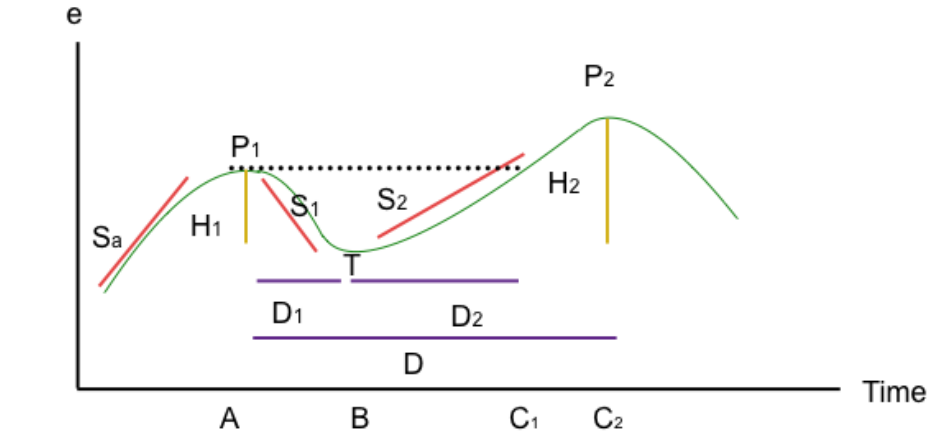


Figure 2.10 then illustrates the various variables involved in the response of the economy to the economic shock. These can be considered as follows:

- the amount by which economic activity changes between the peak of activity (P_1) the subsequent trough (T) and the following peak (P_2). This is expressed as a proportion of total value and measured as H_1 and H_2.
- The time that it takes for the economy to reach the trough of activity and to regain a new peak in activity (D_1 and D_2, with an overall duration of D).
- The rate of economic growth prior to the crisis (S_a), post crisis (S_1) and post trough (S_2).

Figure 2.10 Crisis response components



P = Peak
T = Trough
H = height of economic peak/Trough
S = slope of growth path (decline or recovery)
D = duration of downturn/recovery

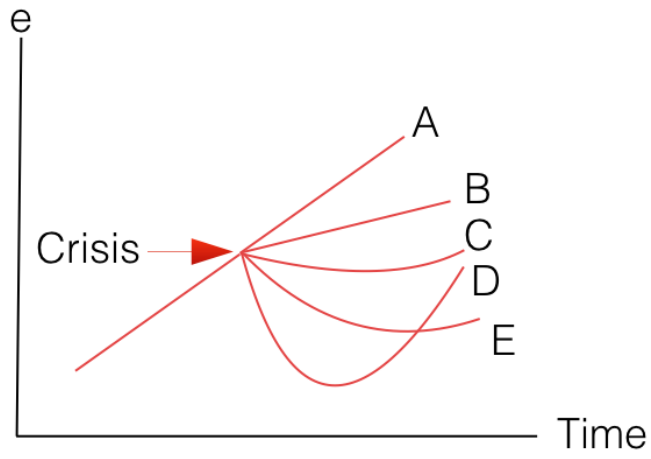
Four dimensions of regional responses to crisis tend to be of interest to policymakers, residents and to have relevance to our notions of resilience, namely:

- The scale of the impact (Resistance – measured by H_1)
- The duration of the impact (Recovery – measured by duration A to C_1).
- The comparative performance of the economy (measured by **ß** sensitivity which is calculated as S_1region divided by S_1national)
- The return to pre-crisis growth rates (Renewal – measured by S_2/Sa)

It is from these elements that ECR2 will begin to build its typology of regional resilience to the last economic crisis. In turn this will then be used to identify the characteristics of regions that can explain the differences observed. In practice, we expect to develop a typology that involves the following themes (illustrated in Figure 2.11):

A. Continued growth (highly resilient)
B. Reduced but non-negative growth (positive resilience)
C. Small negative growth rates before recovery (resilient)
D. High negative growth rates before recovery (rebound resilience)
E. Negative growth rates no recovery (non-resilient)

Figure 2.11 Stylised models of resilience response



3. Identifying the components of economic resilience

3.1 The conceptual foundations

The TPG has continued to develop the conceptual basis for the study and to refine the methodology for analyzing the economic resilience of European regions. The following section builds on the work developed for and presented in the Inception Report, particularly the comprehensive review of available literatures. It sets out the approach being taken to identifying what accounts for the patterns of economic resilience as set out in Section 2, utilising both quantitative analysis and qualitative assessments.

Most people have an intuitive notion of resilience - the capacity to sustain a shock, recover, and continue to function and, more generally, cope with change (Walker et al, 2004). In particular, the notion of resilience is being utilised by an increasing number of authors keen to understand the dynamics of local and regional economies and particularly how they deal with economic shocks and recessionary crises (see, for example, Pendall et al, 2010; Hill et al, 2011).

One of the challenges of course is to assess what the counterfactual situation might have been. An economy that has witnessed a significant slump may still be resilient, in that it weathered a shock more positively than it might otherwise have done so. In some ways the potential resilience of an economy may be a philosophical question, but it is no less valid for that, and for policy makers it is clearly extremely pertinent.

Our approach is based upon distinguishing between three elements of economic resilience. The first is the notion of resilience as a measure of the ***performance*** (or outcome) of an economy. This underpins our consideration of the first hypothesis for this study and our typology development (reported above in Section 2 and based around business cycle analysis). It is the basis for much of the developing literature on regional economic resilience, where a broad distinction can be made between two different conceptions of the term (Pendall et al, 2010).

- The first is based on the engineering conception of resilience which focuses on the resistance of a system to shocks and the speed of its return or 'bounce-back' to a pre-shock state or equilibrium. The faster the system returns to equilibrium, the more resilient it is (Holling, 1996). This is deployed by Hill et al (2011) in a study of regional economic resilience in the US which they define as the ability of a regional or metropolitan economy to maintain or return to a pre-existing state in the presence of some kind of externally generated shock. Our analysis of the territorial impact of the last economic crisis builds on this conceptualisation of resilience.

- The second is based on an adaptive notion of resilience which derives from the theory of complex adaptive systems. These are systems which are characterised by complex non-linear dynamics and an adaptive capacity that enables them to re-arrange their internal structure spontaneously whether in response to an external shock or to some internal or 'self-organised criticality' (Martin and Sunley, 2007). Regional economic resilience from this perspective is thus conceived as a multi-dimensional property embracing not only *recovery*, but also *resistance*, or the ability of regions to resist disruptive shocks in the first place; *re-orientation,* or the extent to which the region adapts its economic structure; and finally, *renewal*, or the degree to which the region resumes the growth path that characterised its economy prior to the shock (Martin, 2012).

The second element that we explore is what characteristics influence the levels of resilience to economic crisis observed across regions. This consideration of the ***capacity*** for resilience lies at the heart of the second hypothesis of the study. This informs our thinking in looking for the determinants, or components of, resilience. This is also an area where our case study work provides an opportunity for achieving greater depth and insight than has perhaps been available to date in much of the literature. Again there are two key distinctions to be made here.

- The first relates to the *innate* capacity of a region. This refers to the structural or systemic conditions which influence the manner in which the regional economy responds to an economic shock. Such characteristics may include features such as economic structure, demographic structure, settlement structure or governance structures. They tend to be institutionally embedded and slow to change.

- The second relates to the *adaptive* capacity of a region. This takes a more 'agency'-based approach, emphasising the importance of the choices made by businesses, households, individuals and organisations, such as governments. A dimension that lay at the heart of our discussion of complex adaptive systems reported in the Inception Report. This agency perspective also marks our work out from most current writings on economic resilience, which tend to focus on the role of systems and structures (see Annex C). Consideration of the adaptive capacity of a region places an emphasis on the ability of agents to prepare, to react, to respond and to learn.

Finally, the third element that we explore in our work is the notion of resilience as *agenda*. This highlights the normative and political dimensions of resilience. Resilient outcomes (e.g. persistent poverty cycles) may not always be desirable, whilst non-resilient outcomes (such as lower growth rates) may depending upon the

perceptions of the agents involved and their overall goals and objectives (e.g. Hill et al, 2011; Shaw, 2012).

Combining the literatures noted above reveals that ***adaptive resilience*** is shaped and built by two broad sets of determinants.

- The first of these can be characterised as relating to the regional economic system and its structure, or its unique and inherent 'DNA'. These characteristics constitute the defining features of a regional economy, and are shaped by its historical, geographical and economic context. As such they are relatively slow changing but play a key role in shaping resilience. These include: its industrial structure and diversity; market size; endowments in natural (place) resources; endowments in human (people) resources; openness and trade orientation (local and global); degree of spare capacity; its national macroeconomy; its governance structures (centralised or decentralised etc); its modularity, networks and connectivity (between key actors).

- The second set of determinants of resilience is the actions or agency of individual and collective agents in the regional economy. These are the behavioural responses or the actions taken by different actors in response to the shock or crisis and thus change more quickly. These can be separated into three different kinds of response – *proactive* measures (actions taken in advance of or in anticipation of the crisis); *reactive* responses (measures taken during the crisis to alleviate, help adapt, cope, or adjust); and *transformative* behaviour (actions to change the path of economy, encourage novelty / innovation, adapt structures or the region's 'DNA' or long-term behaviours and growth paths). For each group of agents, different responses can be identified that might fit under each of these categories (e.g. the responses of policy actors can be proactive – e.g. monitoring; reactive – e.g. spending on key sectors, buffering; and / or transformative e.g. investment in greening, new platforms for innovation, learning, diversification etc). All of these responses are shaped by the region's unique (place and people) context and the capacity of actors to see and process information (and thus act upon it) is highly variable.

The unique mix of these capabilities within each region and their interaction with the wider economic system will determine the resilience of the regional economy.

3.2 Identifying components of economic resilience

Based on an assessment of the available literature, coupled with the interim findings of our case study research, we have identified a variety of characteristics that have been associated with greater or lesser levels of economic resilience. Much of this literature was set out in the Inception Report for this project. However, even the most

cursory reading of the literature illustrates that there is little comparative evidence available as to the significance of different characteristics across varying regional and national contexts. It is this gap that we are seeking to fill with the current work.

To do so we have identified a limited suite of indicators that might be regarded as representative of the characteristics concerned. These are based on those identified in the literature referred to above. In doing so we have also been cognizant of the availability of data across the ESPON territory, with preference given to those datasets available at a NUTS2 geography as a minimum. In practice this has limited our indicator set in only a few cases, most notably around the question of levels of entrepreneurship.

Using these selected indicators we intend to test their power of explanation for the Resilience outcomes identified for each region. This will provide an important insight for policy-makers, and researchers, as to the value of these characteristics in determining economic resilience, either individually or in combination.

There are some acknowledged methodological challenges to the work. Not least the risk that some indicators might be closely correlated to our measures of resilience itself. Unemployment could be one example of this. A second challenge is the limited availability of robust comparative timeseries data for many of the indicators selected. A third is the variable dates at which regions have been affected by the economic crisis (broadly specified). This means that we have to take judgements as to the validity of the datepoint-data available to the study in relation to the geography of the crisis itself. Our final challenge has been the unavailability of some key data sets at a level below NUTS0 and, in some limited cases, the difficulty of accessing other data in a quantitative format.

3.3 Potential influencers of resilience

Analysis of the literature and the interim findings of the case study research for this project suggests that the following characteristics have the potential to influence regional economic resilience:

- That prevailing endowments of physical capital and human capital can all positively influence levels of resilience
- That the prevailing condition of the economy is influential, with stronger economies more resilient than those that are weaker,
- That the sectoral structure of an economy can play an important role in levels of economic resilience, and that more diverse economies tend to exhibit greater levels of resilience
- That access to markets, and the size of these markets can positively affect the resilience of an economy

- That levels of entrepreneurship and innovation are positively associated with economic resilience
- That levels of social capital, informal institutions and network capital exert a positive influence on levels of economic resilience
- That governmental structures can influence levels of economic resilience, with greater levels of fiscal or legislative autonomy supporting economic resilience at a sub-national level
- That the presence of a well-educated and skilled labour force is an important influence on regional economic resilience, together with good school-leaver qualifications
- That the flexibility of labour markets can exert a significant influence on the economic resilience of regions.
- That higher levels of labour market participation rates is a feature of more resilient regional economies
- That resilient regions have lower levels of unemployment
- That housing affordability can be a feature of resilient regions
- That the presence of a strong critical mass of urban-based activities can be identified as a significant influence on the resilience of particular areas

3.4 Existing measures of economic resilience

Existing indexes of resilience (see Annex D) identify various components of resilience, and use a variety of indicators. One reason for this is the differential scale at which the analysis is applied, with some taking a national perspective and others a sub-national approach. Table 3.1 below identifies the different components. There is some overlap in the identified components, with some use of similar individual indictors, but overall there is more difference than similarity. Briguglio highlights national traits, BRR takes a capacities approach, whilst Experian contributes the notion of 'place'. Consultancies such as EKOSGEN-EDAW and ECORYS in the UK are also beginning to develop models of Resilience. For ECORYS this is about the 'capacity of the local economy to adapt to a rebalancing of economic activity', measured by levels of enterprise, private-sector jobs in high value and knowledge intensive industries and a strong skills base. For EKOSGEN-EDAW it is related to shock-counteraction and shock-absorption. Interestingly, EKOSGEN-EDAW introduces the notion of inter-connectivity and integration with surrounding areas.

Table 3.1 Indexes of Resilience

Briguglio et al (World)	*BRR (US)*	*Experian (UK)*	*EKOSGEN-EDAW (UK)*	*ECORYS (UK)*
Macroeconomic stability				
Microeconomic efficiency				

Good Governance				
Social development	Socio-demographic capacity	People	Workforce and Labour market	Skills
	Community connectivity capacity	Community		
	Regional economic capacity	Business	Business and Enterprise	Enterprise and Knowledge intensive businesses
		Place	Scale and proximity	
			Assets and Infrastructure	

In examining the components which might influence regional economic resilience we have chosen to adapt the approach developed by Experian and focused on Business, People, Community and Place. This reflects the conceptual research undertaken for this project and acknowledges the roles of these factors as key sources, or agents, of adaptive capacity within an economy. We have also sought to incorporate thinking from the other approaches. One consideration for this work is the role that national characteristics (such as macro-economic stability and micro-economic efficiency) might play in differentiating regional economic resilience across the EU, another is the significance of scale and proximity.

3.4 The selected indicators

Through a combination of:

- Examination of existing conceptual literatures
- Analysis of the preliminary results of the case studies
- Reflections on existing indexes of resilience
- Review of available data sets

ECR2 has identified a list of indicators with available data through which to explore the economic resilience of regions to the economic crisis. These are summarized in Table 3.2 and are grouped under the headings of:

- Business
- People
- Community
- Place

The principle analysis will be undertaken using those indicators which are available at the regional scales (R). In addition, some indicators that are only available at the national scale (N) may also be considered. Those indicators for which only qualitative information (Q) is currently available or where availability is highly variable in terms of time or geography (V) are not to be considered further at present. Some indicators are not available as far as this study can discern (na) and one remains to be ascertained (TBA). Annex E contains a fuller statement of the indicators to be explored.

Table 3.2 Summary of Indicators of Resilience

	Indicator	***Source***	***Lowest unit***	***time***	***Use***
Business	Sectoral mix (broad aggregate)	Experian data set ESPON typology	2	S/T	R
	Number of enterprises	Experian data set	0	P	N
	Enterprise discontinuation	GEM	0	P	V
	Size of enterprises	Experian data set		P	N
	Level of self-employment	Experian data set	0	S	N
	Investment by businesses	Experian data set	2	S	R
	Research/Innovation by firms/Research institutes	ESPON - SMART Pillar EU RIM ESPON KIT	2	P/T	R
	Physical Capital	Derbyshire et al calculations	2	P	R
People	Participation rate	Experian data set	3	S	R
	Low work households	ESPON Inclusive Pillar	2	T	R
	Employment rate	Experian data set	3	S	R
	Household disposable income	Experian data set	2	S	R
	Household savings	na			

	Household bill payments	Eurobarometer	0	P	N
	Hours worked	Experian data set	0	S	R
	Unemployment rate	Experian data set	3	S	R
	Flexibility of labour market	na			
	Skills of resident population	Experian data set ESPON data	2	S P	R
	Beliefs/Perceptions of population	Eurobarometer	0	P	N
Community	Governance structure	ESPON TANGO project Marks *et al* Index of Regional Authority	2	P	R
	Degree of fiscal autonomy	Eurostat Marks et al Index of Regional Authority	0 2	P P	R
	Territorial management (planning)	Qualitative			Q
	Degree of social capital	Qualitative			Q
	Entrepreneurial interests	GEM (national only)	0	P	V
	Community-based (informal) responses	Qualitative			Q
	Level of social enterprise	National only	0	P	V
	Innovation Confidence	Point survey, limited coverage	0	P	V
	Old-age dependency	Eurostat	2	S	R
	Business birth rate (incl. in ent int)	Experian data set	0	P	N
	Income inequality	TBA			

Place	Level of migration	Experian data set	2	T	R
	Openness of economy (ie level of external trade – non domestic, non-EU)	ESPON TIGER	2	T	R
	Territorial characteristics – degree of agglomeration, peri-urban development, rural	Eurostat	2/3	T	R
	Presence of natural capital (natural resources, landscape quality)	ESPON Atlas	2	T	R
	Availability of spare capacity	na			
	Accessibility of area (different transport modes)	ESPON Atlas	2	T	R
	Property market features	Qualitative			Q

Time: S=series, P=point, T=typology

4 Territorial resilience as a policy concept

Our third hypothesis relates to the potential for policy-led actions, at different territorial scales, to influence levels of regional economic resilience. Theoretically, policy-makers can be powerful actors in promoting resilience through their role as facilitators, influencers, agenda-setters, and direct intervention (see Section 3). Their role in practice remains to be explored.

Much of the evidence for the role of policy-makers is being gathered through our case study activities, which, at the time of the Interim Report, are insufficiently developed to report on this element. However, a review of policy agendas at the European levels and at a sub-national level in one Member State illustrates how the question of managing resilience is rising in policy discourse, and strengthens our interest in the question of resilience as 'agenda'. From initial work undertaken through this study, paths of potential actions available to policy-makers are already emerging.

4.1 European policy agendas

At the EU level the recent economic crisis is regarded as an opportunity for change rather than a one-off hit that allows the resumption of business as usual. Thus the emphasis is upon encouraging *sustainable recovery* with the Europe 2020 strategy document explicitly stating 'our exit from the crisis must be the point of entry into a new economy' (p. 10). More specifically, the Territorial Agenda 2020 states that the crisis 'provides an opportunity for a transition towards a more sustainable and resource efficient economic structure if appropriate actions are taken' (p. 5). At the same time, European policy-makers are also aware that crisis induced austerity measures are likely to present significant difficulties for some regions in terms of finding resources to invest in appropriate innovation and regional development policies. This creates an imperative for stronger inclusion of private sector actors and resources in such policies and governance.

More broadly, it is also acknowledged that different regions are affected differently by crises. Thus according to the Territorial Agenda 2020, 'local endowments and territorial characteristics have growing importance for regions in order to cope with and recover from external shocks' (p. 5). Much of the focus in terms of the objective of sustainable growth to date has been on adaptation in relation to regions resilience to climate change. The Commission has thus placed strong emphasis upon the use of Cohesion policy to encourage investment in renewables, energy efficiency, risk-prevention and investment in green infrastructure and public procurement. The Territorial Agenda 2020 also notes that 'regions have different opportunities to embed adaptation and mitigation into their strategies' (p. 6).

Across EU policy strategies, increasing emphasis is being placed on encouraging the development of integrated, place-based policy action. This is policy which is tailored

to contexts; where intervention elicits and utilises local knowledge; where linkages and interdependencies between placed are taken into account; and which is part of a territorialised social agenda which aims at guaranteeing socially agreed standards for particular aspects of well-being (Barca, 2009; Territorial Agenda, 2020). The logic behind this is that cities and regions are faced with different combinations of development problems and growth potential.

The EU's Cohesion Policy is acknowledged to be 'uniquely placed' to contribute to the EU's sustainable growth objectives' (Commission, 2011; p. 12). As well as promoting its delivery through multi-level governance and public-private partnerships, the external intervention it provides for territories may prove critical in facilitating appropriate adaptation, changing development trajectories and thus in building resilience. The Barca report (2009; p. 22) observes that 'an exogenous intervention might be needed to trigger change'. It goes on to acknowledge, however, that such intervention must work with the grain of territorial assets and capacities – 'the purpose is obviously not to import institutions from outside, but to provide the pre-requisites for them to develop, to tilt the balance of costs and benefits for local actors to start building up agency, trust and social capital, to change beliefs and to experiment with institutions and democratic participation. As Amartya Sen (1999) puts it, what is called for is a contribution to enhancing and guaranteeing the substantive freedom of individuals seen as active agents of change, rather than passive recipients of dispensed benefits'.

Cohesion policy in particular has the capability to unleash territorial potential through integrated development strategies based on local and regional knowledge of needs, and through building on the specific assets and factors which contribute to the economic development of places. It this requires the encouragement and active involvement of local actors. Territorial Agenda 2020 places particular emphasis upon the development of strong local economies through effective use of territorial assets and the integration of local endowments, characteristics and traditions into the global economy. This is seen as critical 'in strengthening local responses and reducing vulnerability to external factors' (p.8) – in other words for the development of economic resilience.

This thinking clearly aligns with and has informed the conceptualisation of resilience developed for purposes of this study. Regions are understood to be highly diverse and evolutionary entities. Furthermore, their resilience is here conceived as a place-based capacity shaped both by a territory's inherited resources and structures, as well as its people and the agency of its individuals, businesses and institutions.

4.2 Sub-national policy agendas

At a sub-national level there are signs that there is a stronger emphasis on the notion of 'economic resilience' emerging. This can most readily be seen in the UK, which

we use as an exploratory lens for reporting here. We are exploring the comparative emergence of the concept in other Member States and will report more fully on this in the Draft Final Report.

Evidence for the increasing attention being paid to economic resilience can be seen most vividly in the extent to which the term now occurs within policy documents and strategies. This is illustrated by the inclusion of a section in "Creating Successful Local Economies" - the national publication of the LEP Network (England's new structure of Local Enterprise Partnerships (LEP) responsible for local economic development) – entitled "Economic Resilience and the Long-Term Growth Challenge" (The LEP Network, 2012). This highlights both the emergence of this theme and also the longer-term perspective being associated with it. In other examples we have the New Economy Manchester (the LEP for Greater Manchester) speaking of Building Economic Resilience across Greater Manchester, and, in its submission to Government the proposed LEP for Cornwall and Isles of Scilly identifying the "ingenuity, resilience and aspirations of our area" (www.cornwall.gov.uk). Whilst there is evidence that some authorities, such as Sheffield City Region, were beginning to consider notions of economic resilience prior to the economic crisis in the UK, it is apparent that the crisis has provided an impetus to sub-national policy considerations in this field.

Examining the available documentation it is apparent that, in broad terms, sub-national policy-makers seek to influence resilience adaptive capacities in three main ways.

First and foremost, they seek to provide leadership of the region's resilience agenda and through identification of resilience challenges, goals and preferred outcomes or measures of success, can provide strategic leadership of the agendas of individual and collective actors in the region. This is evident across the strategy documentation, as well as the development of a new language of discourse. They also play a critical role in mobilising knowledge of the economic environment and how it is changing, and disseminating this knowledge and learning to other actors in the region. This depends upon highly networked information and management systems. A number of sub-national governments have already devised resilience action plans or strategies which make an assessment of their risks and vulnerabilities to economic downturns and set out ways and means by which they may take pertinent action (e.g. City of Edinburgh, 2008). In the case of Aberdeen resilience is also promoted but is conceived as an individual trait rather than a systemic strength (Aberdeen – the smarter city, Aberdeen City Council, 2012). The development of indexes of Resilience, or tools for identifying levels of resilience are a strong part of this process (Yorkshire Cities, 2009 and 2011), a demand for which many consultancies respond (see for example, ECORYS, EKOSGEN and City of Sheffield, Experian).

Secondly, and directly following on from the above, sub-national governments can take action to influence the adaptive capacities of other individual and collective actors in the region. A range of specific interventions can be identified for each different actor or actors in the region. Thus in terms of business, for example, they may seek to prioritise investment in growth business sectors or facilitate sectoral diversity. In terms of people, they may invest in rapid redeployment initiatives to support workers adaptability to changing labour market conditions (e.g. PROACT, Wales), or provide 'life-changing' funds to support individual re-training or skill enhancement. In the North East of England, Gateshead Council have introduced an 'Economic Resilience Package' to "alleviate the worst effects of the recession" (Gateshead Council, 2012). In terms of community, they may invest in the development of key multi-functional community hubs to build stronger social networks and relationships.

Thirdly, sub-national governments also have the capacity to act on and help enhance key structural features of the region's economy or its unique, place-based assets or 'capitals'. These include a place's economic and financial capital, its social and cultural capital, as well as its political, natural and built capital assets. For example, in terms of social capital, sub-national governments act as unique connectors, facilitating complex communication and co-operation between multiple agents including a region's firms, labour force, consumers, advocacy groups and so on, that otherwise might not be made.

In summary therefore, sub-national governments thus have a unique and important capacity to provide 'institutional' or 'policy entrepreneurship' that can co-ordinate, provide strategic direction and leadership, enhance place assets and improve the functioning of key networks in the regional economy.

But as well as understanding *what* sub-national policy-makers can do, it is also important to understand *when* they can do it. Resilience thinking emphasises the dynamic nature of regional economic development trajectories and policy responses. As such, governance and policy actions in relation to resilience can be categorised into three broad types or horizons, distinguished according to when they occur relative to the shock or stimulus.

- Anticipatory actions - that seek to build a stronger understanding of the components of the regional economy, its existing strengths and vulnerabilities to shocks
- Reactive policies - which seek to respond to economic downturn to mitigate the effects in a region, generally a series of shorter-term actions
- Transformative actions – that seek to bolster the resilience of an economy over the medium to long-term

Examples of each of these have been identified, although the precise form that they each take varies between regions. The TPG is exploring the development of a useful tool for sub-national actors, which might build upon the following assessment grid (Table 4.1):

Table 4.1 Assessment Grid: Sub-national policy action for resilience

Key actions	Anticipatory	Responsive	Transformative
Resilience agenda: understand challenges and vulnerabilities, set preferred outcomes and measures of success			
Enhance adaptive capacities (of business, people, community)			
Act on system structures, place assets and networks/ relationships			

5. Communication activities of the project

A number of dissemination activities have taken place within the project since the submission of the Inception Report in July 2012.

Website and E-bulletin

Since the inception of the project, two e-bulletins have been produced, informing project partners and their networks of the activities that have been taking place. These can be found on the ECR2: Regional Economic Resilience website, hosted by Cardiff University. Alongside the e-bulletins, this website is continually updated with information from the project as well as topical details, thoughts and reading. This is with the aim of extending the reach of the project. The website is located at: http://cplan.subsite.cf.ac.uk/cplan/research/economic-crisis

Press reports

The project was included in the Royal Town Planning Institute Wales' Summer 2012 edition of Cynllunio. Cynllunio is the quarterly magazine for the Wales branch of this national representative body.

Seminars

Early in December, Cardiff University represented the ECR2:Resilience project at ESPON's annual internal seminar is Cyprus. Hosted as part of the Cyprus Presidency events the seminar addressed the topical theme of Territorial Development Opportunities in Europe and its Neighbourhood to Foster Global Competitiveness. The ECR2:Resilience project was part of the economic competitiveness theme of the seminar and contributed to one of the two workshops organised for this.

Presentations

In mid-December, Project Partner 6 presented a paper at an Economics Research Seminar in Lancaster University, UK. The paper dates the classical business cycle for quarterly UK aggregate and regional employment to assess turning points in the economic cycle.

In November 2012, the Lead partner delivered one of the Plenary session papers at the Regional Studies Association (UK) Winter Conference entitled 'Regional Resilience: a New Model for Territorial Development?'.

The Lead partner was asked to present at an event organised by the West Cork Development Partnership. The event brought together almost 100 representatives of community development organisations and local businesses from across West Cork in

Ireland. It provided a great forum to introduce our ESPON study on regional economic resilience to a local audience and discuss the notion of resilience from a local perspective.

Forthcoming

On behalf of ECR2:Resilience, the Lead Partner has been invited to deliver a key note speech to a forthcoming Regional Studies Association conference to be held in Ireland on 22 February 2013. With an audience of academics, practitioners and policy makers the conference will provide a valuable platform to highlight, and discuss, some of the emerging results of ECR2:Resilience. The conference will be held in Cork City Hall and will also serve as the launch of the new regional strategy for South West Ireland by the South West Regional Authority.

The Lead Partner will also be leading a workshop on 'Planning and Resilience' at the annual conference of the Wales RTPI. This will reach an audience of practitioners and sub-national policy-makers.

6 Towards the Draft Final Report

Key tasks

1. Amendments to Interim Report
   Amend Interim Report in line with response by ESPON CU and Sounding Board. Led by Cardiff University
   May 2013
2. Finalise data collection
   Identify gaps in dataseries for all key indicators and implement strategy for overcoming these. Led by Experian plc.
   End May 2013
3. Resilience Components analysis of data
   Agree key characteristics and test their explanatory power as components of observed levels of regional resilience. Led by Experian plc and Cardiff University
   End July 2013
4. Resilience Performance analysis of data
   Using key datasets (employment and GDP) establish resilience of regional economies to the economic crisis. Led by Manchester University
   End July 2013
5. Complete Case Studies
   Finalise case studies, ensuring coverage of business perspectives and Structural Fund programming. Led by individual case study partners.
   End July 2013
6. Undertake wider stakeholder interviews
   Complete small pattern of interviews with representatives of EC, Member States and other informed observers. Led by Cardiff University.
   End September 2013
7. Draw up initial results paper (to inform SF programming)
   Consider effects of economic crisis on Structural Fund programmes, and response of these programmes to economic crisis. Led by Cardiff University, supported by individual case study partners.
   End August 2013
8. Analyse results
   Address research questions and key hypotheses in light of results identified. Led by Cardiff University
   End September 2013
9. Draft Final Report
   Complete Draft Final Report
   November 2013

Draft Content of Draft Final Report

Inter alia the report is envisaged to include the following elements:

a) Main Report (max 50 pages) that includes:

- introduction and context to the study
- the key findings/analysis/diagnosis of the project bringing together the most relevant outcomes of the case studies;
- guidance for multi-level and cross-sector territorial governance (preconditions and success factors);
- policy options for future EC Cohesion Policy;
- policy options for national, regional and local authorities.

b) Executive Summary (max 10 pages)

c) Scientific Report documenting the scientific work undertaken in the applied research including elements such as:

- Literature and methodology/theory used;
- Typologies, concepts developed and used;
- Data collected and indicators used, including tables with the exact values of indicators;
- Maps produced in support of the results, covering the territory of EU 27, Iceland, Liechtenstein, Norway and Switzerland;
- Models and other tools used or developed;
- Detailed description of the case studies;
- Roadmap for policy implementation and on the further research avenue to follow.

d) Appendices to the Scientific Report including detailed results of the separate case studies.

e) Additional material to contribute to the ESPON 2013 capitalisation and communication strategy, including:

- A slideshow explaining the assumptions, the methodology and the results of the project
- A selection of 5-10 maps suitable for the communication of project progress and results

7. Emerging policy conclusions

Naturally, it is rather early in the development of this project to be drawing strong policy conclusions. However, there are some preliminary conclusions that emerge from the study results to date. These are worth highlighting and will be subject to further testing as the study progresses.

Clear indications are emerging of the importance of a flexible and adaptive workforce and labour market; of the important role innovative firms can play; of the complex nature of entrepreneurial development in stimulating resilience; of the value of an open and diverse economy, and of the role of expectations of the future in influencing behaviour. The presence of a critical mass of activities also appears to be significant. The increasing integration of economic activity across regional economies is exacerbating the difficulties faced by local policy makers, but also suggests that the reduction in the 'localisation' of economies may offer opportunities to build resilience over the longer-term.

Evidence is also pointing to the effects of economic downturn on the long-term prospects for economic resilience and growth. This is particularly visible in the out-migration of young skilled labour from economies with fewer employment opportunities. However, there is some evidence that this need not be a permanent loss of talent and that past experience suggests that returning labour may act as a force for future resilience. The evidence emerging from our study also suggests that net-migration rates are a challenging indicator of resilience.

There is some evidence that public policies can make a difference to the economic resilience of regions. These actions can be considered at three levels:

- Anticipatory actions - that seek to build a stronger understanding of the components of the local economy
- Reactive policies - which seek to respond to economic downturn to mitigate the effects in a region, generally a series of shorter-term actions
- Transformative actions – that seek to bolster the resilience of an economy over the medium to long-term

Examples of each of these have been identified, although the precise form that they each take varies between regions. Context is also important, as similar policies appear to have different effects in different regions. Again this is an area to be explored in more depth in the following phases of the study. One of the clear points emerging from the case studies though is the ability of policy-makers to learn from the experience of past economic downturns. This ability is not evenly distributed.

A strong preliminary finding of the study is the constrained opportunities available for significant independent action at a sub-national level. In many cases, national level actions are more significant in determining overall levels of economic resilience.

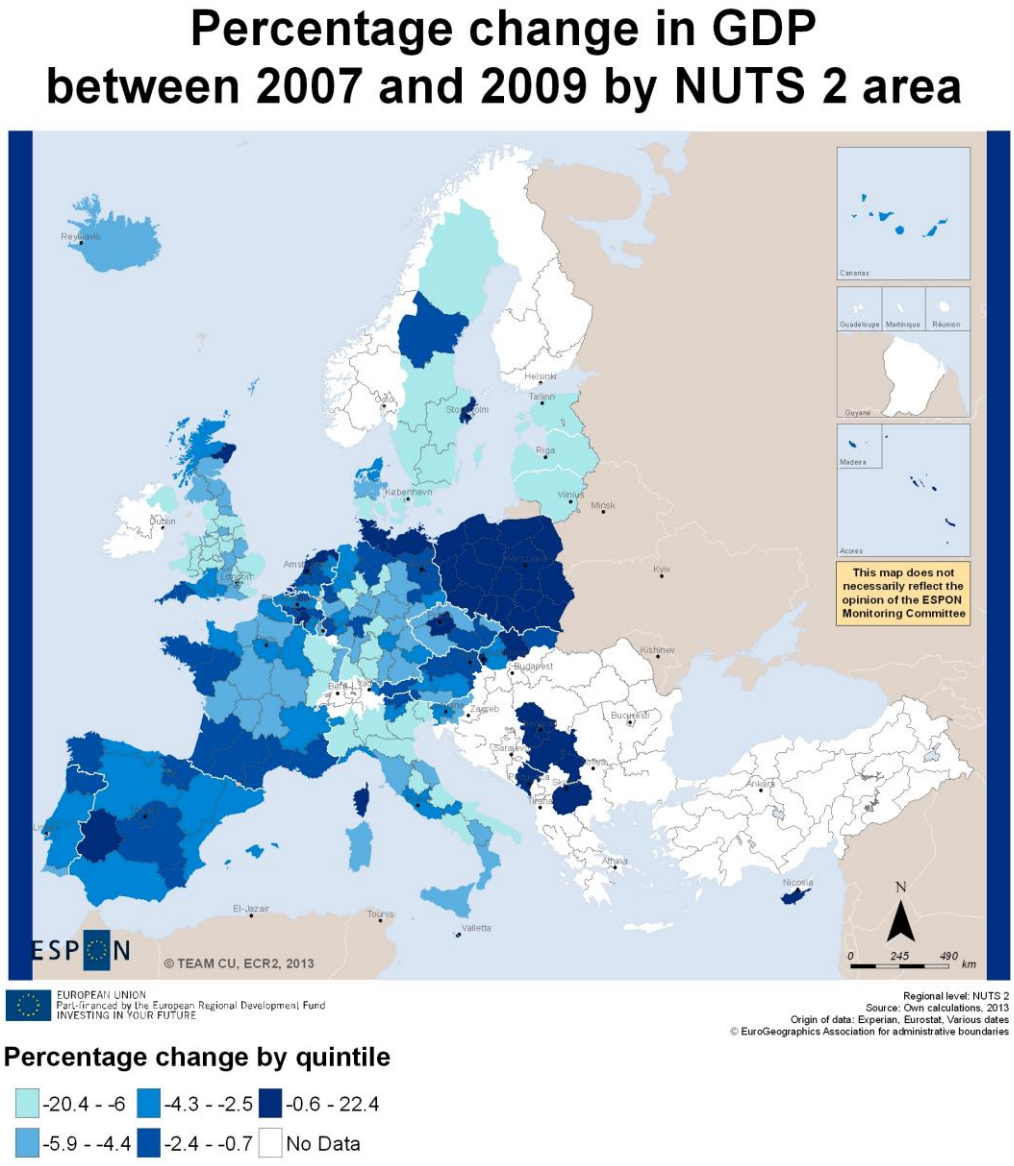
This is often a function of different governance structures and the distribution of powers and resources between different tiers of governance. Where sub-national powers are limited this highlights the importance of place-aware policies at a national, and supra-national, scale. This does not suggest that sub-national actions do not have a role, rather that their effectiveness is strongly influenced by the overall national economic context.

Finally, the TPG is beginning to consider the form that useful tools might take to be of assistance to sub-national actors. One of the key tools is likely to take the form of an assessment grid, assisting policy actors to assess the potential resilience of their region. This will consider elements developed and tested in the latter stages of this study under the categories of business, people, community and place.

ANNEXES

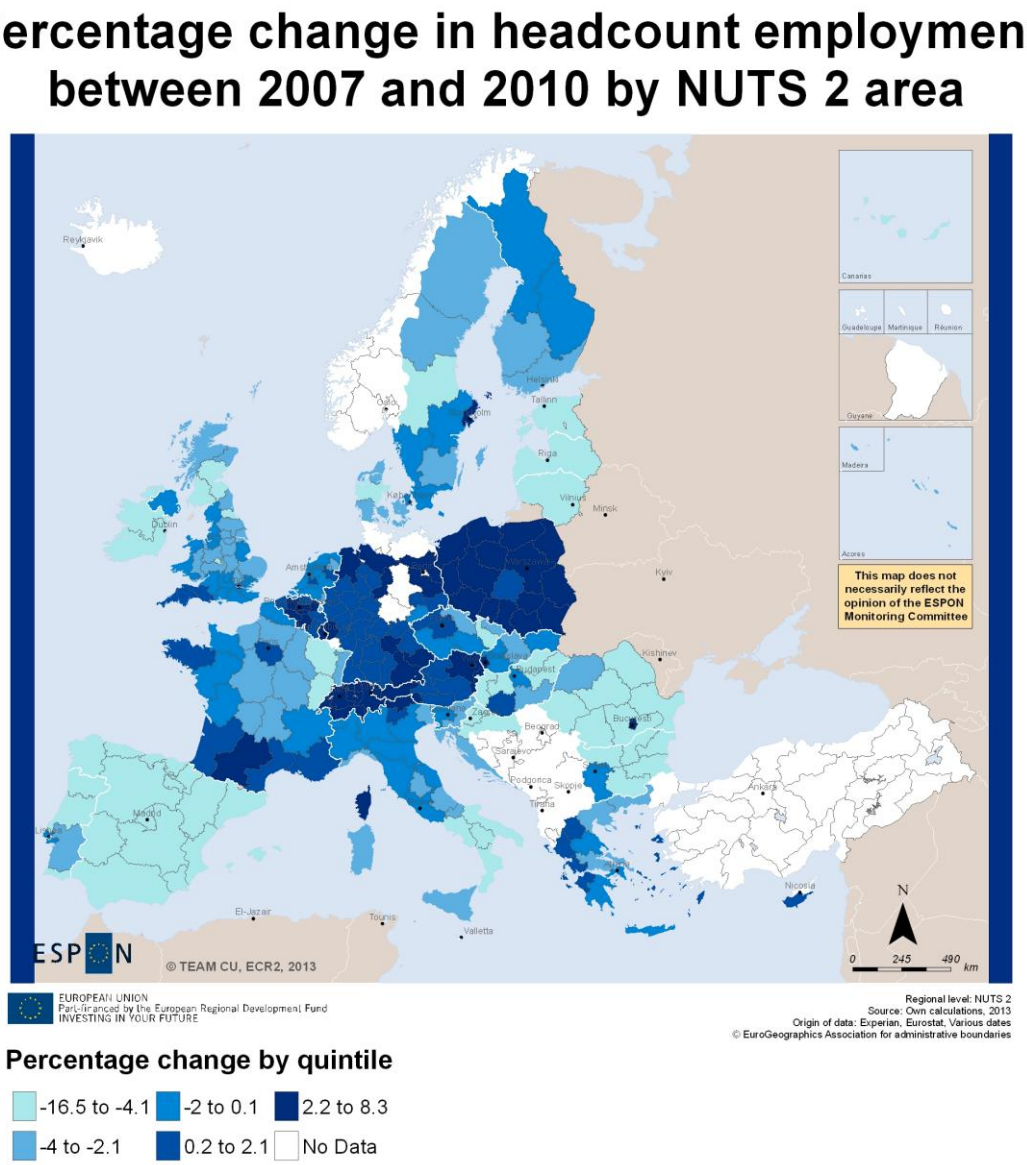
Annex A Mapping

Map 2.1 GDP change in European regions



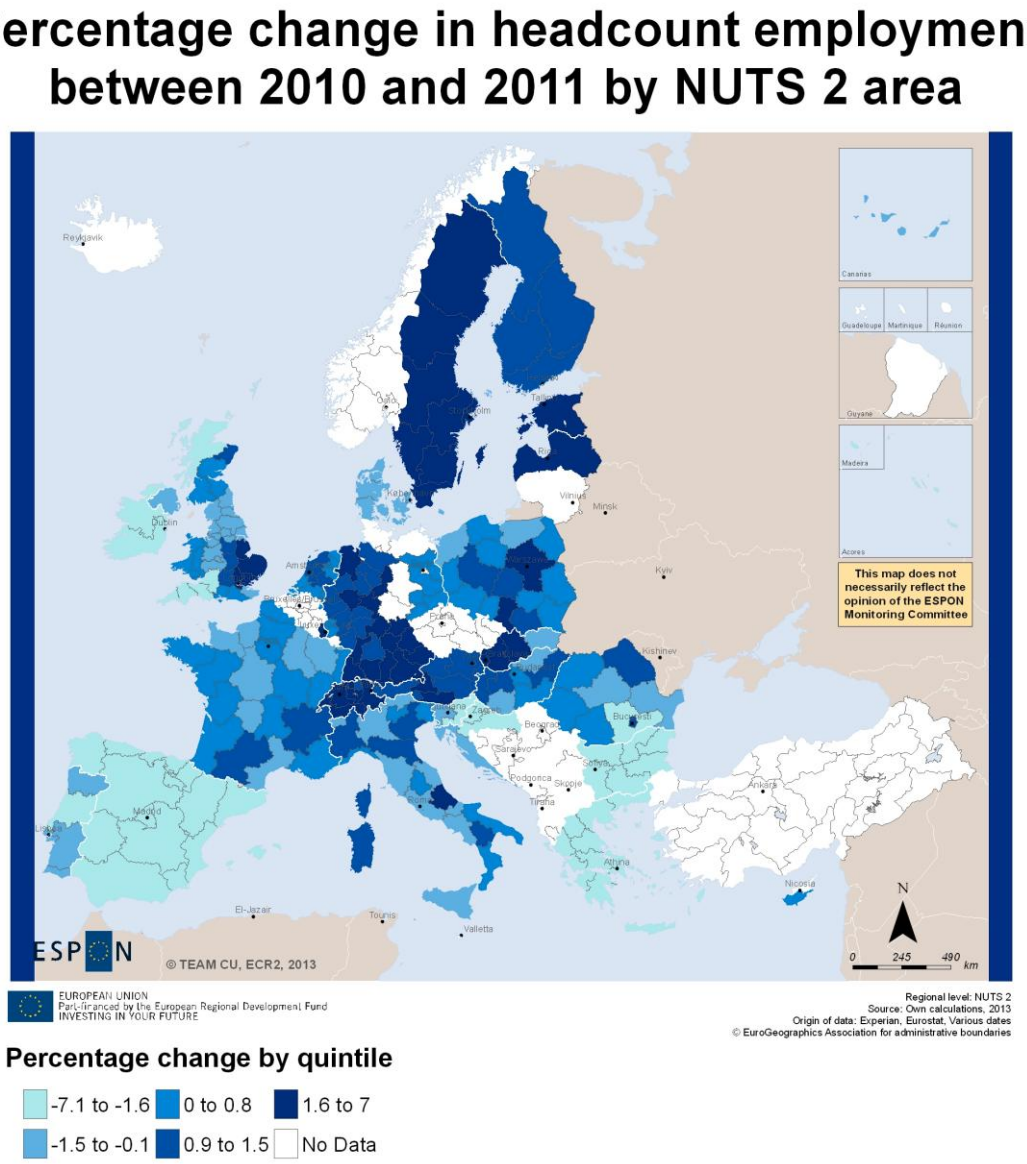
Source: own calculations based on Experian data

Map 2.2 Employment effects of the last economic crisis



Source: own calculations based on Experian data

Map 2.3 Post-crisis employment recovery



Source: own calculations based on Experian data

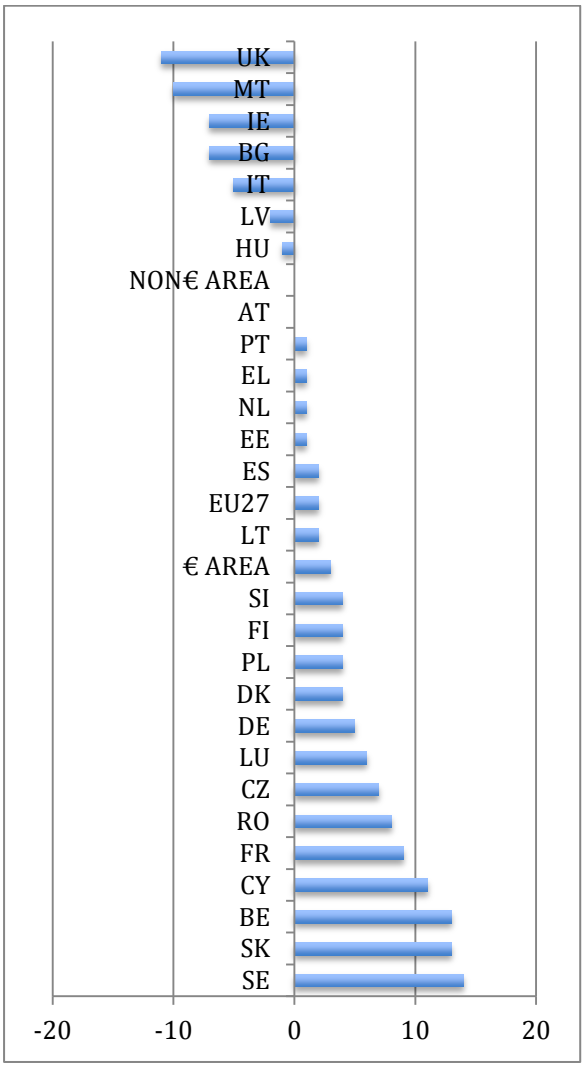
Annex B Perceptions of Crisis

One of the under-reported elements of the economic crisis is individuals' perceptions of the economic climate they face. These perceptions can have an important influence on individual and household consumption patterns, as people make decisions on what they anticipate the duration and severity of an economic downturn may be. Qualitative data can also provide insights into the effects of the crisis on the incomes available to households. This Annex provides an introduction to those insights.

Over the year from Spring to Autumn 2012 perceptions as to whether the employment situation will worsen have reduced in seven economies but increased in all others, particularly across the Eurozone (Figure B.1). The change in sentiment is particularly marked in Sweden, given its apparent resilience to date.

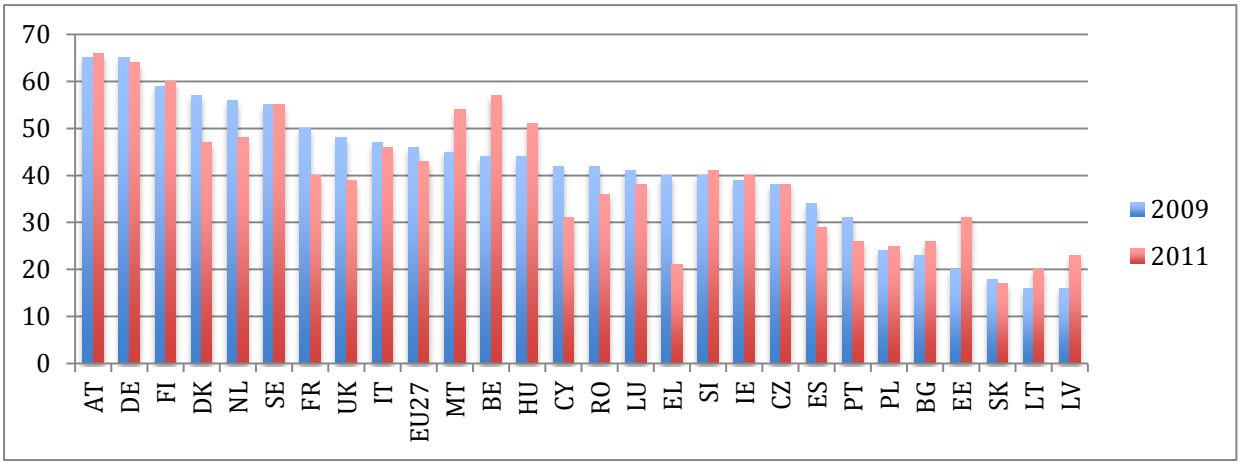
The effects of the economic crisis on individuals' perceptions of the future can be seen in their levels of confidence of being able to retain employment. Between 2009 – 2011 there was a marked change in the proportion of citizens who were very confident about the security of their employment (Figure B.2). The highest levels of confidence can be found in Austria, Germany and Finland. Significant falls the proportion of respondents expressing confidence are noticeable in a number of countries particularly Greece and Cyprus, with increases in those feeling very secure recorded in the Baltic States, Belgium, Hungary and Malta.

Figure B.1 Change in proportion of residents who believe worst of the crisis is still to come



Source: adapted from Standard Eurobarometer 78 (2012 Autumn)

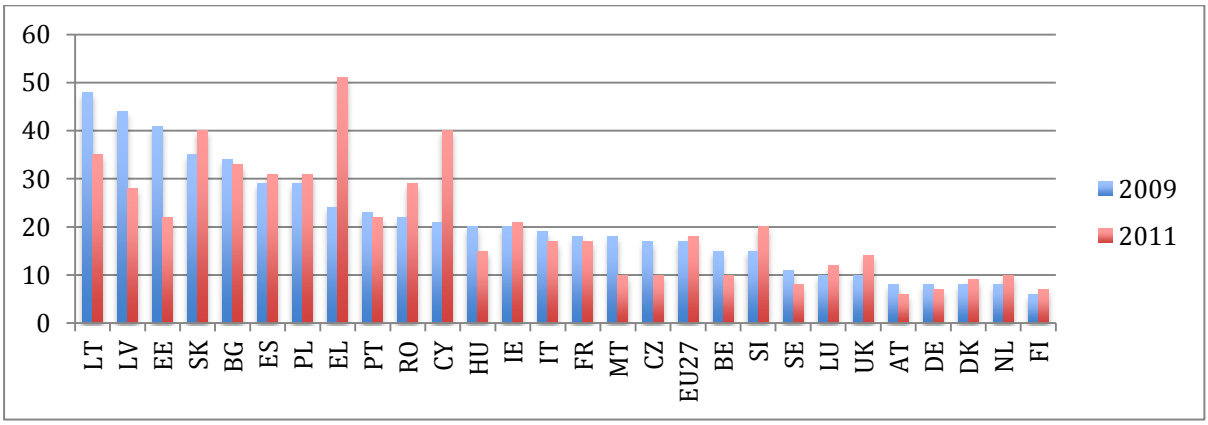
Figure B.2 Proportion of respondents Very Confident in their ability to keep their job (%)



Source: adapted from Eurobarometer Flash EB no 286 (2010) and Flash EB no 338 (2012) Fieldwork in 2009 and 2011 respectively

The corollary to those that feel secure in their employment prospects are those who feel insecure. Looking at the same Eurobarometer data for the proportion of residents who are not at all or not very confident about their ability to keep their job starkly illustrates a changing geography to the economic crisis (Figure B.3). In 2009 residents of the Baltic States were feeling least secure in their employment prospects, by 2011 this had changed to residents of Greece and Cyprus, with residents of Slovakia persisting in their feelings of insecurity.

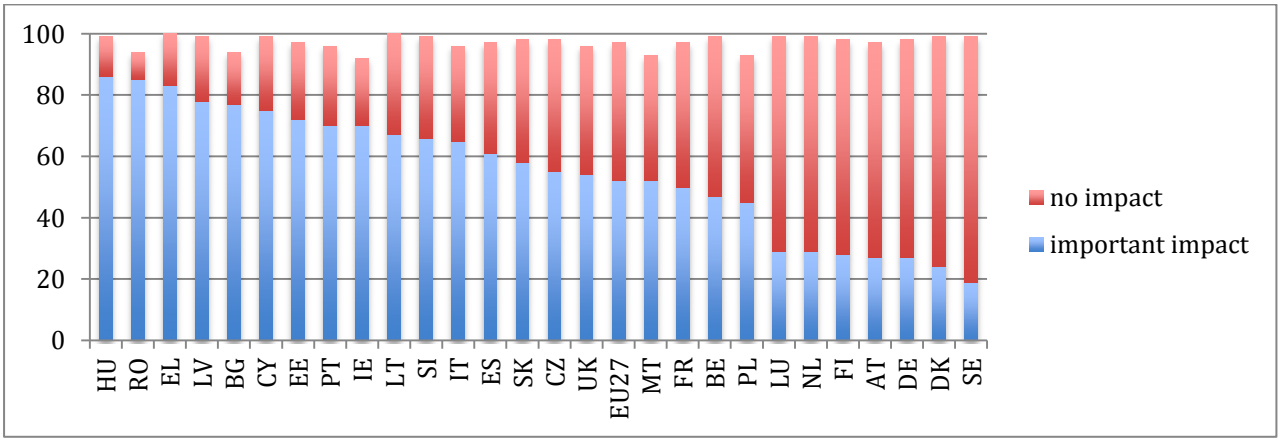
Figure B.3 Proportion of respondents Not At All or Not Very Confident in their ability to keep their job (%)



Source: adapted from Eurobarometer Flash EB no 286 (2010) and Flash EB no 338 (2012) Fieldwork in 2009 and 2011 respectively

In terms of the effect that the economic crisis is having on different parts of the EU, a survey undertaken in 2010 gives a very strong indication of the varying territorial impact. When asked whether the crisis was having a major impact or no impact, more than 80% of respondents in Hungary, Romania and Greece felt that it was having an important impact (Figure B.4). In contrast, respondents in Sweden, Denmark, Germany, Austria, Finland, Netherlands and Luxembourg were most likely to feel that the crisis was having no impact on their personal situation.

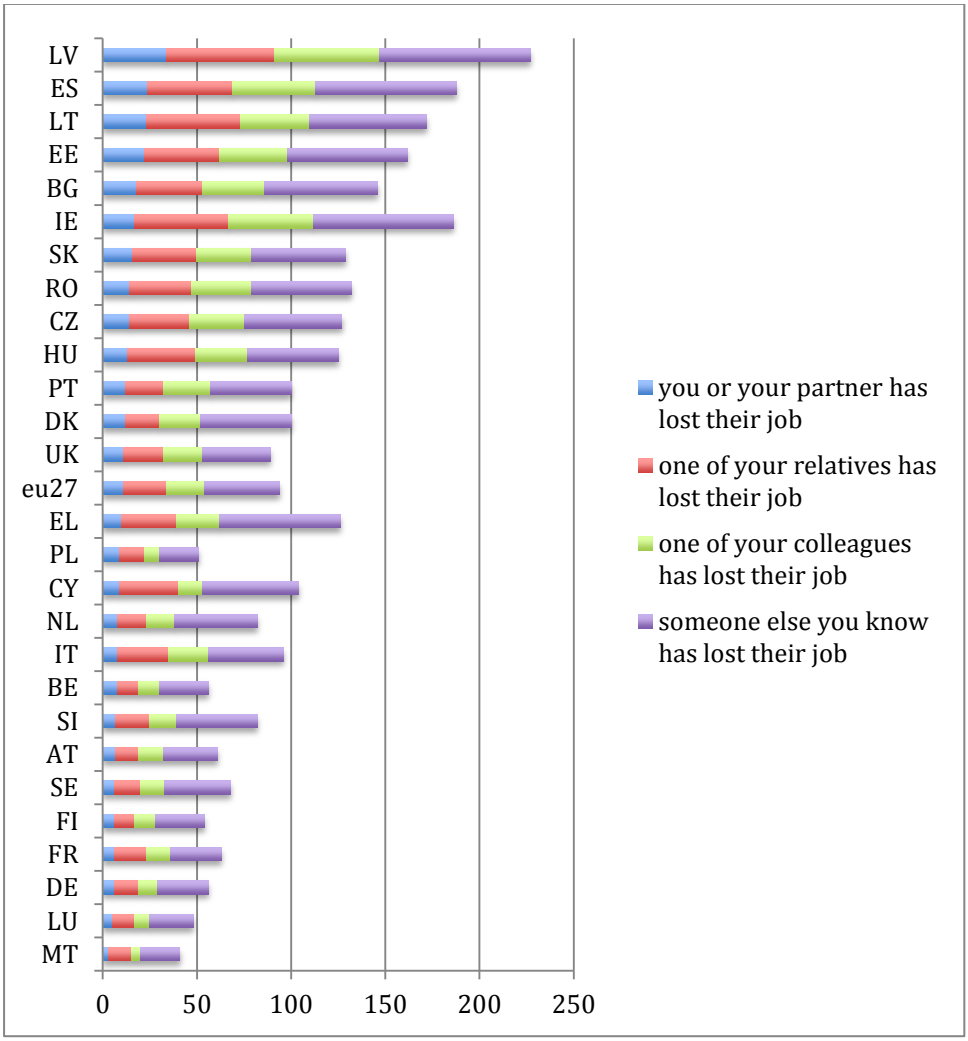
Figure B.4 Extent to which the crisis is having an impact on your personal situation (% respondents)



Source: adapted from Special Barometer (2010): Europeans and the Crisis

Looking at respondents responses in terms of the employment effects of the crisis (Figure B.5) it is clear that the effects were strongest in Latvia, Lithuania, Spain, Estonia, Bulgaria and Ireland. Whilst this accords with the macro-economic data identified earlier in this report it does not fully account for why residents in Romania and Bulgaria identified such strong adverse impacts of the crisis. However, one explanation may be that small economies are more likely to witness effects which are closer to individuals than larger economies. Again the least effected economies are those of Luxembourg, Germany, Finland, Malta and, in this instance, France. Of course, business cycle effects mean that a single survey point across the EU will pick up economies at different points in their business cycle, but nevertheless this provides a useful indication of the territorial distribution of the effects of the last economic crisis.

Figure B.5 Employment effects, as a direct response to the crisis:

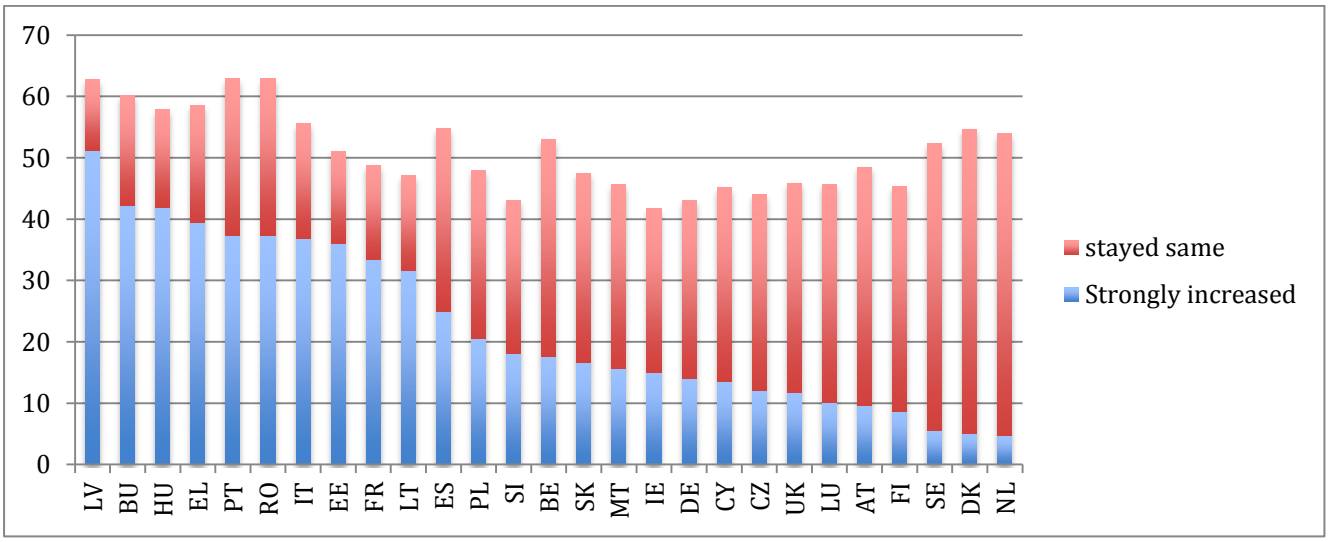


Source: adapted from Special Barometer (2010): Europeans and the Crisis
Note: Total will not sum to 100 as each category is an independent value. All values expressed as a % of responses

From the qualitative data available it is clear that remaining in employment is not the only influence on whether respondents to surveys felt that the crisis was having an important impact on their personal situation. The economic impact of the crisis can also be seen in differences households report in their ability to pay household bills and credit commitments. This may reflect changes in household income levels but, crucially, also reflects changes in the cost of goods and services facing households, their ability to access credit and levels of disposable income in the face of, potentially, rising taxes. From Table B.1, it is evident that households in nine economies identify the strongest difficulties in meeting household bills and credit commitments. The situation has also worsened somewhat between 2009 and 2011. In contrast to this, households in five economies do not report significant difficulties in either 2009 or 2011.

Alongside their own situation EU residents are also asked to comment upon their perceptions of poverty in the area in which they live. These data should be taken with a certain degree of caution as recent research by the EU illustrates that EU citizens typically overstate the level of economic 'bads', such as unemployment, and underestimate levels of economic 'goods', such as rates of economic growth[3]. However, even taking this into account, the reported responses support the broad picture of the territorial impact of the last economic crisis. When asked about the situation in the year up to 2009 (Figure B.6), respondents from Latvia, Bulgaria, Hungary and Greece were most likely to feel that poverty had strongly increased, whilst those from Sweden, Denmark and the Netherlands were most likely to feel that it had stayed the same.

Figure B.6 Perceived change in level of poverty in past 12 months in area where respondents live (% all respondents)



Source: adapted from Eurobarometer: Monitoring the Social Impact of the Crisis (Flash 276)

[3] Eurobarometer (2010) Eurobarometer 323 January

Table B.1 Households ability to keep up with household bills and credit commitments (%)

2009				
	falling behind with some/many bills	keeping up but it is a constant struggle	keeping up but struggle to do so from time to time	keeping up without any difficulties
BG	15	30	40	15
EL	14	44	22	20
LV	13	32	34	20
MT	13	31	32	23
HU	13	24	36	28
LT	13	26	24	35
EE	12	26	29	32
RO	11	22	41	23
CY	7	37	31	23
ES	7	17	31	45
IT	6	20	34	40
PT	5	35	34	24
IE	5	11	39	43
CZ	5	20	30	43
eu27	5	15	33	45
UK	5	12	32	50
BE	3	11	39	46

2011				
	falling behind with some/many bills	keeping up but it is a constant struggle	keeping up but struggle to do so from time to time	keeping up without any difficulties
EL	28	45	18	9
CY	23	36	27	13
BG	16	26	42	15
LV	14	21	37	27
HU	12	22	38	27
RO	10	15	47	27
MT	10	32	28	30
IE	10	17	41	31
LT	10	14	30	45
SK	7	21	29	41
IT	6	25	35	33
EE	6	25	26	42
PT	5	20	40	33
ES	5	19	34	41
eu27	5	16	34	44
CZ	5	20	30	44
UK	4	13	39	42

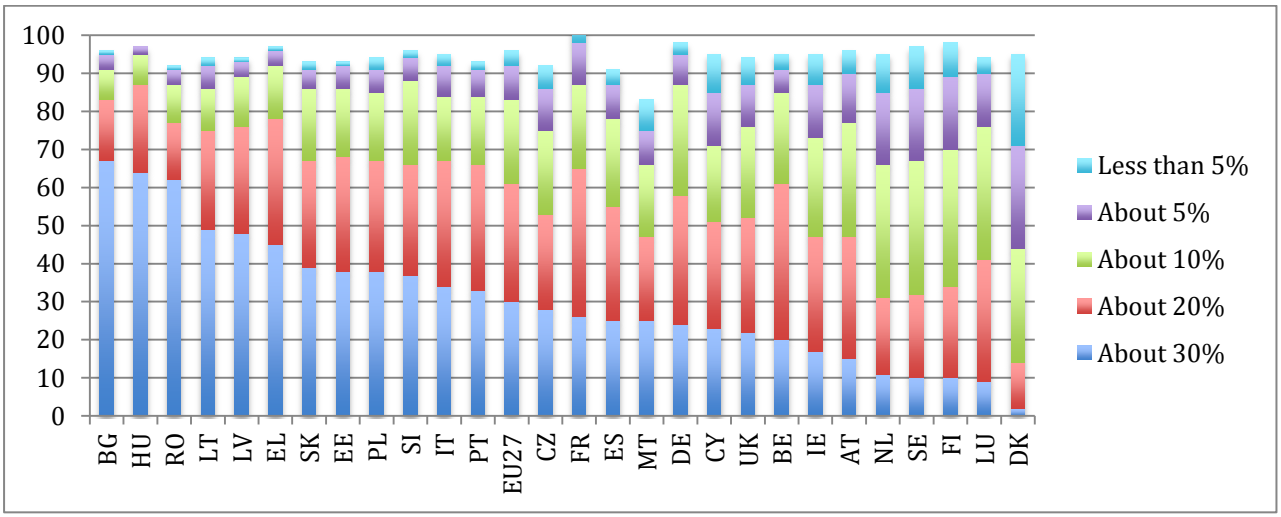
FR	2	15	40	42
PL	5	9	35	50
SI	4	10	35	51
SK	4	15	24	57
DE	3	11	35	50
LU	3	6	24	66
AT	2	5	29	63
FI	2	7	25	66
SE	1	4	18	75
NL	1	2	20	76
DK	1	2	14	82

FR	3	19	40	37
SI	4	11	33	52
PL	4	6	37	53
LU	3	7	35	53
BE	3	10	33	53
AT	2	10	32	55
FI	3	7	27	63
DE	2	11	29	56
NL	2	4	24	69
DK	2	3	16	79
SE	1	5	17	77

Source: Eurobarometer Flash EB no 286 (2010) and Flash EB no 338 (2012) Fieldwork in 2009 and 2011 respectively

Similarly, when estimating the proportion of residents within their locality who live in poverty, estimates were highest by residents of Bulgaria, Hungary and Romania in 2009, and lowest by residents of Netherlands, Sweden, Finland, Luxembourg and Denmark (Figure B.7).

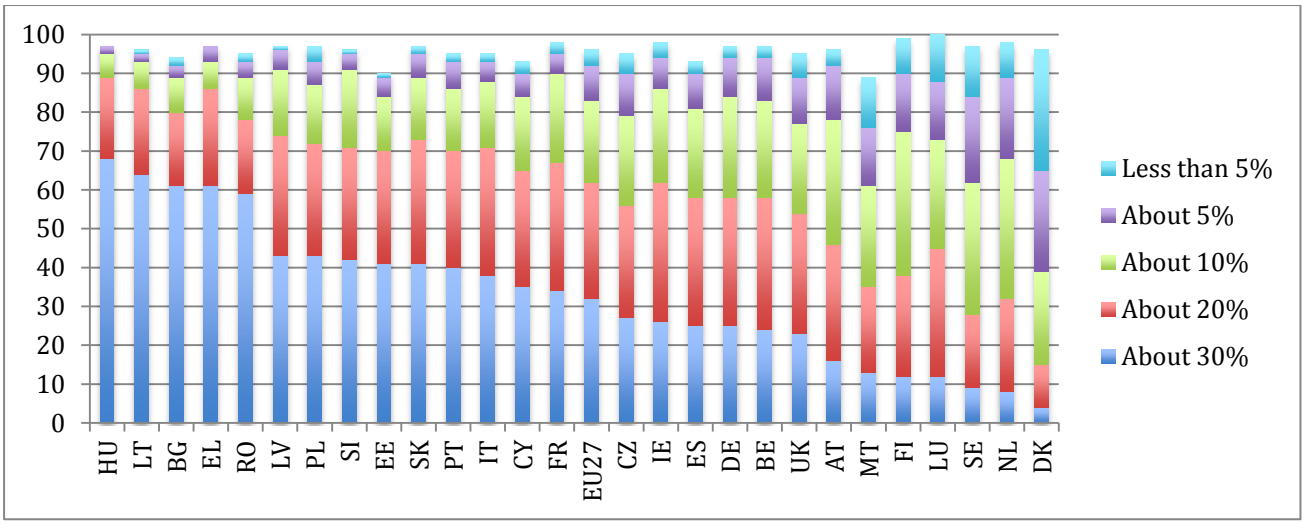
Figure B.7 Perceived proportion of population in area living in poverty in 2009 (% respondents)



Source: Eurobarometer Flash EB no 286 (2010). Fieldwork in 2009

In 2011, the same five Member States still had the lowest proportion of respondents who felt that about 30% of local residents lived in poverty (Figure B.8). However, there is now a clear grouping of five Member States where respondents feel that a relatively high proportion (about 30%) of local residents are living in poverty. As in 2009, this includes Hungary, Bulgaria and Romania, but now also includes Greece and Lithuania.

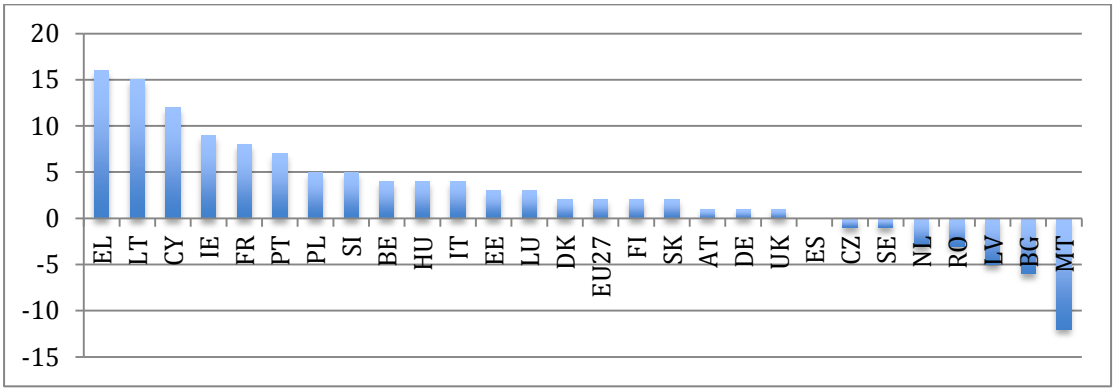
Figure B.8 Perceived proportion of population in area living in poverty in 2011 (% respondents)



Source: Eurobarometer Flash EB no 338 (2012) Fieldwork in 2011

The economies which recorded the biggest increase in the proportion of residents living in poverty, and, by extension, can be judged as those whose residents feel were worsening in performance between 2009-2011 are Greece, Lithuania, Cyprus, Ireland and France (Figure B.9). Those where residents appear to believe that circumstances are improving include Malta, Bulgaria, Latvia, Romania and the Netherlands.

Figure B.9 Change in proportion of residents believing that about 30% or more of residents live in poverty (2009-2011)



Source: adapted from Eurobarometer Flash EB no 286 (2010) and Flash EB no 338 (2012) Fieldwork in 2009 and 2011 respectively

Although the perceptual data available to the study is all at a national level it does provide some highly valuable insights which can be used to complement the economic indicators previously reported. Overall there is a strong complementarity between the perceptual data and the economic datasets regarding where the effects of the economic crisis have been most keenly felt. However, there are also some areas of dissonance which we will explore further.

One of the features which emerges from this data appears to be the, not unexpected, lag effect visible in some of the perceptual data, however, it also appears to illustrate a degree of foresight in so far as it illustrates peoples' perceptions of the future. Equally, it also illustrates that individuals can be uncertain of the future even where employment figures are relatively positive. This may have implications for their spending/consumption decisions which in turn will have effects on levels of aggregate demand within an economy. The extent to which 'belief' in the future may be a factor in the resilience of economies remains to be explored. This may also suggest that recessions can have longer-term effects on behaviour, attitudes and expectations – an area which we will also consider in the forthcoming stages of this study.

Annex C Resilience: Systems, structure and agency

Conceptualisations of resilience often share a common emphasis on defining resilience in terms of the functioning of the regional economy as a *system*. Resilience is defined in terms of the system's capacity to absorb, resist or respond to a disturbance and at least maintain its functioning, if not necessarily the same system structure (Carpenter et al, 2001). As well as shaping the definition of resilience, this systems-based perspective also extends to its measurement and analysis. Thus, from this perspective economically resilient and non-resilient regions are identified by examining the system's overall economic performance over a period of time, with criteria for a negative economic shock defined, and pre- and post-shock growth rates and trajectories of output and employment measured. Furthermore, analysis of the determinants of resilience then typically focuses upon the structure of the system whether through understanding how inherited regional production structures shape the sensitivity of regions to recessionary shocks and their subsequent recovery (as Hill et al, 2011; and Martin, 2012), or how these structures exhibit distinct phases or adaptive cycles of change in line with complex ecological systems such as panarchy (Simmie and Martin, 2010). Regional economic resilience from a systems perspective is thus understood principally in relation to the system's structure, performance and overall functioning (Martin, 2012).

Whilst valuable in highlighting the potential for resilience to illuminate how regional economies respond to economic disruptions, this system and structure emphasis has resulted in much less attention being paid to understanding the role of human agency in the adaptation at the heart of regional economic resilience. In part this reflects the inevitable degree of determinism evident in translating systems thinking from the natural and physical sciences to the social world where the ingenuity and foresight of human agency means evolutionary paths and cycles are capable of being overridden, broken or substantively changed (Davoudi, 2012).

Developing a fuller understanding of the role that the different actors in regional economies - including local and regional governments - can play in shaping their resilience to economic shocks requires that the systems-oriented perspective outlined above be supplemented with a *people-oriented* perspective. Literatures from health and psychology relating to individual and community resilience in the face of a range of adverse situations (such as natural disasters) are particularly pertinent here, and provide a number of important insights.

These include the notion that resilience is not simply an end point or performance outcome: it is a process or an ongoing development capacity to adapt to change and thrive. Furthermore, this literature focuses much more explicitly on how resilience is shaped by the innate resources or capacities of individuals and collective groups of actors, as well as the intentional actions they take to build up their capacities and respond to and influence the course of change (e.g. Magis, 2010; Kulig et al, 2010;

Berkes and Ross, 2013). The literature acknowledges that capacities to develop resilience vary between individuals, groups and communities (places) and that actors have differential abilities to acknowledge, respond effectively to and influence change (Goldstein, 2009). However, the literature also point to a number of characteristics that play key roles in shaping resilience including strong people-place connections, collaborative institutions and governance, strong social networks, well-developed community infrastructures and positive cultures of leadership and readiness to accept change (Berkes and Ross, 2013).

Combining these literatures thus suggests that regional economic resilience is an adaptive notion or *capacity* and can be defined as the ability of a regional economy (as a system comprised of multiple agents) to withstand, adapt to and recover from an external economic shock. It thus represents its ability to adapt and thrive in the face of adversity.

Annex D Existing Indexes of Resilience

In recent years there have been a small number of studies which seek to measure the economic resilience of particular territories. These provide interesting insights in terms of methodological approach and their underlying hypotheses. Some are also instructive in terms of their potential predictive power, particularly where they were developed prior to the current economic crisis. We focus here on three such studies, to illustrate the different scales and approaches being taken.

At a global scale, Briguglio et al, develop an indicator of national economic resilience by extending the notion of the vulnerability of economies. In their work they have established one composite resilience value based on four categories. A number of indicators make up each category (Table D.1)

Table D.1 Indicators of national economic resilience

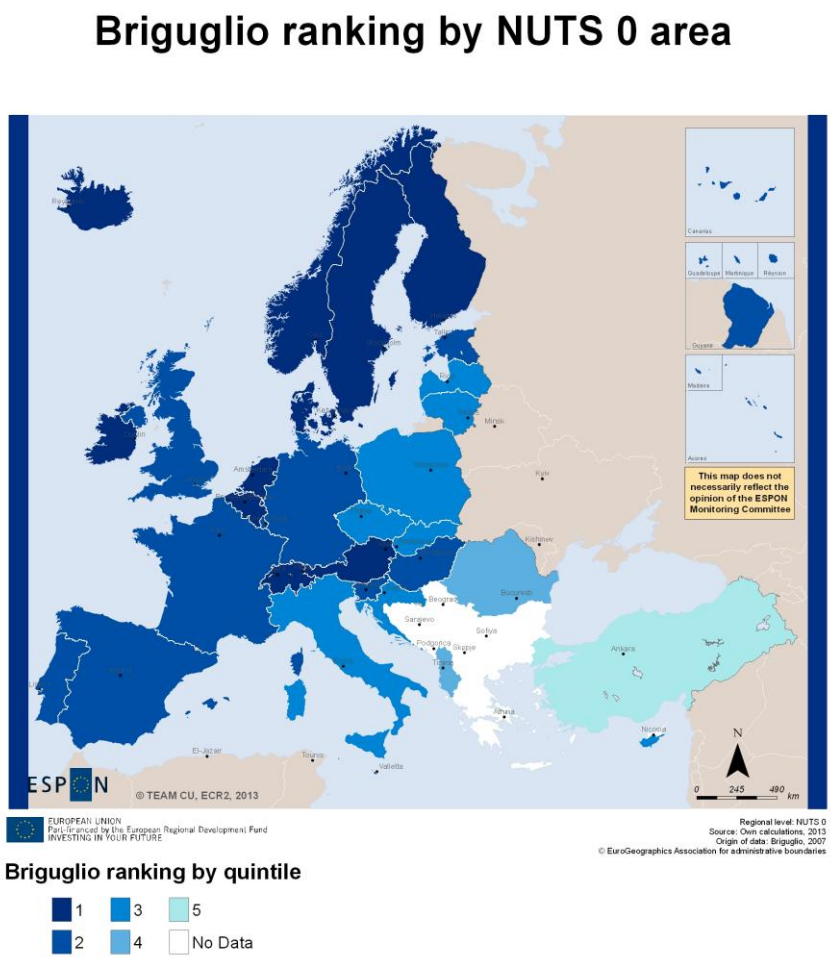
Macroeconomic stability	***Microeconomic efficiency***	***Good governance***	***Social development***
Fiscal deficit to GDP ratio Sum of the unemployment and inflation rates The external debt-to-GDP ratio	Based on Economic Freedom of the World Index	Judicial independence Impartiality of courts The protection of intellectual property rights Military interference in the rule of law; Political system and the integrity of the legal system	Life expectancy at birth Adult literacy rate School enrolment rates

Source: adapted from Briguglio et al (2008)

Their work was undertaken prior to the fiscal crash and the beginning of the economic crisis, but provides a useful perspective on some potential facets of resilience. We illustrate the performance of European economies in Map D.1, where 1 equals the most resilient quintile and 5 equals the least resilient quintile.

The *Resilience Capacity Index* has been developed by the University at Buffalo Regional Institute, as part of the University of Berkeley's 'Building Resilient Regions' network. This provides a single value of resilience for US metro regions, based upon a composite index of 12 indicators, grouped into three categories (Table D.2).

Map D.1 Resilience score of European economies



Source: adapted from Briguglio et al, 2008

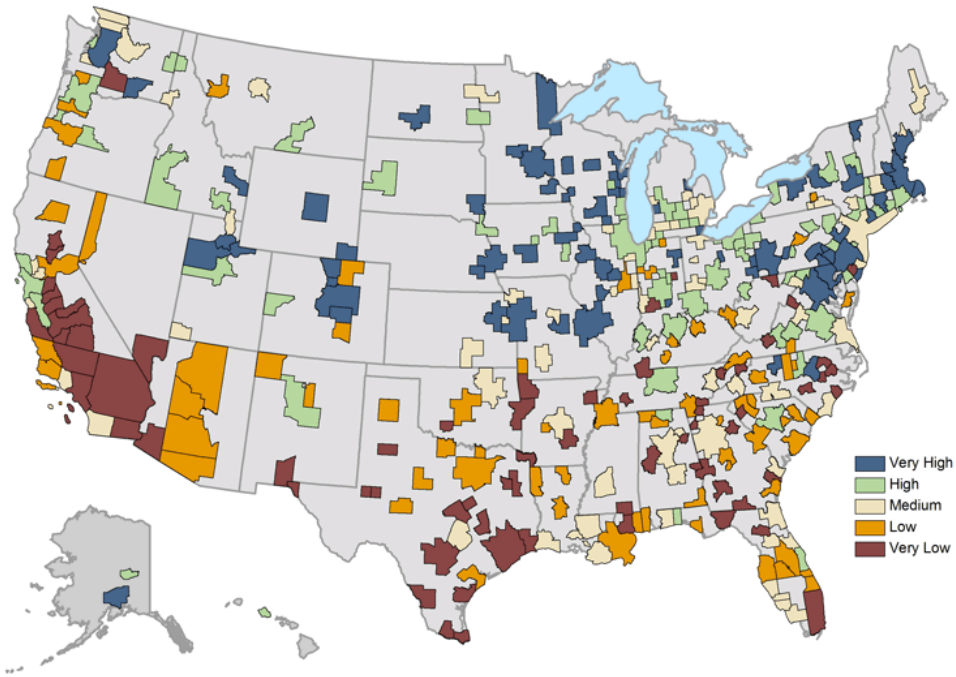
Table D.2 Indicators of Resilience Capacity

Regional Economic Capacity	***Socio-demographic Capacity***	***Community Connectivity Capacity***
Income equality	Educational attainment	Civic infrastructure
Economic diversification	Without disability	Metropolitan stability
Regional affordability	Out-of-poverty	Home ownership
Business environment	Health insured	Voter participation

Source: adapted from BRR website (http://brr.berkeley.edu/rci/)

Whilst several of these indicators are particular to the US context and do not translate well to the European space as a whole, they provide a valuable indication of the issues which are regarded as significant. The composite value of the index provides the following geography of resilience in the US (Map D.2).

Map D.2 Regional Resilience in the US



Source: http://brr.berkeley.edu/rci/data/map

Within individual member states of the EU there have been a small number of attempts to develop regional indexes of resilience, partly as a response to the current economic crisis. These tend to relate to a particular Member State, such as the work by Experian PLC in England, UK. In their work Experian identify four components to resilience, each represented by a number of individual indicators with weighted values (Table D.3).

Table D.3 Indicators of Components of Resilience

Business	***People***	***Community***	***Place***
% vulnerable sectors % resilient sectors % high-growth (knowledge) sectors Business start-up Insolvency Rates	Working age population (growth) NVQ4+ APS Low qualifications % employed as corporate managers % employed in elementary	% vulnerable to declines in disposable income % vulnerable to LT unemployment CC rate of unemployment Social cohesion/do	Achievement at school Crime rates House prices Previously developed land ERV commercial office space

% workforce self-employed Adaptive companies Days beyond terms Foreign-owned businesses Exporters Highly exporting SICs % employment in vulnerable sector % employment in resilient sectors Business Density Experian pH group and APS	occupations Earnings	neighbours look out for each other Life expectancy at birth female Life expectancy at birth male % wards amongst 10% most deprived	Greenspace as a % of total land

Source: Experian PLC

Examining the various approaches highlighted above we find that some stated indicators of resilience can only be applied at the national scale, and so, perhaps, have less validity when compiling a regional index; others are particular to individual national economies and some refer to indicators which are difficult to access on a comparable basis across the EU or the ESPON space. However, they each offer valuable pointers to the factors which might considered in developing typologies of resilience as the study progresses.

Examining the various approaches to date it is apparent that most of the indicators identified focus on innate characteristics of resilience, rather than measures of the adaptive capacity of a region. Many of the indicators are also composite indicators which require unpacking to appreciate their actual composition. Overall, there is a degree of consistency in what is regarded as significant in determining resilience, put broadly this relates to business characteristics, population characteristics and the nature of society (or community). Place-based considerations are less prevalent, and are only formally considered in the Experian index. The other area of variation is in the level of significance ascribed to macro-economic conditions. Whilst this latter element may have less significance in assessing relative resilience between geographical units within a national economy it might be expected to play a stronger role in cross-national comparisons. However, it is also the case that this is a factor over which sub-national policy makers can have very little influence.

These features of resilience indexes have been used to guide the thinking of the study team in developing our own approach to a typology of resilience to the economic crisis and in seeking indicators through which to measure the components of resilience. In particular, we seek to strengthen the consideration of place-based characteristics and to distinguish more fully between indicators of performance and capacity. We also intend to explore how best to balance macro-level indicators with those which are more differentiated at a sub-national scale.

Annex E Underlying data

1 Business

Economic structure

The economic structure of a region is considered an important influence on the susceptibility of a particular economy to an economic shock. Owing to a change in classification during the data series available data currently supports a broad four-sector (primary production, manufacturing, construction, services) assessment of regional economic activity. We are exploring whether a more fine-grained analysis is possible, by utilizing a breakpoint in the shift between the two classifications, and whether this would assist in developing our model of economic resilience.

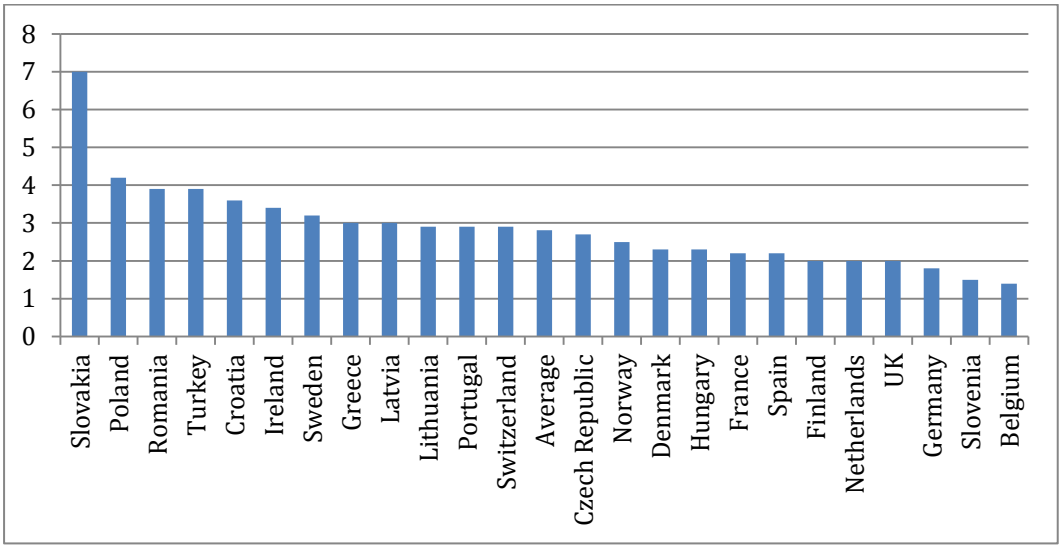
In the absence of Experian data we can make use of ESPON map typology from the Territorial Diversity project (Figure 1).

Number of Enterprises

Experian data (from Eurostat) currently is only available at the NUTS0 level and for a very limited time period. Alternative datasources, such as GEM, for number of business discontinuations, also only available at national level and for limited points in time on non-comparable basis.

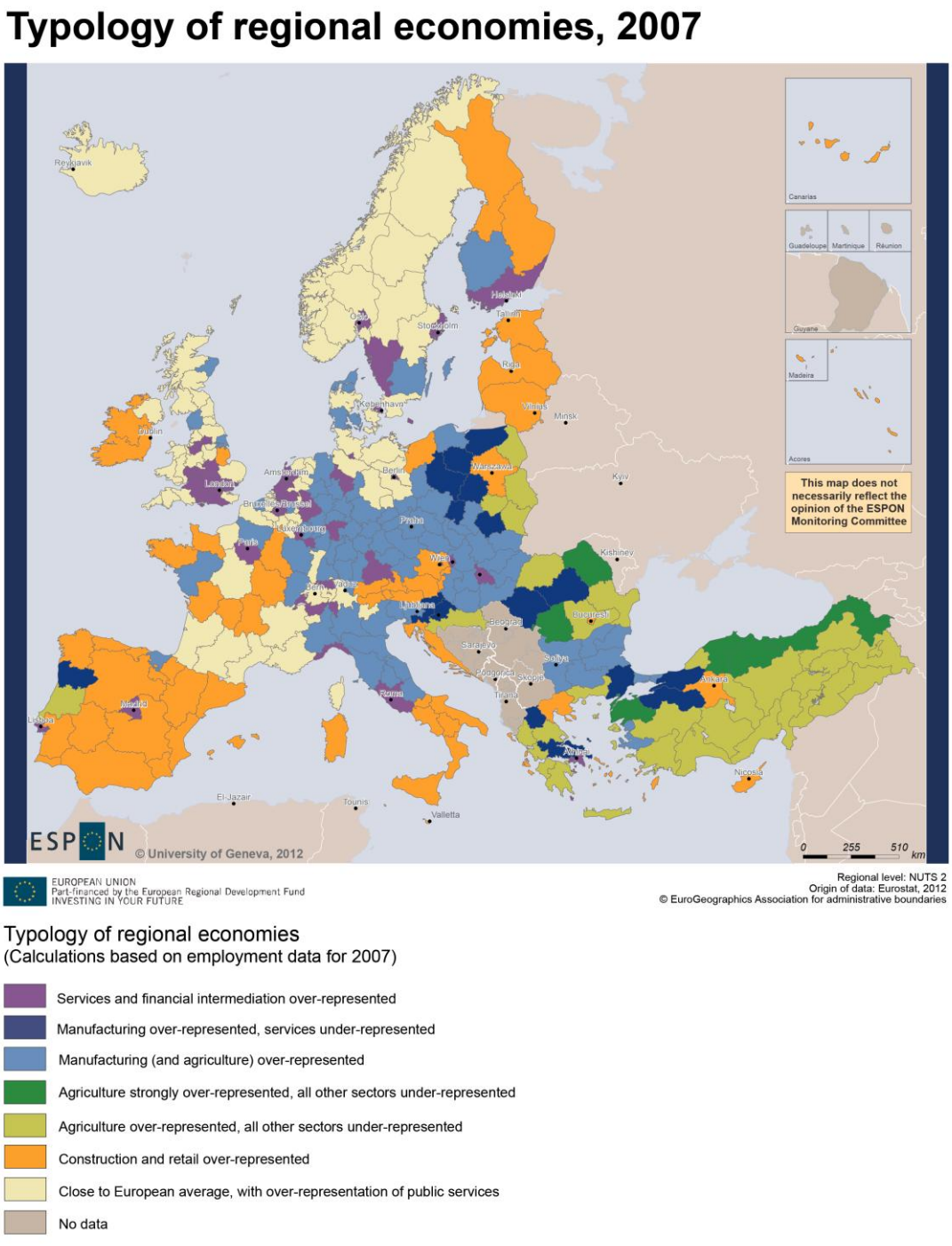
Economies which are least resilient might be expected to exhibit higher levels of business closures. Comparable date across the ESPON territory is lacking in this regard, but the Global Entrepreneurship Monitor provides some useful evidence for a large sample of countries, albeit at a national scale only (Figure 2). However, as the graphic illustrates, the differences are not strong and may not follow anticipated patterns. Some literature suggests that low levels of business closures may contribute to less resilient economies as it prevents the recycling of economic capacity.

Figure 2: Business discontinuation (proportion of all businesses, 2011)



Source: adapted from Global Entrepreneurship Monitor (2011) Global Report

Figure 1 Business sector concentration



Source: ESPON Project Territorial Diversity, via ESPON Map database

Number of Enterprises

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business discontinuations, also only available at national level and for limited points in time on non-comparable basis.

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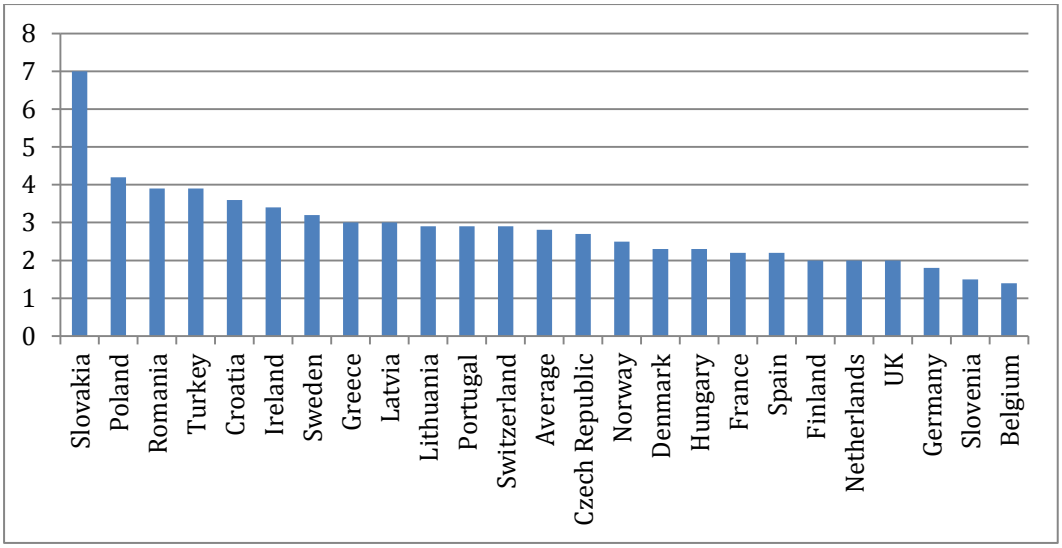


Source: adapted from Global Entrepreneurship Monitor (2011) Global Report

Size of Enterprises

This is subject to the same challenges as the number of enterprises. Limited timeseries data at NUTS0 available from Experian data set.

Level of self-employment

Available from the Experian dataset over a reasonable timeseries at a NUTS0 level. Use could be made of this for testing significance at a national level. This can then be linked to case study research findings.

Investment

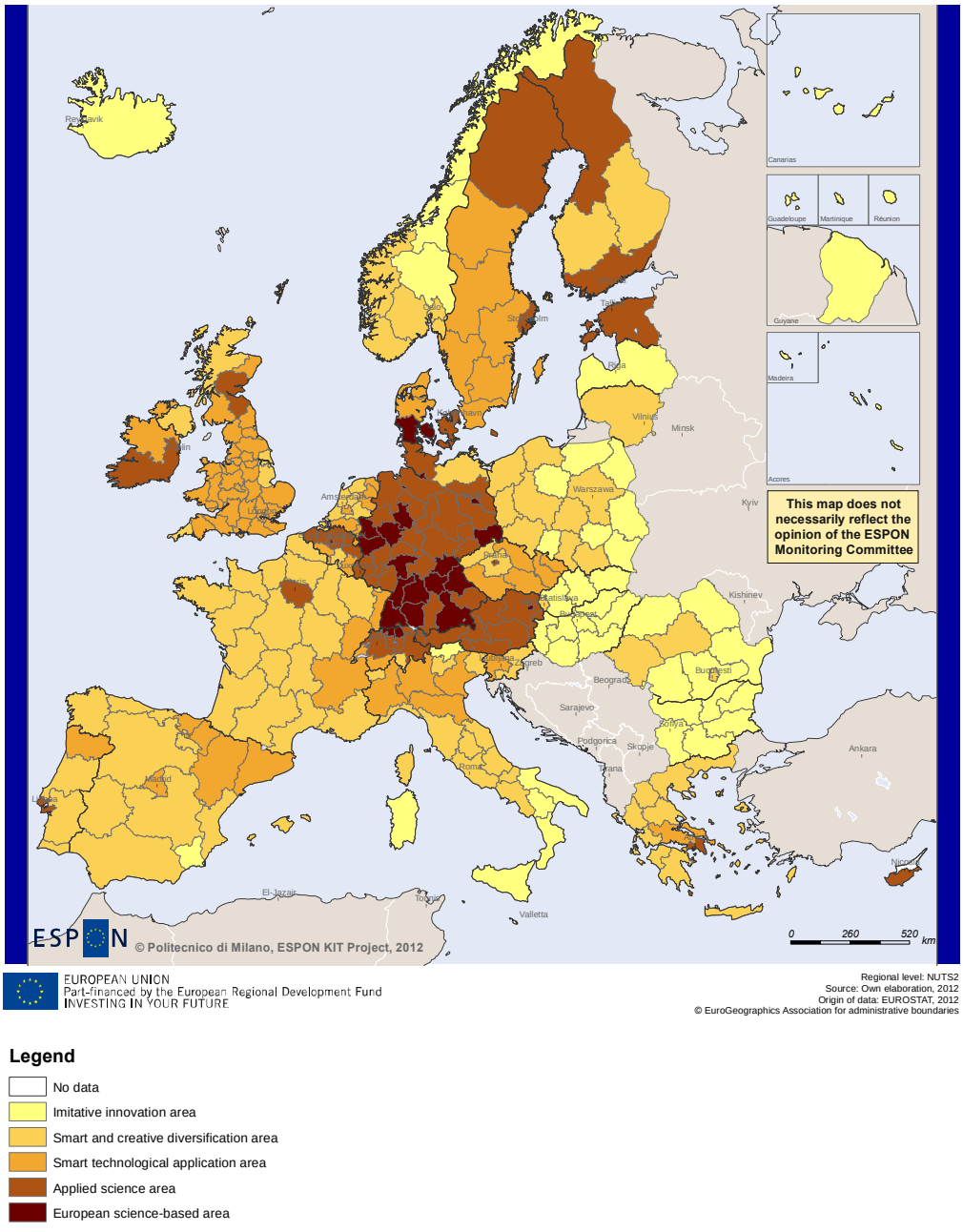
Levels of business investment can provide a valuable indication of business confidence. Comparable data is available at a NUTS2 level for a number of countries within the ESPON space and has now been collated for the study by Experian.

Innovation

Levels of innovation may be regarded as a core component of resilience, as innovation clearly demonstrates the ability of a firm, or an economy, to successfully

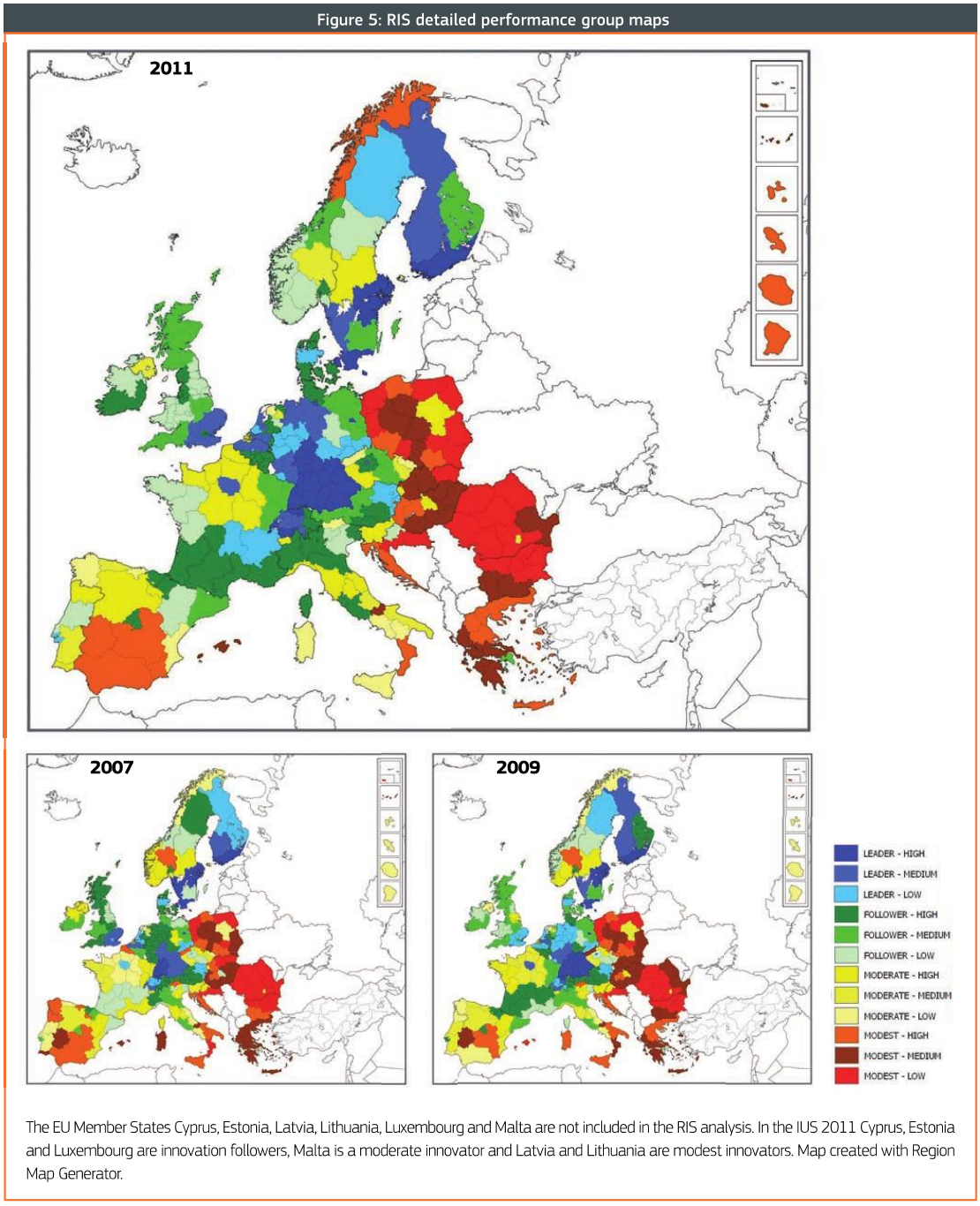
introduce new ideas. Our approach here will consider the value of two key data sets, the EU's Regional Innovation Monitor (Figure 3) and the territorial patterns of innovation identified in the ESPON project KIT, illustrated in Figure 4. Alternative concepts will also be explored. These include notions of technologically advanced regions and scientific regions in Europe (see ESPON project KIT, Final Report p.4 for example). This will explore the explanatory power of these groupings. We will not address individual indicators, such as R&D expenditure, as well owing to the fact that these are included in the composite indicators that these typologies are based on.

Figure 3 Territorial patterns of innovation in Europe



Source: ESPON project KIT, Final Report, Map 2.2.1, p.19

Figure 4 Regional Innovation Types



Source: Regional Innovation Scoreboard 2012, p.18 (Regional Data included in Annex 2 of the report)

Physical Capital

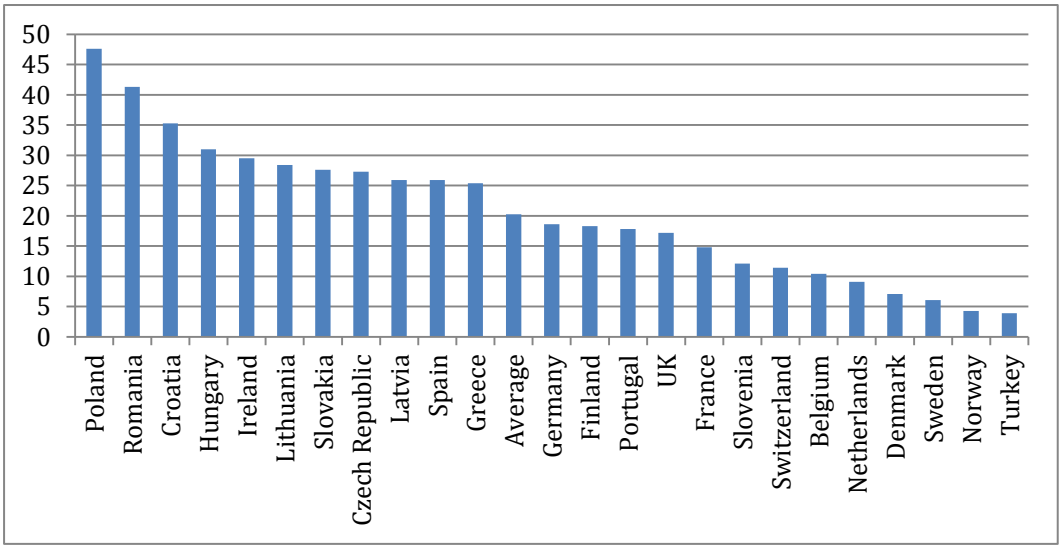
Estimating physical capital stock is fraught with difficulties and is rarely available at a regional level across international territories. A recent effort to estimate the level of physical capital at a NUTS2 level across the

EU27 has been made by Derbyshire, Gardiner And Waights. The study will make use of this data.

Entrepreneurial Activity

Overall levels of entrepreneurial activity may provide an indication for the potential resilience of an economy. Those economies with a higher number of businesses may prove more resilient in the face of economic shocks. Equally, some businesses will be started owing to there being limited alternatives during an economic downturn. These 'necessity-driven' enterprises are identified within GEM surveys of national patterns of entrepreneurship (Figure 5).

Figure 5 Proportion of business starts described as 'necessity-driven' (2011)



Source: adapted from Global Entrepreneurship Monitor (2011) Global Report

2 People

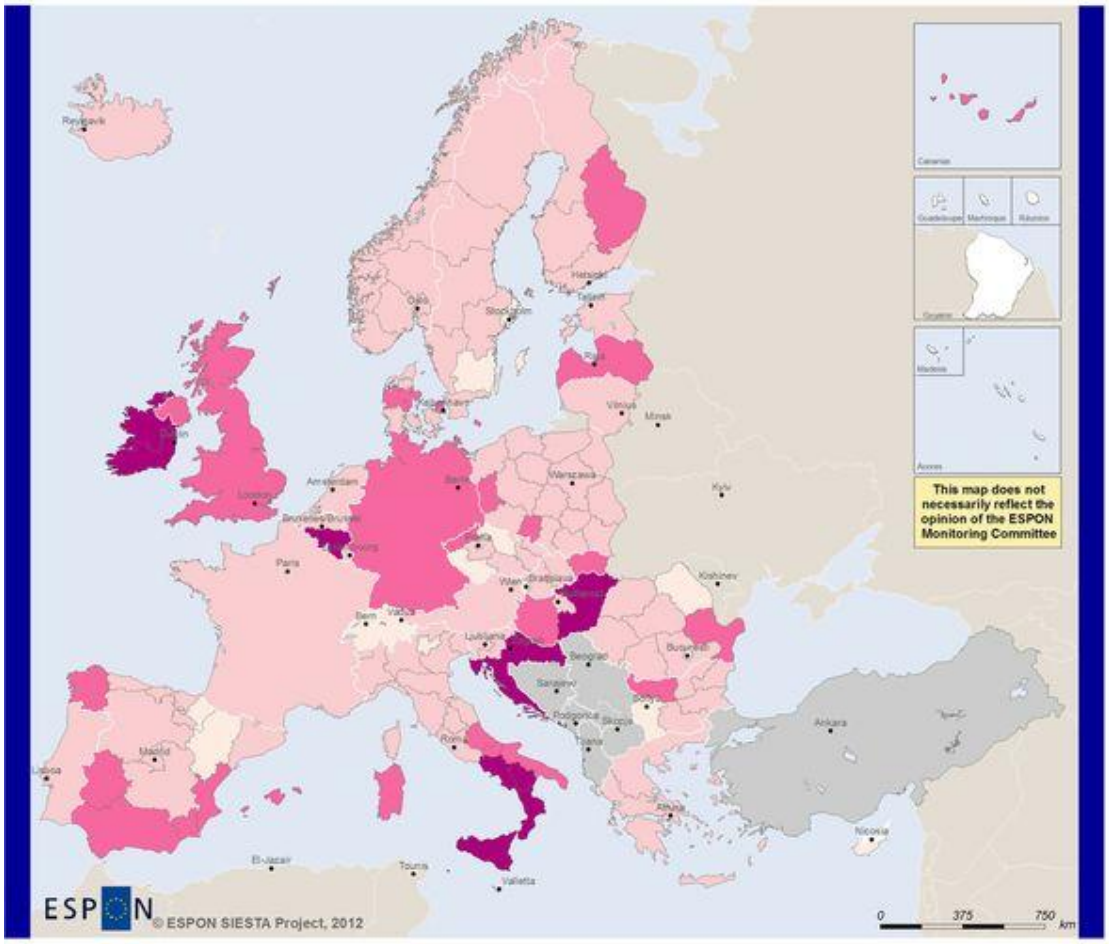
Participation rate

Individuals choose whether they wish to participate in the labour market or not. Activity rates, or participation rates, may provide an indication of the resilience of particular regions. Using comparable NUTS2 data compiled by Experian, extending back to 2000, we will explore the significance of this variable across the ESPON territory. Figure 6 illustrates regional differences in changes in participation rates during and after the crisis. ESPON also has information on low work intensity households (Figure 7).

Figure 7 Low Work Intensity (IP18)

People living in households with very low work intensity, 2010

Represented as percentage of population aged 0 to 59 years



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Regional level: NUTS2, NUTS1, NUTS0
Source: EUROSTAT EU SILC
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

Percentage of population aged 0 - 59 (%), 2010.

- 0% - 5%
- 5% - 10%
- 10% - 15%
- > 15%
- No data (ESPON space)
- No data (No ESPON space)

Notes:
BE, EL and HU are shown at NUTS1 level.
AT, DE, FE, NL, PT and UK are shown at country level.

The indicator people living in households with low work intensity is defined as the number of persons living in a household having a work intensity below a threshold set at 0.20.

Definition: The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period.

Educational qualifications

A key indicator to be explored by the study is the significance of higher levels of skills and qualifications in economic resilience. Experian have now collated the dataset for tertiary education attainment at a NUTS2 level extending in most cases back to around the year 2000, and will use this in our forthcoming analysis.

In addition alternative ESPON sources are available which provide data on adults in learning and training (IP10), low educational attainment (IP11), and early leavers (Riate map 3.9).

Figure 8 Education participation

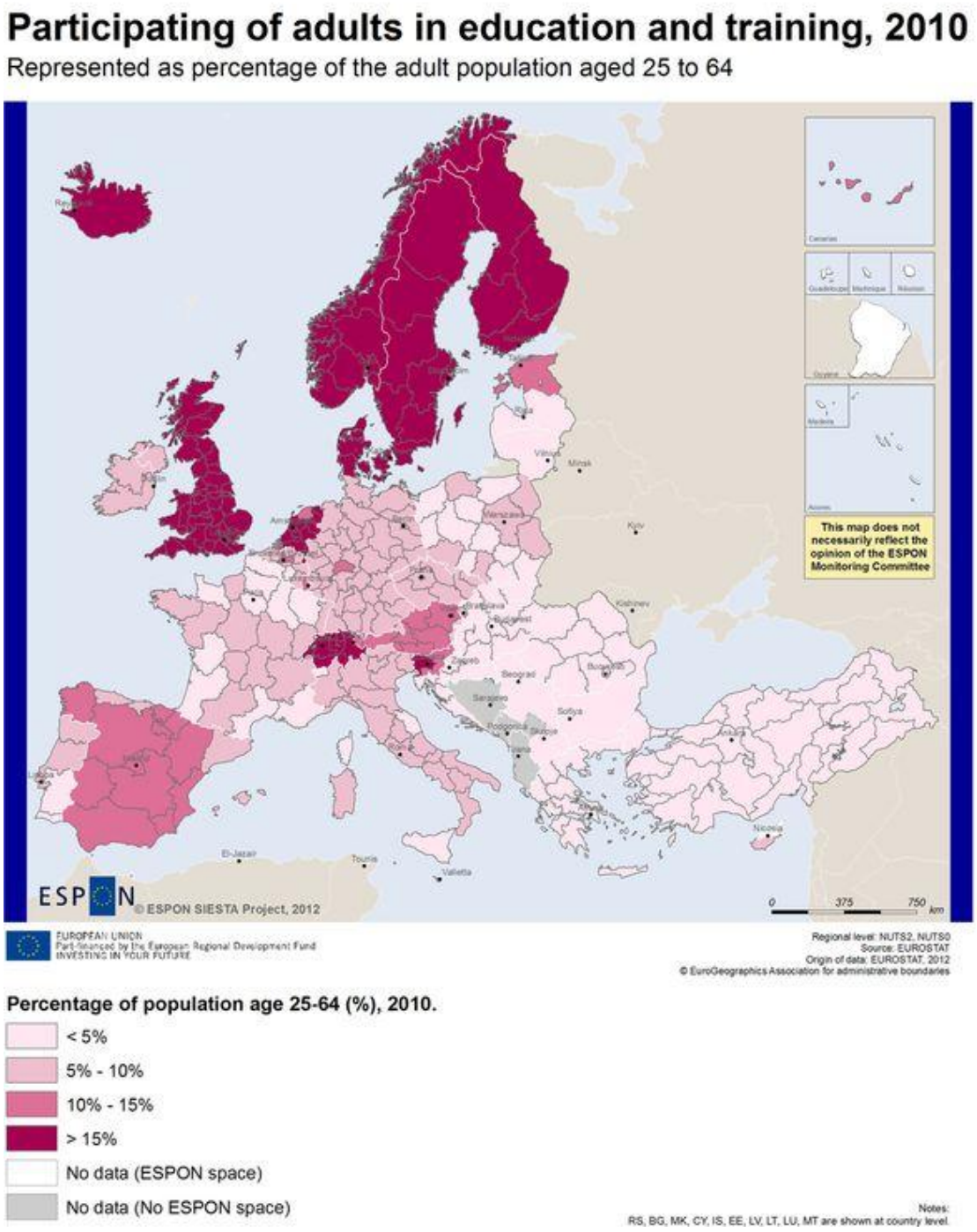
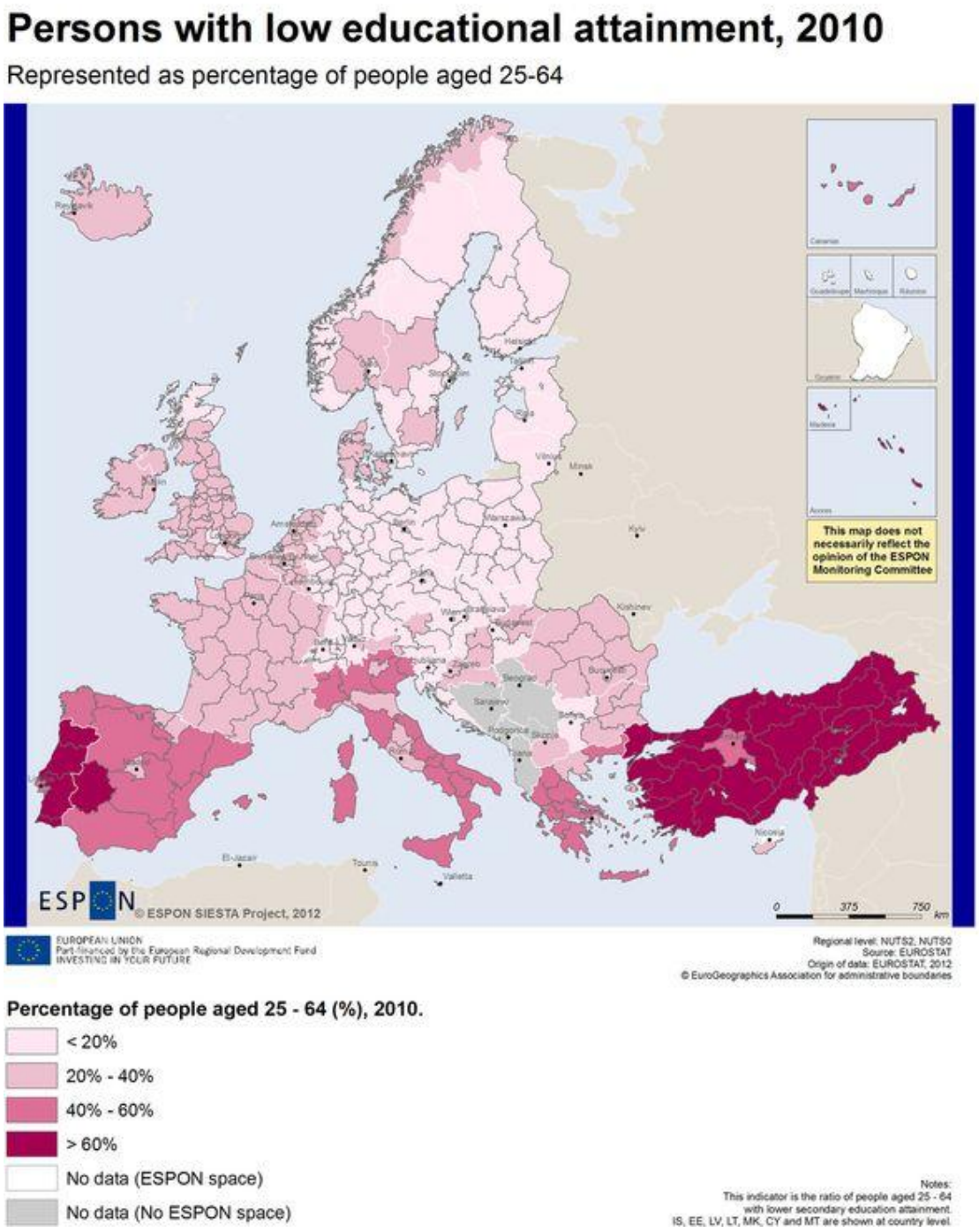


Figure 9 Educational attainment



Hours worked

Individuals may choose whether to work longer, or shorter, amounts of time. Employers may also request that workers accept shorter working hours, or undertake

additional hours. Changes in levels of working hours may signal an economy that is able to adapt without recourse to simple hire/fire decisions. Data availability from Experian is however limited to NUTS0 which has limited relevance to the current study. We shall seek to use this alongside other national data sets in assessing its relevance to the theme, but not in terms of regional-scale analyses.

Disposable Income

Levels of household disposable income provide a useful indication of the changes in incomes which households experience at a time of economic shocks; either due to reductions in income or increases in direct taxation. Comparable data is available from Experian for this indicator at a NUTS2 level extending back to 2000. Figure 10 illustrates regional differences in changes in disposable income in the period prior to and during the crisis. In addition data is available from ESPON (Figures 11b-13) sources on population at risk of poverty (IP13, IP14, IP15, IP16*).

Use can also be made of Eurobarometer data on households' ability to meet bills and credit commitments, although this is only available at a national level (Figure 11a).

Figure 11a Households ability to keep up with household bills and credit commitments (%)

2009				
	falling behind with some/many bills	keeping up but it is a constant struggle	keeping up but struggle to do so from time to time	keeping up without any difficulties
BG	15	30	40	15
EL	14	44	22	20
LV	13	32	34	20
MT	13	31	32	23
HU	13	24	36	28
LT	13	26	24	35
EE	12	26	29	32
RO	11	22	41	23
CY	7	37	31	23
ES	7	17	31	45
IT	6	20	34	40
PT	5	35	34	24
IE	5	11	39	43
CZ	5	20	30	43
eu27	5	15	33	45
UK	5	12	32	50
BE	3	11	39	46

2011				
	falling behind with some/many bills	keeping up but it is a constant struggle	keeping up but struggle to do so from time to time	keeping up without any difficulties
EL	28	45	18	9
CY	23	36	27	13
BG	16	26	42	15
LV	14	21	37	27
HU	12	22	38	27
RO	10	15	47	27
MT	10	32	28	30
IE	10	17	41	31
LT	10	14	30	45
SK	7	21	29	41
IT	6	25	35	33
EE	6	25	26	42
PT	5	20	40	33
ES	5	19	34	41
eu27	5	16	34	44
CZ	5	20	30	44
UK	4	13	39	42

FR	2	15	40	42
PL	5	9	35	50
SI	4	10	35	51
SK	4	15	24	57
DE	3	11	35	50
LU	3	6	24	66
AT	2	5	29	63
FI	2	7	25	66
SE	1	4	18	75
NL	1	2	20	76
DK	1	2	14	82

FR	3	19	40	37
SI	4	11	33	52
PL	4	6	37	53
LU	3	7	35	53
BE	3	10	33	53
AT	2	10	32	55
FI	3	7	27	63
DE	2	11	29	56
NL	2	4	24	69
DK	2	3	16	79
SE	1	5	17	77

Source: Eurobarometer Flash EB no 286 (2010) and Flash EB no 338 (2012) Fieldwork in 2009 and 2011 respectively

Figure 11b Population at risk of poverty

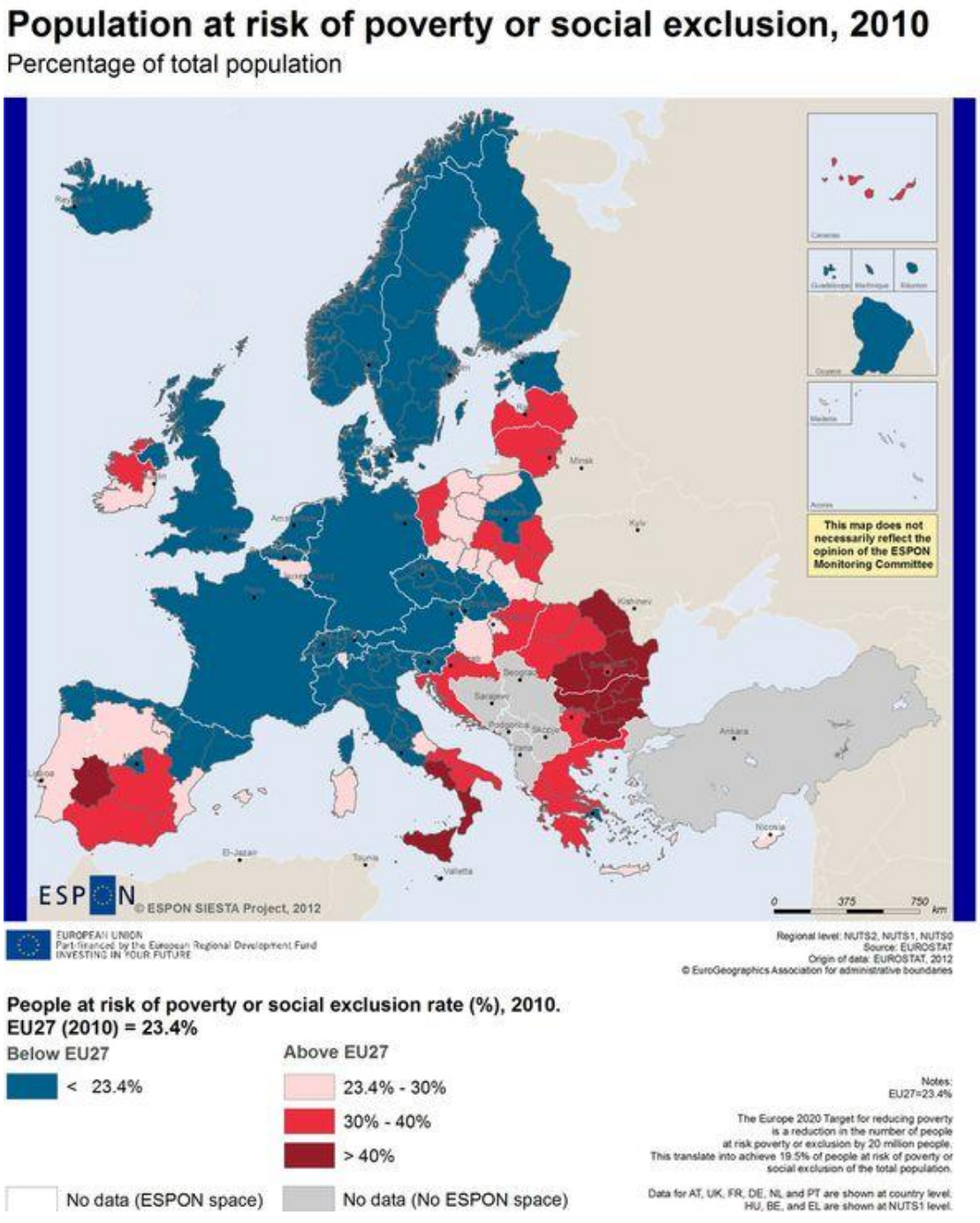


Figure 12 Population at risk of poverty after social transfers

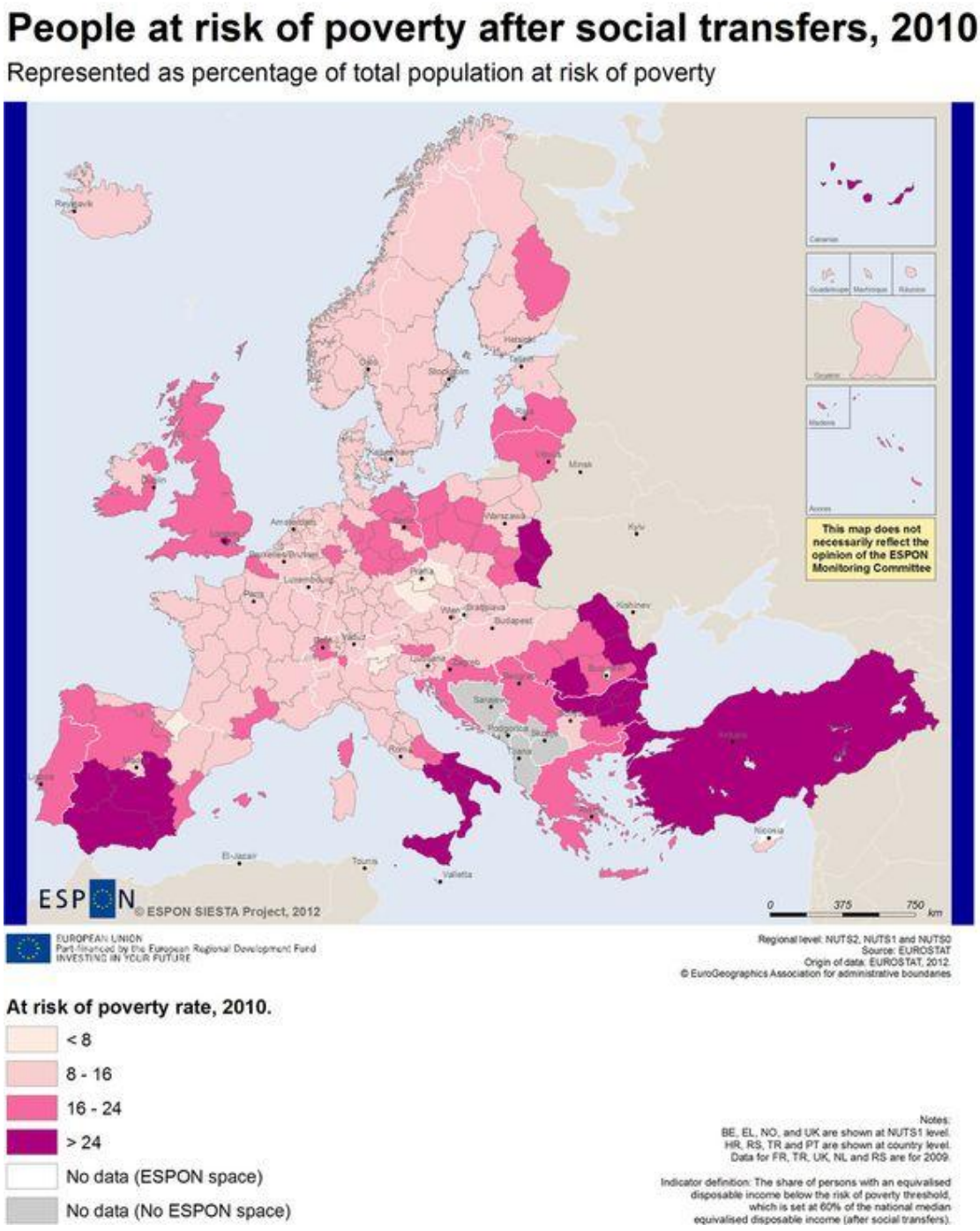
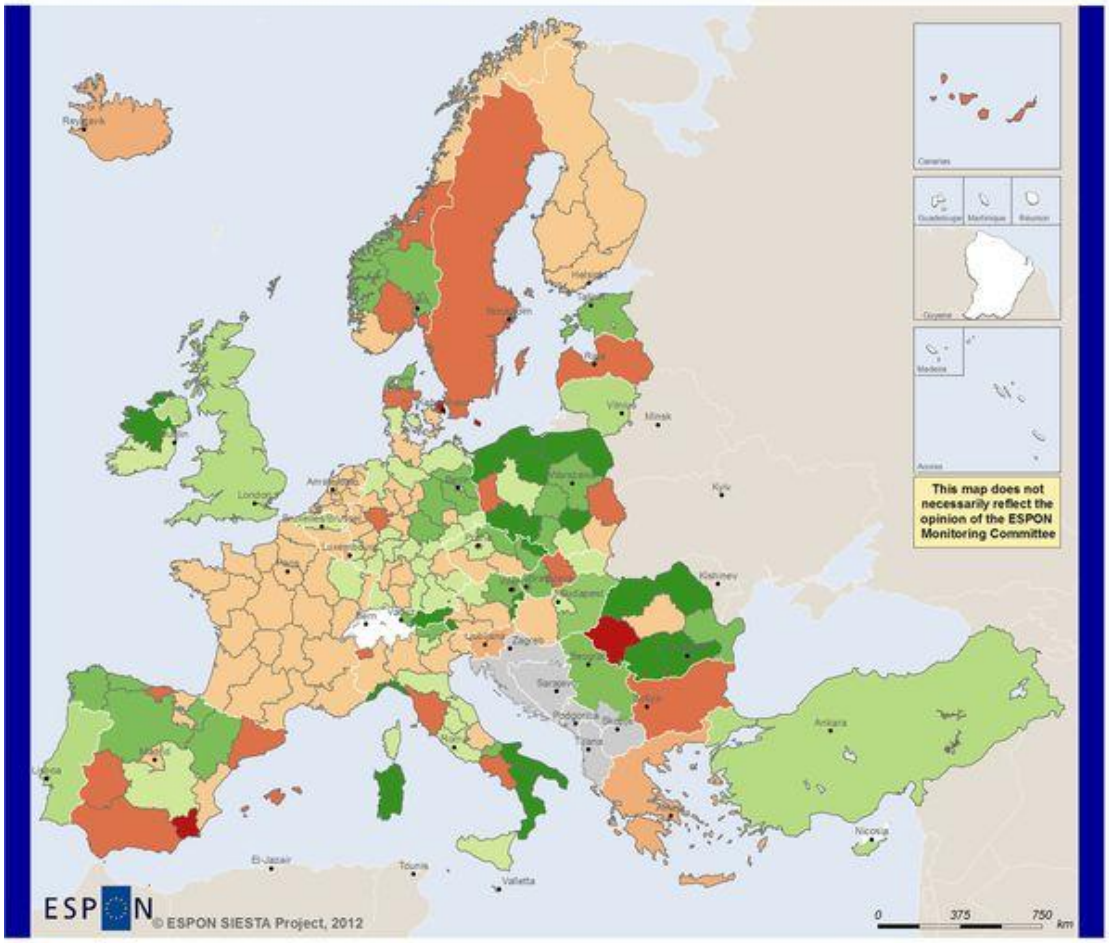


Figure 13 Change in population at risk

At risk of poverty rate after social transfer, change 2005-2010

Represented as percentage of change after social transfers



EUROPEAN UNION
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Regional level: NUTS2, NUTS1 and NUTS0
Source: EUROSTAT EU-SILC
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

Percentage points difference (%), from 2005 to 2010.

Positive change (%)	Negative change (%)
< -4%	0% - 2%
-4% - -2%	2% - 4%
-2% - 0%	> 4%
No data (ESPON space)	No data (No ESPON space)

Notes:
BE and EL are shown at NUTS1 level.
BG, TR, SE and UK are shown at country level.
Data for TR, FR and RS show the change 2005 - 2009.
Data for FR, NL and RS show the change 2006 - 2009.
Data for DK and RO regions show the change 2007 - 2010

Regions in green colours show a reduction in their poverty rates between 2005 and 2010.
Regions in brown colours have suffered an increase in their poverty rates between 2005 and 2010.

Unemployment

Although levels of unemployment are often regarded as an indicator of economic performance the effects that it can have on individuals in terms of their choices, and future economic opportunities means that we include this in our 'people' category. Levels of unemployment (as a proportion of the labour force) have been collated by Experian to the NUTS2 level back to 1999. Figure 14 illustrates regional differences in changes in unemployment rates during and after the crisis.

Youth Unemployment rate (2009) is available from ESPON (IP8), longterm unemployment from ESPON (IP19).

Figure 15 Youth Unemployment

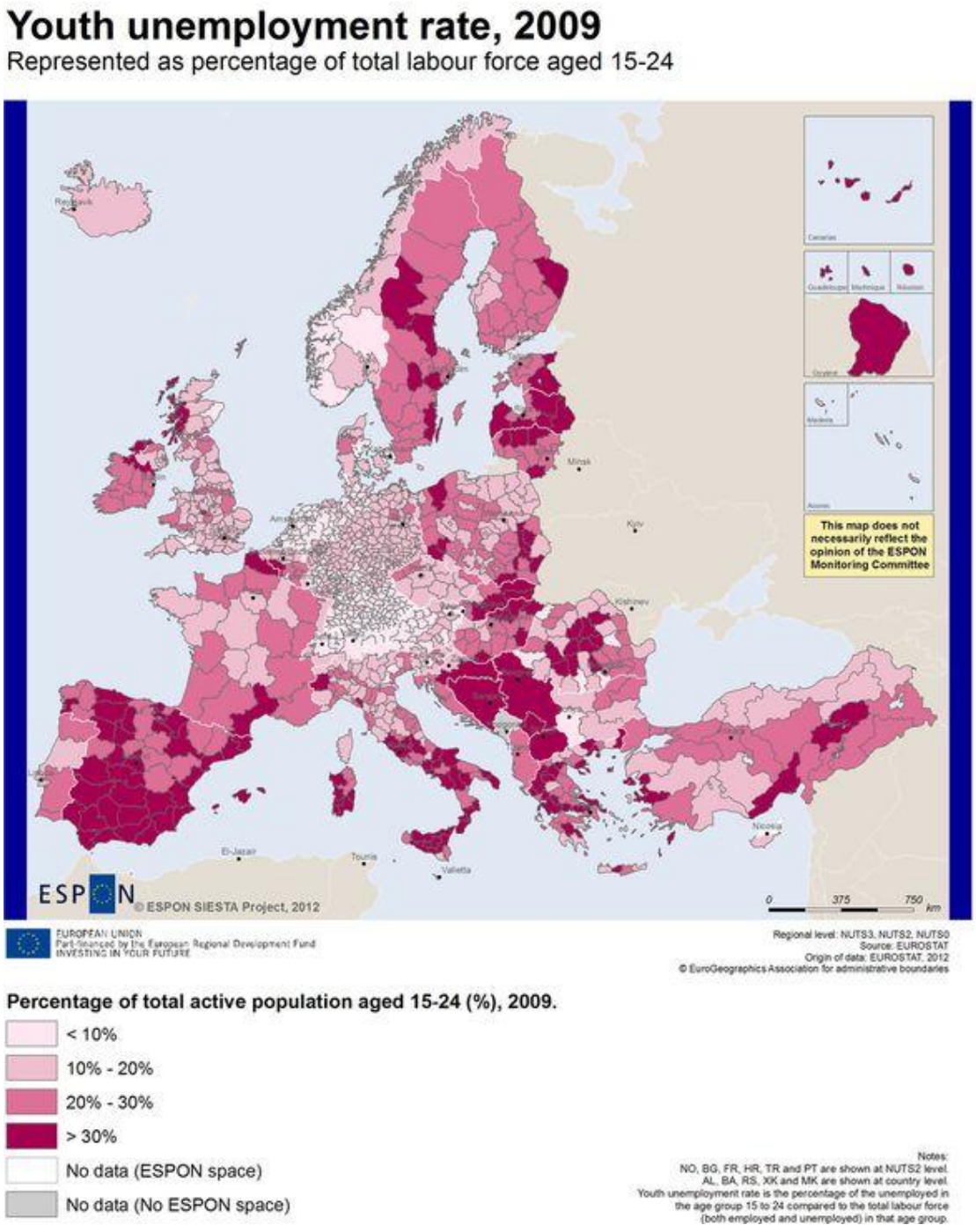
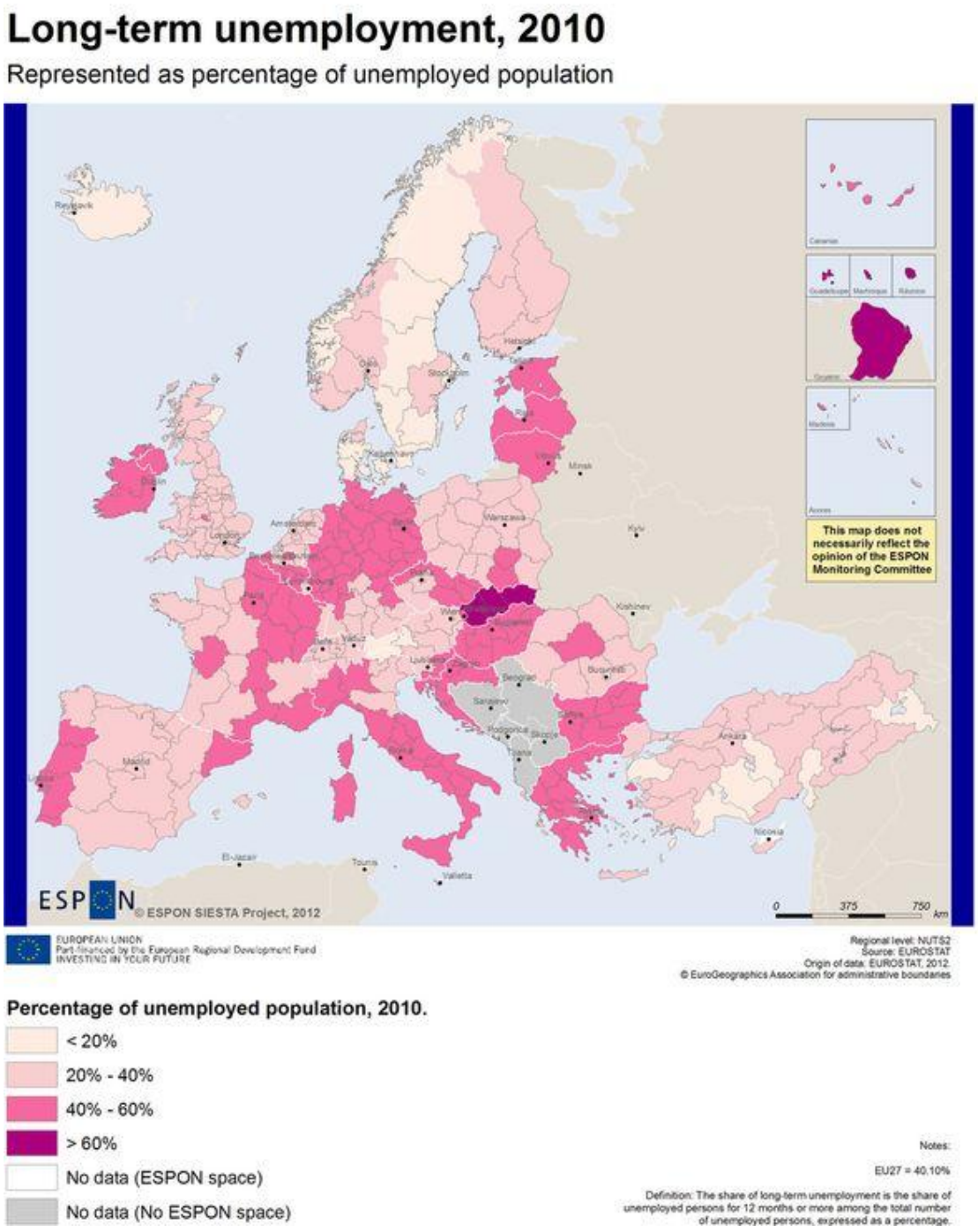


Figure 16 Longterm unemployment



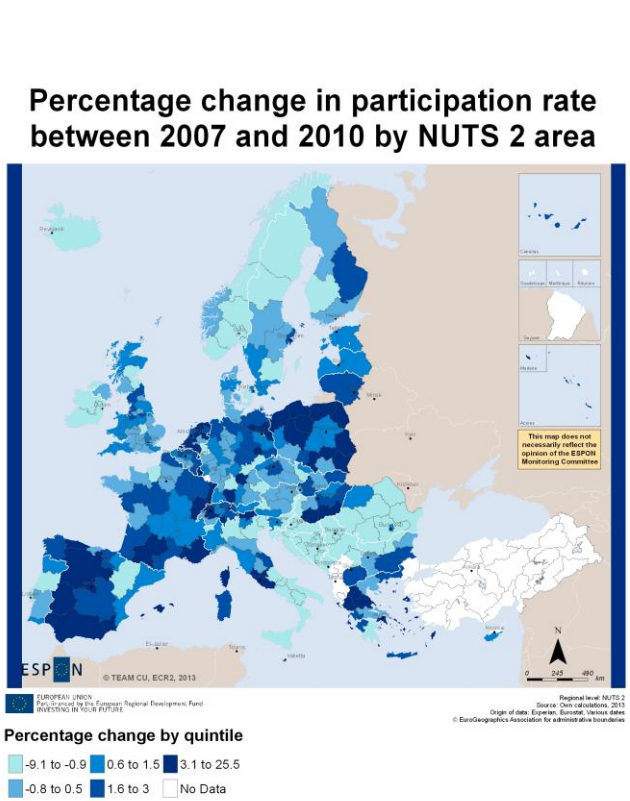
Labour productivity

Material on labour productivity is available for a single year from ESPON (Riate map 2.4).

Perceptions

A strong influence on future behavior is the belief in the future held by individuals. Various measures of this are available through Eurobarometer surveys at the level of the Member State. In some instances these have been repeated on an irregular basis enabling snapshot comparisons to be made. We illustrate some of this material in Annex B. We shall seek to undertake an assessment of this at a national level.

Figure 6 Change in participation rates during and post crisis



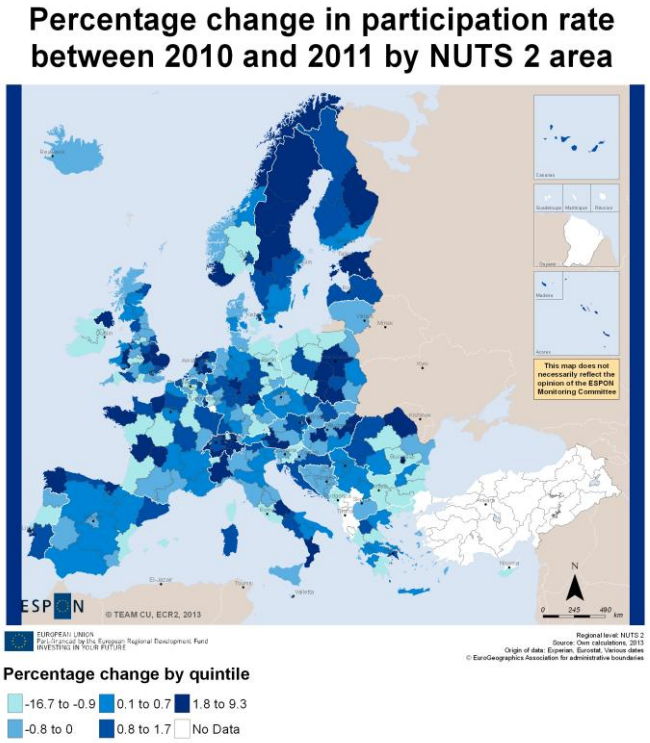
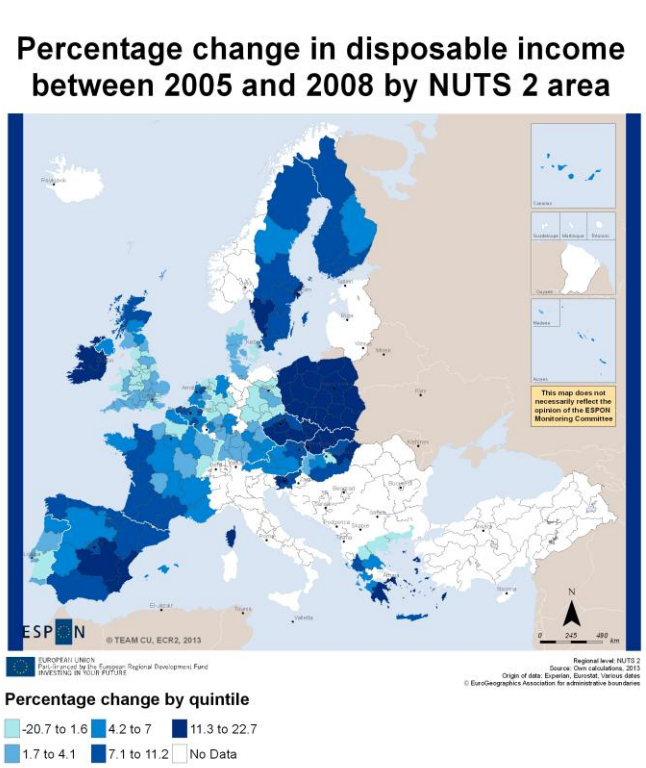


Figure 10 Disposable income change prior to and during the crisis



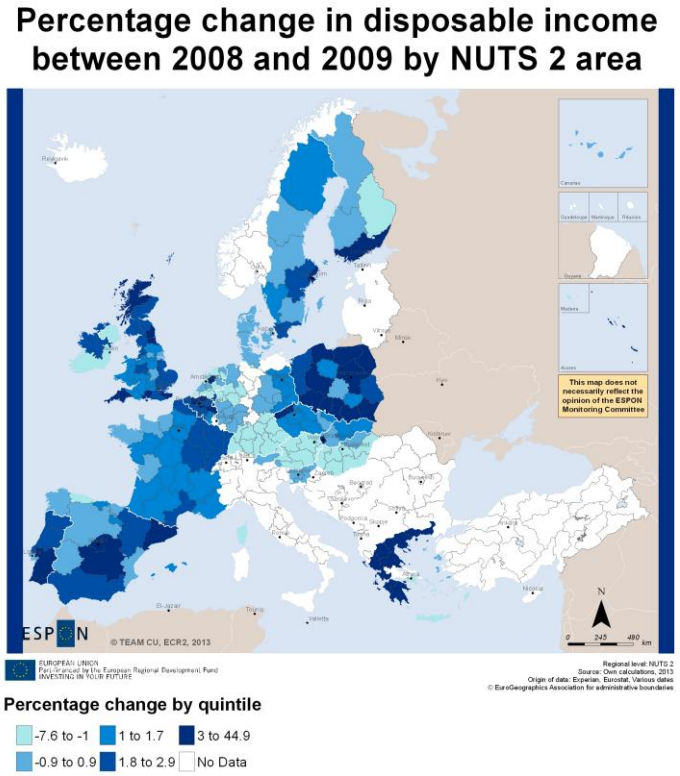
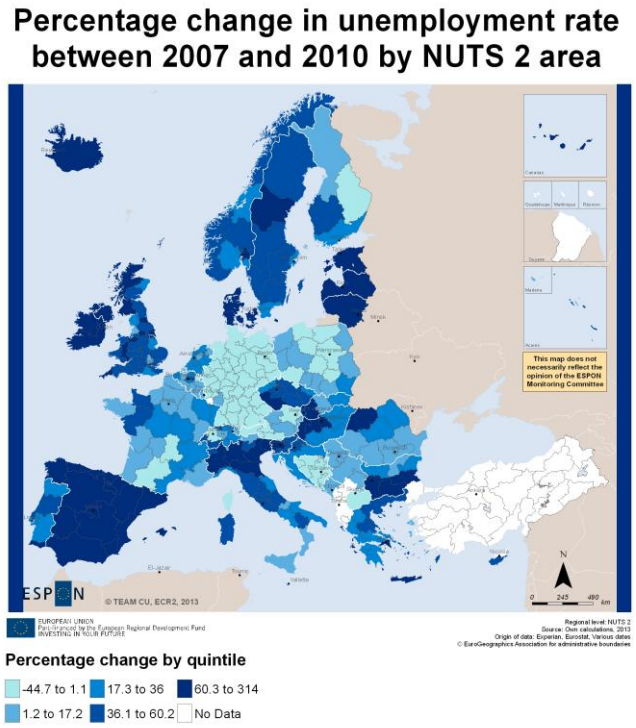
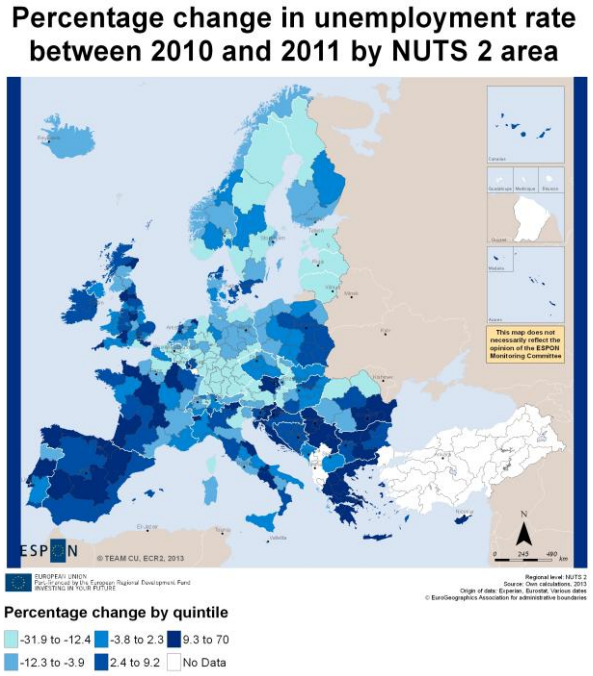


Figure 14 Changes in Unemployment pre and post crisis





3 Community

Governance

Governance structures play an important role in determining the 'freedom to act' at different territorial scales. There is some evidence that different governance structures can influence levels of territorial resilience to economic crisis. However, this remains subject to further study. The ESPON space is characterised by a variety of forms of governance, which can be characterised in a number of different ways. Typical classifications focus on administrative traditions or welfare regimes (see ESPON TANGO report for further details). Our interest is strongly related to the relative autonomy of sub-national authorities, which is not well developed in these classifications.

One potential source is that of Marks et al who have developed an index of Regional Authorities (http://www.unc.edu/~gwmarks/data_ra.php). Although not comprehensive for the ESPON territory it does provide useful assessment across the following criteria (institutional depth, fiscal autonomy, self rule, law making and fiscal control) for a number of countries.

The ESPON TANGO Project draws on the scores of the Worldwide Governance Indicators (www.govindicators.org), published by the World Bank, to develop 6 clusters of governance 'types' across the ESPON space. This is as follows (with clusters i and ii and clusters v and vi reportedly very close to forming one combined cluster each):

- cluster I: Denmark, Finland, Luxembourg, Norway, Sweden, Switzerland, The Netherlands
- cluster II: Austria, Belgium, France, Germany, Iceland, Ireland, United Kingdom
- cluster III: Czech Republic, Hungary, Latvia, Lithuania, Poland, Slovakia
- cluster IV: Cyprus, Estonia, Malta, Portugal, Slovenia, Spain
- cluster V: Bulgaria, Croatia, Greece, Italy, Montenegro, Romania
- cluster VI: Albania, Bosnia, Kosovo, Macedonia, Serbia

Further consideration can also be given to the more detailed assessment set out in Table 10, of Stead's report on Developing Typologies of Regional Governance (sourced from ESPON project 2.3.2), particularly where there is variation in identified objectives (such as effectiveness, decentralization, accountability and co-ordination). This is reproduced below as Figure 15.

Figure 15 Emphasis on governance objectives in EU member states (source: ESPON project 2.3.2, Annex B)

	openness	transparency	participation	effectiveness	horizontal coordination	accountability	vertical coordination	decentralization	coherence
Austria			*	*		*	*		*
Belgium	*	*	*						
Bulgaria	*	*			*	*		*	
Cyprus	*		*						
Czech Republic	*	*	*	*					
Denmark			*	*	*		*	*	
Estonia		*	*	*			*		
Finland			*	*				*	
France	*		*	*		*	*	*	*
Germany	*	*	*	*	*	*	*	*	
Greece	*	*				*	*	*	*
Hungary			*	*				*	
Ireland	*	*	*	*		*			*
Italy			*	*				*	*
Latvia	*		*	*		*			*
Lithuania	*		*			*	*	*	
Luxembourg	*	*	*				*		*
Malta		*	*	*		*			*
Netherlands	*	*	*	*	*	*	*	*	*
Norway			*	*		*	*	*	
Poland	*	*	*	*	*		*		
Portugal	*		*			*	*		
Romania		*		*	*	*	*	*	
Slovakia	*	*	*					*	
Slovenia	*	*	*	*				*	
Spain			*		*		*	*	
Sweden				*	*		*		*
Switzerland		*	*	*		*	*	*	*
UK	*	*	*	*		*		*	*

Fiscal Autonomy

The level of fiscal autonomy may have an influence on levels of resilience, through the affect that this can have on sub-national responsive capacity. A crude measure of this can be obtained through adopting the characterisation developed by Ismeri Europe and Applica and set out in the ESPON project SGPTD (Figure 16), but this is not believed to be sufficient. A broad assessment could also be made from the Marks Regional Authority Index, but this lacks coverage. Data can be obtained from Eurostat (2009, Taxation trends in the EU), this is the preferred route.

Figure 16: State Systems: responsibilities and local autonomy

Group of Countries	***Features***	***Trends in Competencies***	***Local revenues and autonomy***
Federal States (Austria, Belgium, Germany)	Constitutionally recognised, shared powers between central and sub-central levels (states)	Not significant changes, reinforcement of federal organisation in Belgium	Medium
Unitary 'Northern' states (Sweden, Finland, Denmark, Norway)	Centralised states with strong local autonomy	Rationalisation and unification of some local tiers (counties, municipalities aggregated into regions)	High
Unitary regionalised states (Italy and Spain)	Strong autonomy of intermediate levels (regions)	Fast devolution and tendency to introduce federal agreements	Medium-high and increasing
Other unitary states – 'old' Member States (France, Greece, Ireland, Luxembourg, Netherlands, Portugal, UK)	Different institutional forms with more (UK, Netherlands, France) to less power to local government (Portugal, Greece)	On-going but slow devolution and reorganisation in UK and France. Slowdown or devolution halt in Portugal and Greece	Medium (high in France)
Other unitary states – 'new' Member States (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Cyprus, Malta)	States undergoing restructuring; fragmented local government	Re-establishment and reinforcement of local governments; more articulated devolution process in Poland	Medium low

Source: ESPON SGPTD Final Report, p.8

Territorial Management

The role of development planning and control has contributed to the economic crisis in some Member States, such as Ireland and Spain. In other areas it might have played a more positive role in checking the development of property 'bubbles'. Assessment of this will be made at the case study level. Use will also be made of the

spatial planning typology of Farinos-Dasi (2007) reported by the ESPON TANGO project - which identifies the following groupings (Figure 17):

Figure 17 Spatial planning types

Comprehensive integrated	Land use regulation	Regional economic	Urbanism
AT, DK, FI, NL, SE, DE	BE, IE, LU, UK	FR, DE, PT,	GR, IT, ES
(+ BE, FR, IE LU, UK)	(+ PT, ES)	(+ IE, SE, UK)	
BG, EE, HU, LV, LT PL, RO, SL, SV	CY, CZ, MT	HU, LV, LT, SK	CY, MT

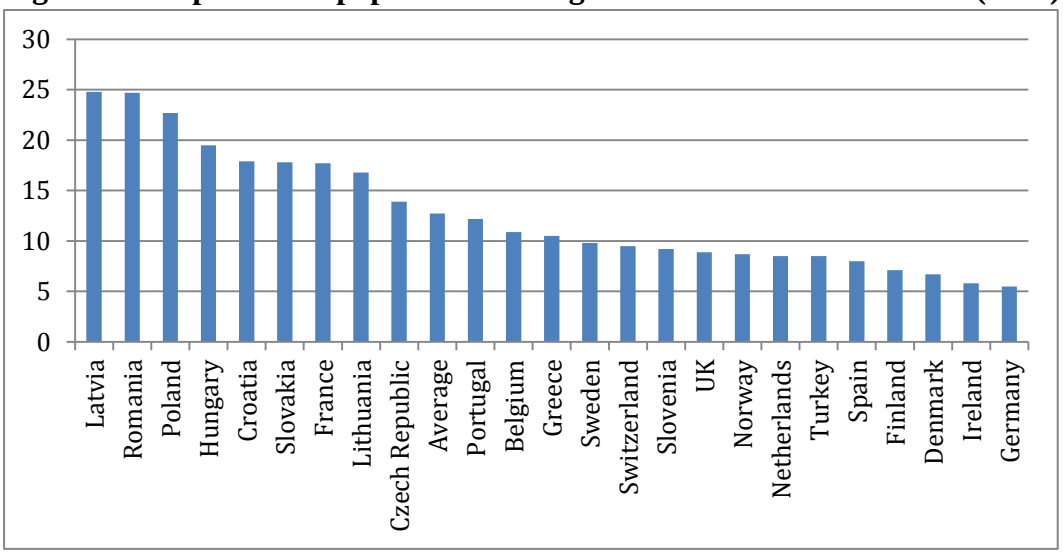
Social Capital

There is some suggestion that areas with stronger levels of social capital may exhibit higher levels of resilience. Assessment of this will be made at the case study level.

Entrepreneurial intentions

The extent to which a community has strong entrepreneurial intentions might offer some insights into the potential resilience of an economy in the face of an economic shock, as it signals active adaptive approaches. *A priori* one might anticipate that the proportion of a population that is considering establishing an enterprise might be higher either when the economy is stronger or when it is weaker. Data on entrepreneurial intent is only available at a national scale, and not for all countries within the ESPON space (Figure 18). We will examine this further in the light of the qualitative case study material.

Figure 18 Proportion of population stating intention to start a business (2011)



Source: adapted from Global Entrepreneurship Monitor (2011) Global Report

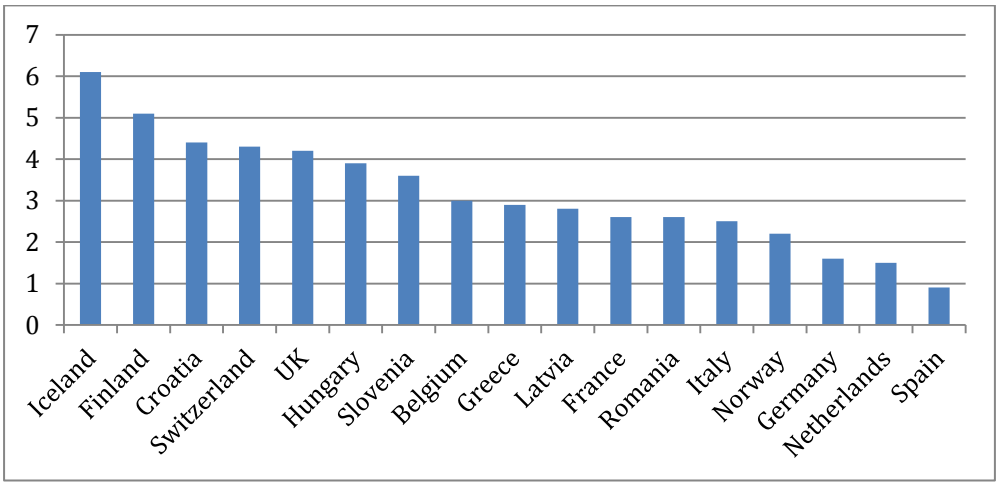
Business Birth Rate

The rate at which new businesses created could influence levels of economic resilience, although conceptually the picture appears to be mixed. Data is available from Experian for a very limited period at the NUTS0 level.

Social enterprise

Levels of social entrepreneurship may be considered to indicate both levels of social capital within an economy and to provide indications of a more resilient economy. Higher levels of social entrepreneurship may both act to reduce negative impacts of economic shocks and may serve to provide employment opportunities within an economy. There is anecdotal evidence from our case studies of increases in levels of social entrepreneurship as individuals look for alternative sources of employment, but also reductions in levels of activity as existing social enterprises struggle to survive in difficult economic circumstances. There is only limited comparable evidence from across the ESPON space on levels of social enterprise. The most robust source is a recent survey of levels of social entrepreneurship by the Global Entrepreneurship Monitor. This provides national data for a limited number of states, based on survey data from 2009 (Figure 19).

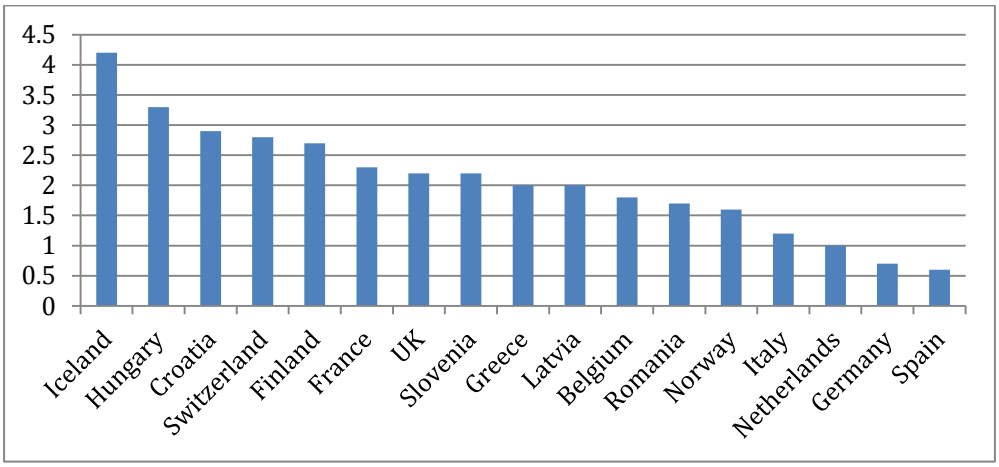
Figure 19 Social Entrepreneurship (2009) as percentage of working population



Source: adapted from GEM 2011 Report on Social Entrepreneurship

It also provides a valuable insight into the scale of new social enterprise foundation (Figure 20), which we will examine further to assess the insights this provides for considerations of resilience. In most instances the numbers of early stage Social Enterprises significantly outweigh the numbers of established Social Enterprises.

Figure 20 Early stage Social Enterprises as proportion working population (%)

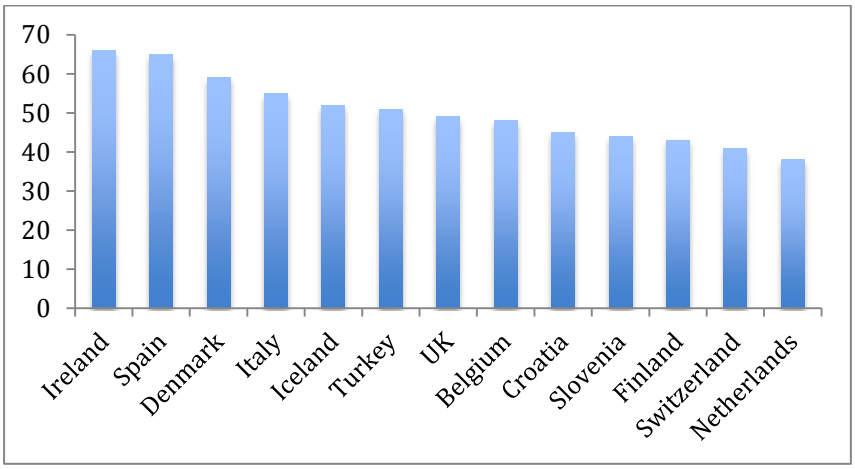


Source: adapted from GEM 2011 Report on Social Entrepreneurship

Innovation confidence

We have considered the potential of an indicator on innovation confidence as a measure of a population's willingness to embrace new ideas. This might provide an insight into levels of adaptability. Unfortunately there is limited data available for such an indicator. An Index of Innovation Performance is produced on an occasional basis which seeks to measure the extent to which consumers embrace innovations, based upon survey returns. This covers a small number of national economies across the ESPON space (Figure 21). Although analysis of this material is challenging there is some suggestion that an inverse relationship might apply in terms of the performance of the respective economies in the face of the economic crisis.

Figure 21 Reported levels of consumer confidence in innovation (%)



Source: adapted from Levie, J (2010) The IIIP Innovation Confidence Indexes 2009 Report

Where data is available for more than one year it does appear to indicate that consumers became less 'innovation-friendly' (or more conservative) during the economic crisis (Figure 22). However, the data series is insufficient to perform any analysis of this material.

Figure 22 Changes in reported levels of Innovation Confidence

Croatia	2008-2009	-20
UK	2007-2009	-12
Slovenia	2007-2009	-10
Spain	2008-2009	-4
Iceland	2008-2009	-3
Finland	2007-2008	-2
Ireland	2007-2008	-1
Italy	2007-2008	+2

Source: adapted from Levie, J (2010) The IIIP Innovation Confidence Indexes 2009 Report

Demographic Structure

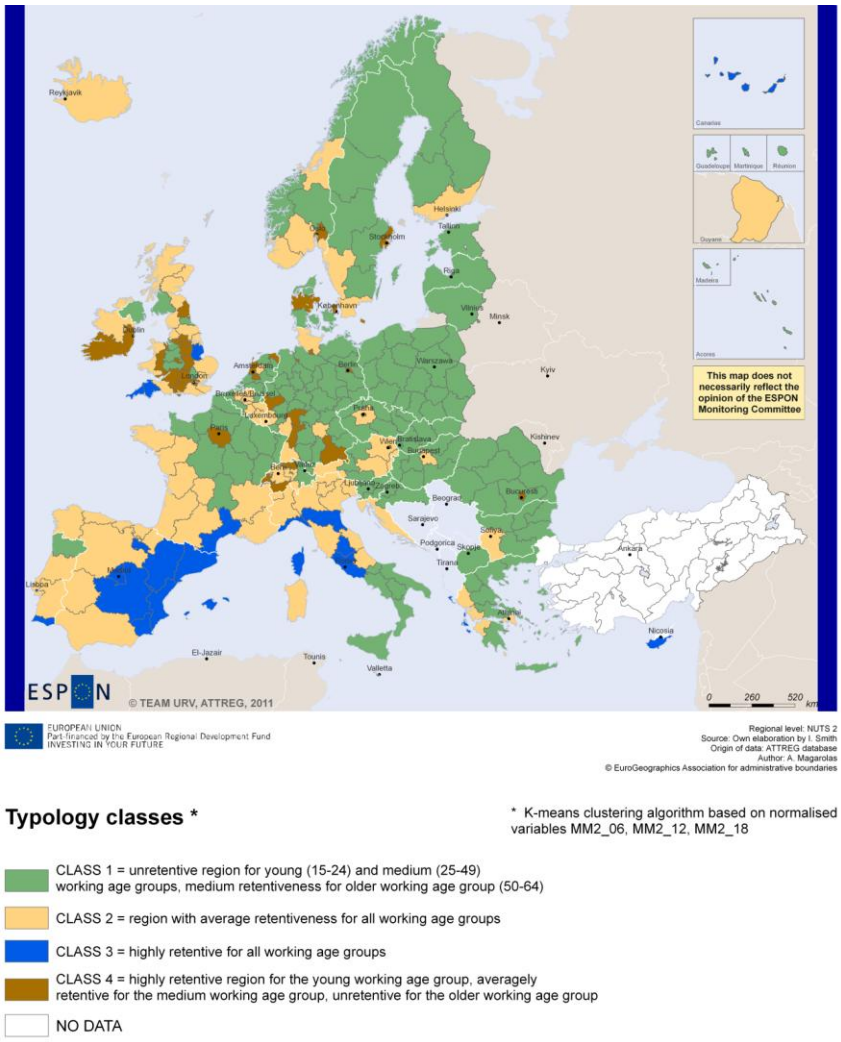
Populations which have different age structures may exhibit different levels of resilience. Those with lower proportions of a working age may prove to be less resilient owing to the smaller labour base, but may also prove to have a stronger level of resilience where retirement incomes are more prevalent and provide a stronger degree of income stability. Data is available from Eurostat (http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-HA-12-001/EN/KS-HA-12-001-EN.PDF) and can be assessed in terms of population change, net migration rate and old age dependency ratio amongst other attributes. For the present study we propose to include the latter under the Community indicator-set.

4 Place

Migration

Migration rates can be considered to be a relatively strong indicator of the resilience of an economy. Intuitively it is anticipated that less resilient economies will exhibit net outmigration, particularly amongst those of a working age. Current reports of the outflow of young adults from economies such as Ireland and Spain, to territories which are economically stronger appears to support such an analysis. Evidence from the ESPON ATTREG project suggests, however, that this thesis might not stand stronger analysis. Their results suggest that net migration rates prior to the crisis were highest in some of those regions that have proved least resilient to the economic shock, a finding that is strengthened for those aged 25-49. In Figure 23, ATTREG characterises regions by virtue of their relative ability to retain working-age populations. By simple observation it is evident that there is no clear relationship between those regions most able to retain populations and economic performance during the last crisis.

Figure 23 Regional Mobility by typology of age cohorts



Source: ESPON project ATTREG, Final Report, Map B, p.6

Initial analysis of this data suggests that, at least some of, those areas with higher levels of net in-migration were over-heating in the pre-crisis boom and so attracted migrant labour on the basis of what proved to be unsustainable patterns of economic growth. Indeed members of the ATTREG study team suggest post-crisis, those regions which were least attractive to migration have proven to be the more resilient.

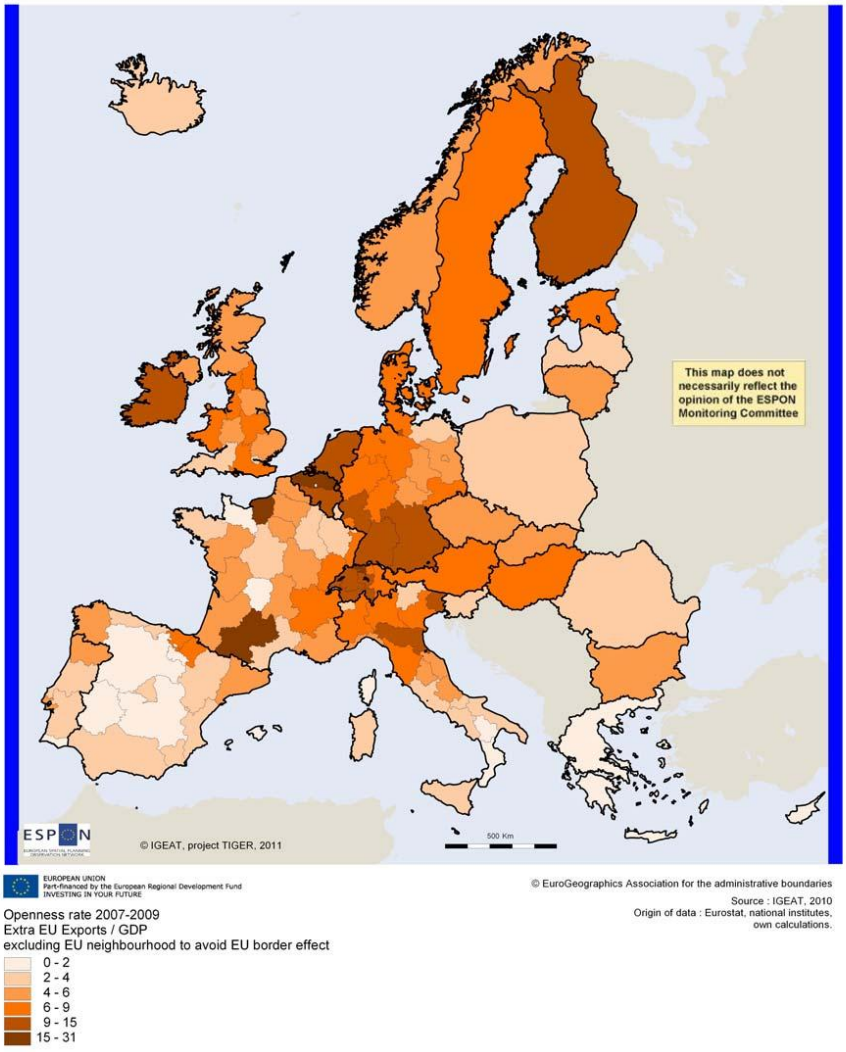
This is a line of inquiry that will be pursued in the next stages of our research. Our qualitative research suggests that there is strong evidence that individuals are responding to weaker economic opportunities by seeking employment in other regions. However, much of this is not reflected in official migration figures as it constitutes temporary movements based around what may be a working week in one location followed by a return to the family home at weekends, or other temporal patterns.

Access to markets

Connectivity – The connectivity of places might be considered as one potential component of resilience. Potentially, the more connected a place the more able it is to access other markets. However, having examined the relation between cities' connectivity and their economic performance the ESPON study TIGER found no evidence of such a link in advanced producer services or other functions (p.65 Final Report).

Openness – openness to trade is regarded as a potential indication of resilience. Qualitative research from the case studies suggests that strong export performance is able to counteract declines in domestic demand. However, this also provides potential risks in terms of vulnerability to overseas competition. Across the ESPON territory there are clear disparities in levels of 'openness' as illustrated by the ESPON TIGER project (Figure 24). We will explore the value of this indicator in the next stages of our work.

Figure 24 Openness to extra-ESPON and neighbourhood trade of European regions, average 2007-2009.



Source: Reproduced from ESPON TIGER Project, Draft Final Report, p.41.

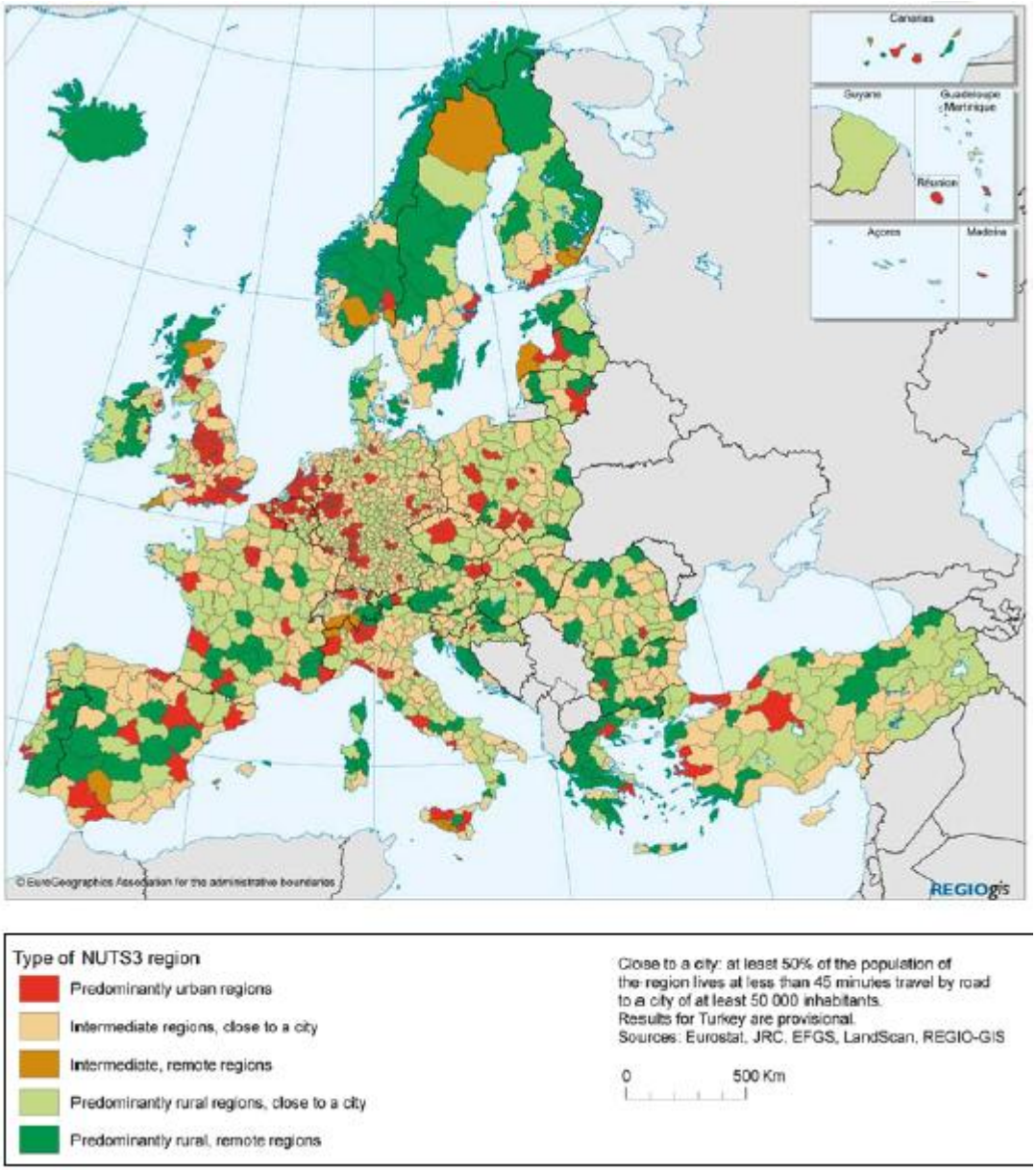
Note: extra-EU and neighbourhood exports exclude all exports within the ESPON space as well as its immediate neighbourhood (Western Balkans, Near East, former-USSR and Northern Africa)

Territorial Characteristics - (NUTS3)

Urban-rural typology

One consideration to explore is whether levels of urban or rural intensity influences levels of resilience. This will be done through use of the Commission's urban-rural typology (Figure 25)

Figure 25 Urban-rural typology



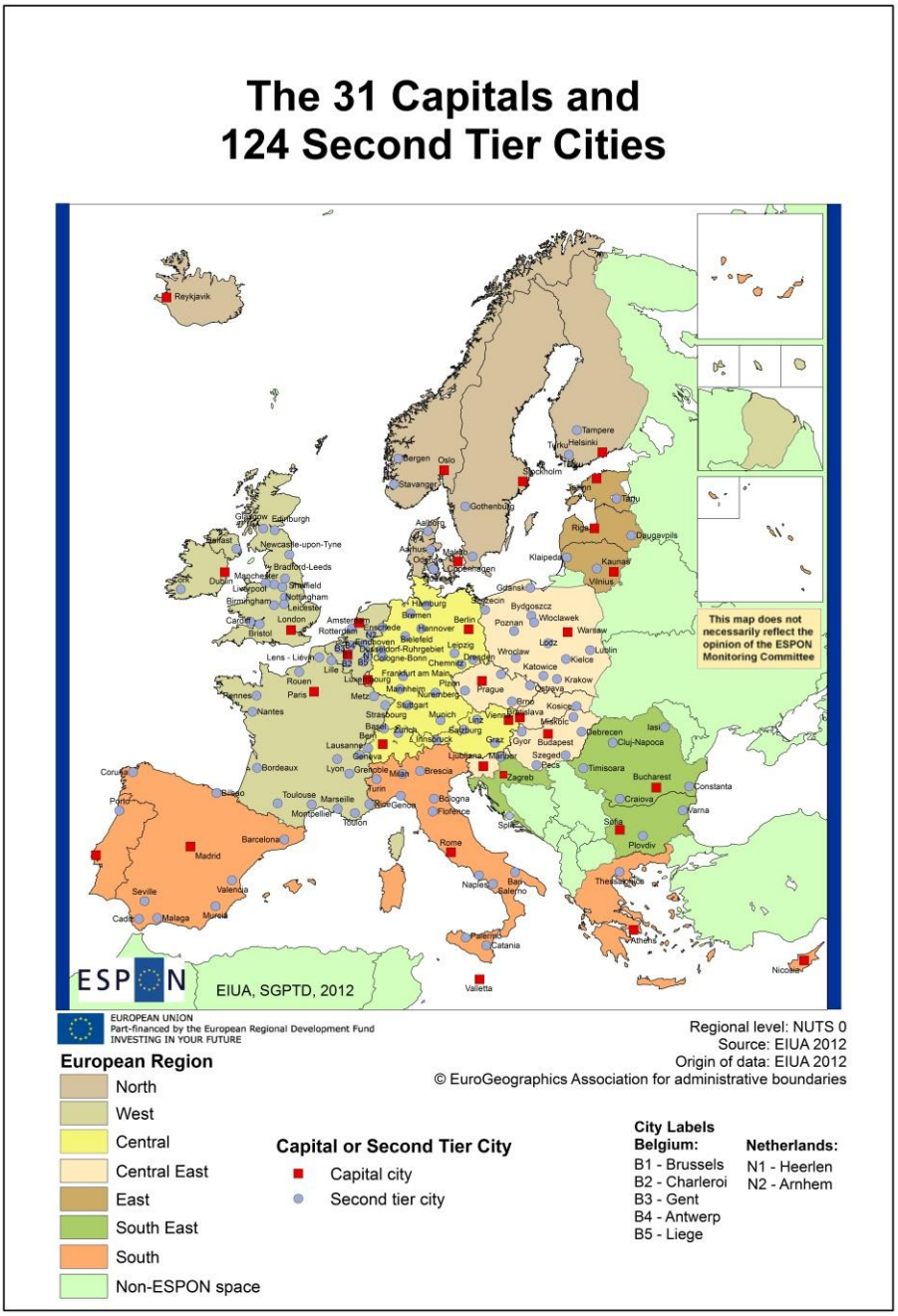
Urban structure

The presence of critical mass is regarded by some writers as a critical influence on levels of economic resilience. Urban areas provide opportunities for diverse employment opportunities and agglomeration economies. Representatives of the ESPON TIGER[4] project suggest that larger cities have performed more strongly post-crisis citing a flight of global capital to 'safe-haven' locations. These safe havens have more diverse markets and so provide more robust locations for real estate investments.

In assessing urban structure we will make use of a typology based on the presence of global centres, national capitals and second tier cities. In doing so we will be guided by the ESPON project SGPTD, which identifies 31 capitals and 124 second tier cities (Figure 26). Alternatively we can make use of the 'metro regions' concept identified by the European Commission (Figure 27).

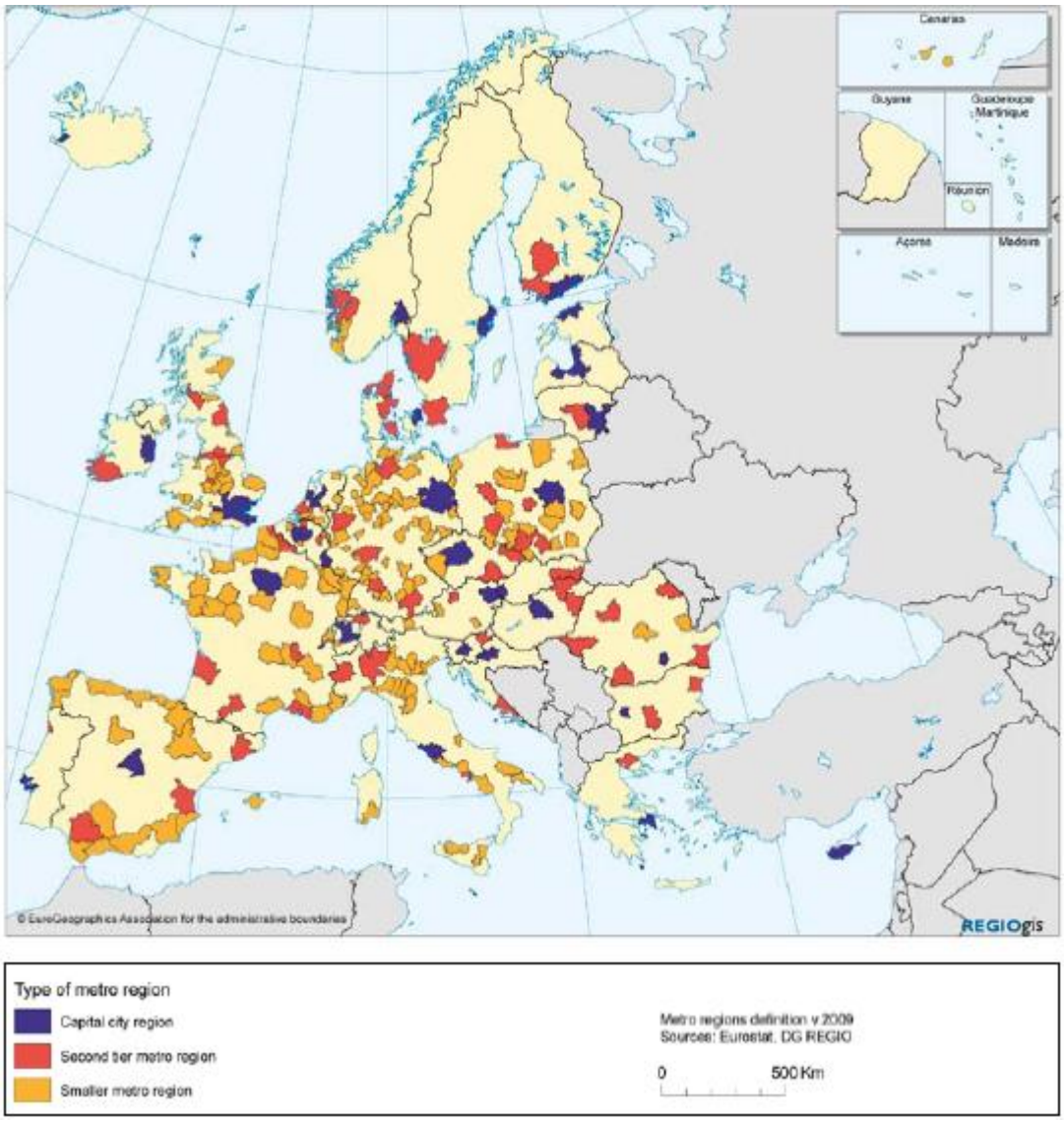
Figure 26 Urban structure across the Espon Space

[4] Speaking at ESPON Internal Seminar, November 2012, Paphos, Cyprus



Source: Reproduced from the ESPON project SGPTD, Final Report, Map 1, p.2

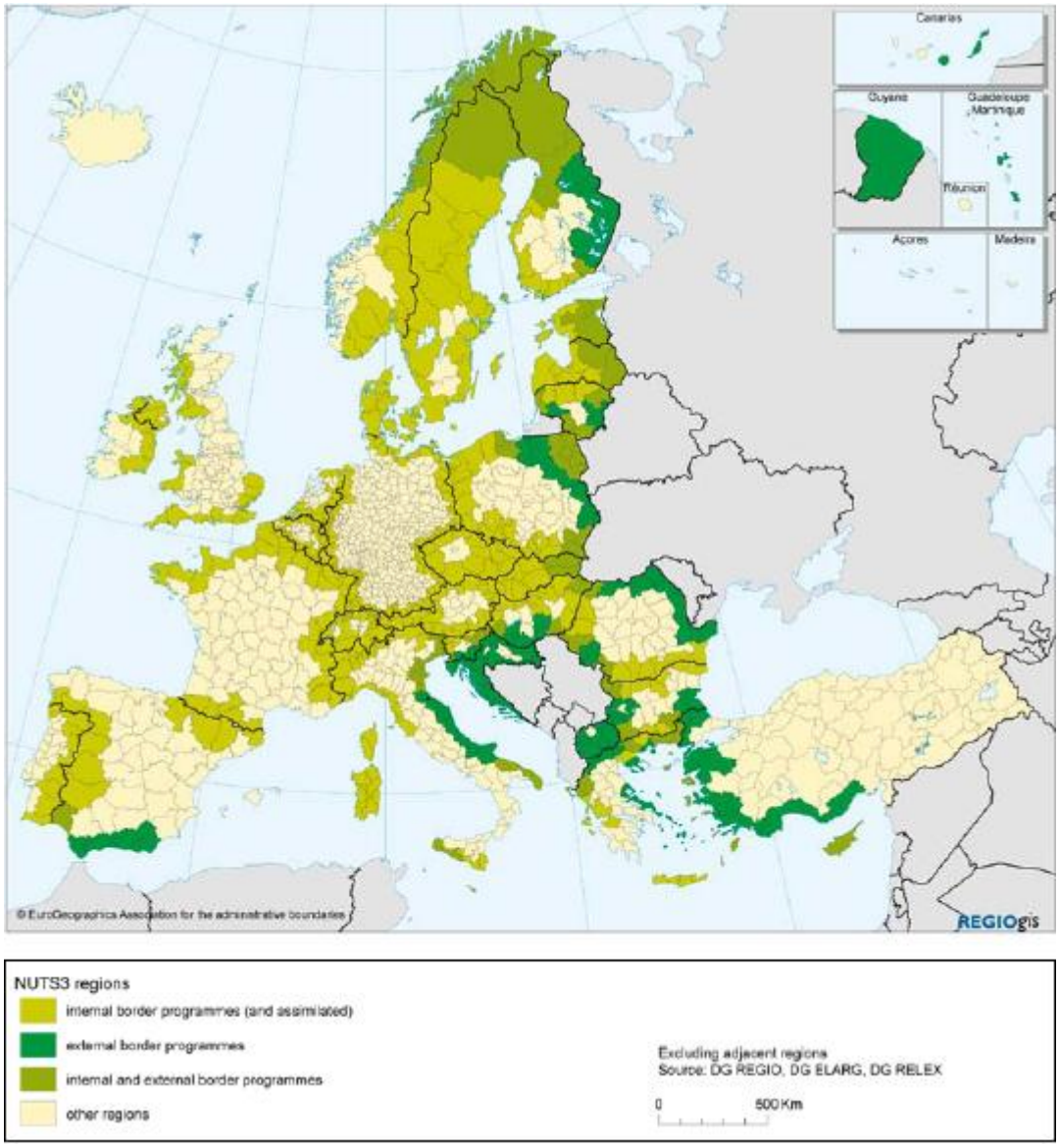
Figure 27 EU Metro regions



Border regions

Using the territories of cross-border cooperation (Figure 28) we can examine whether border region status has an influence on levels of resilience.

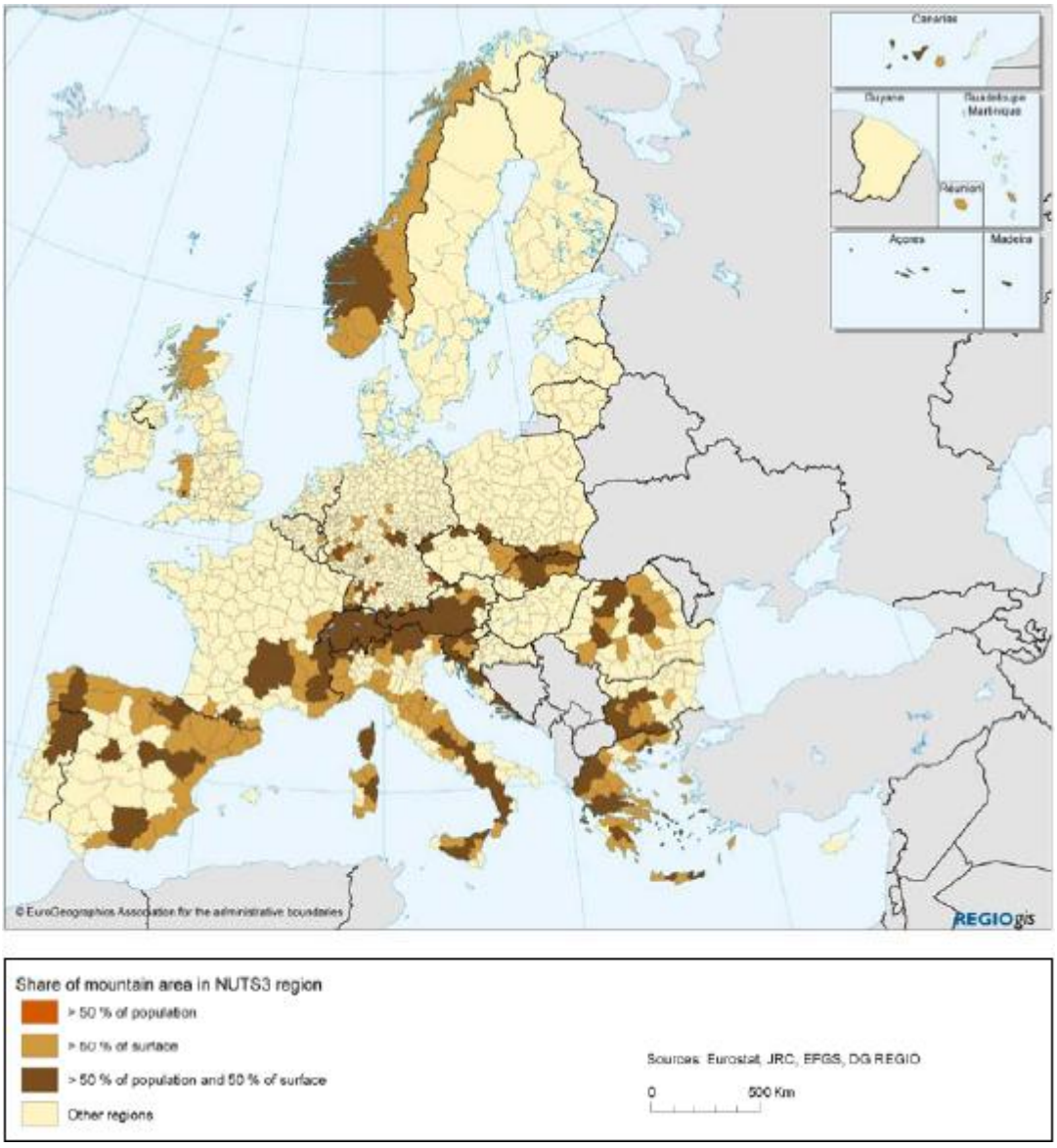
Figure 28 Border regions



Mountain regions

The study will examine whether mountain region status has an influence on measured levels of resilience (Figure 29)

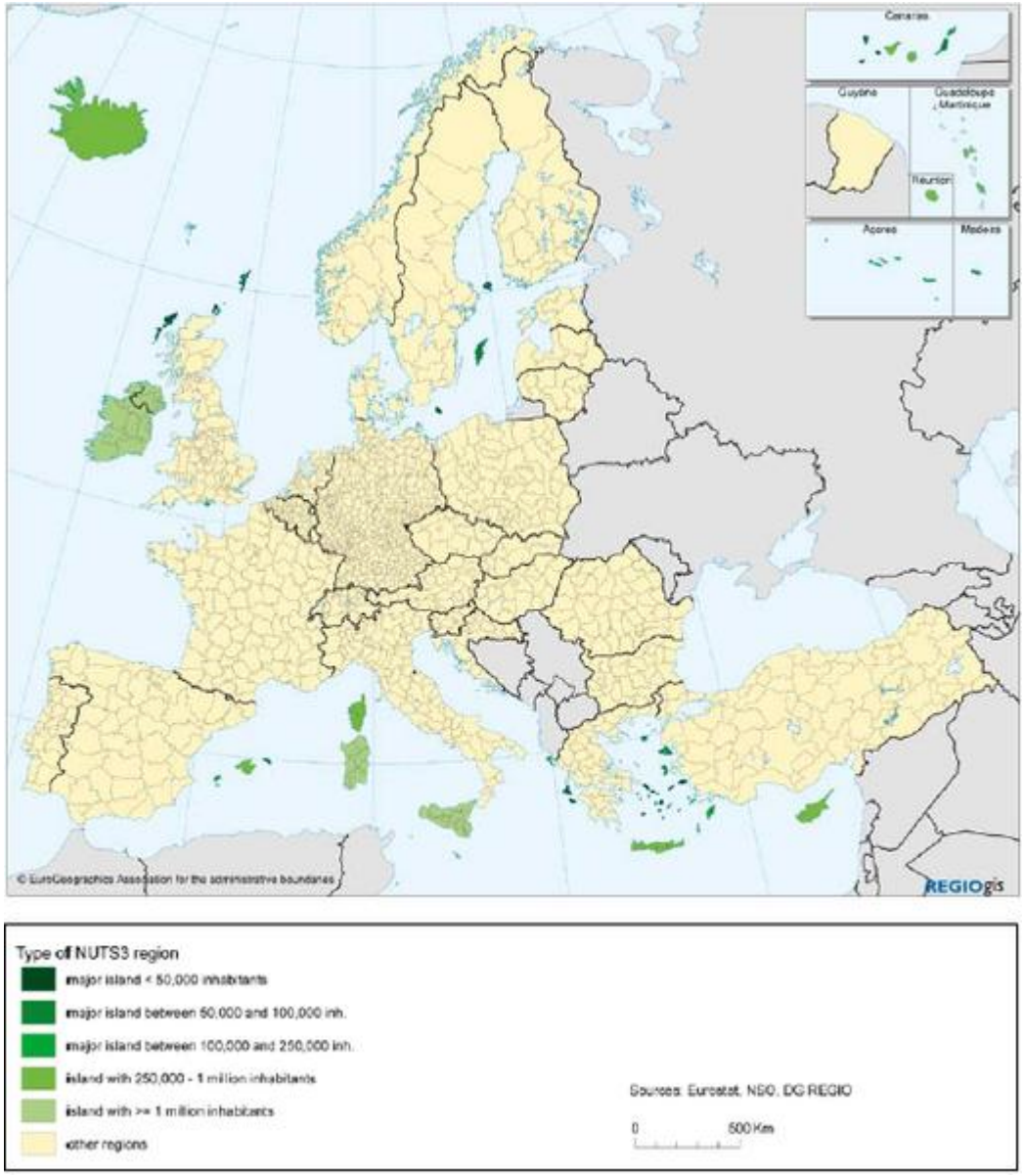
Figure 29 Mountain regions



Island Regions

The study will examine whether Island region status has an influence on measured levels of resilience (Figure 30)

Figure 30 Island Regions



Sparsely Populated Regions

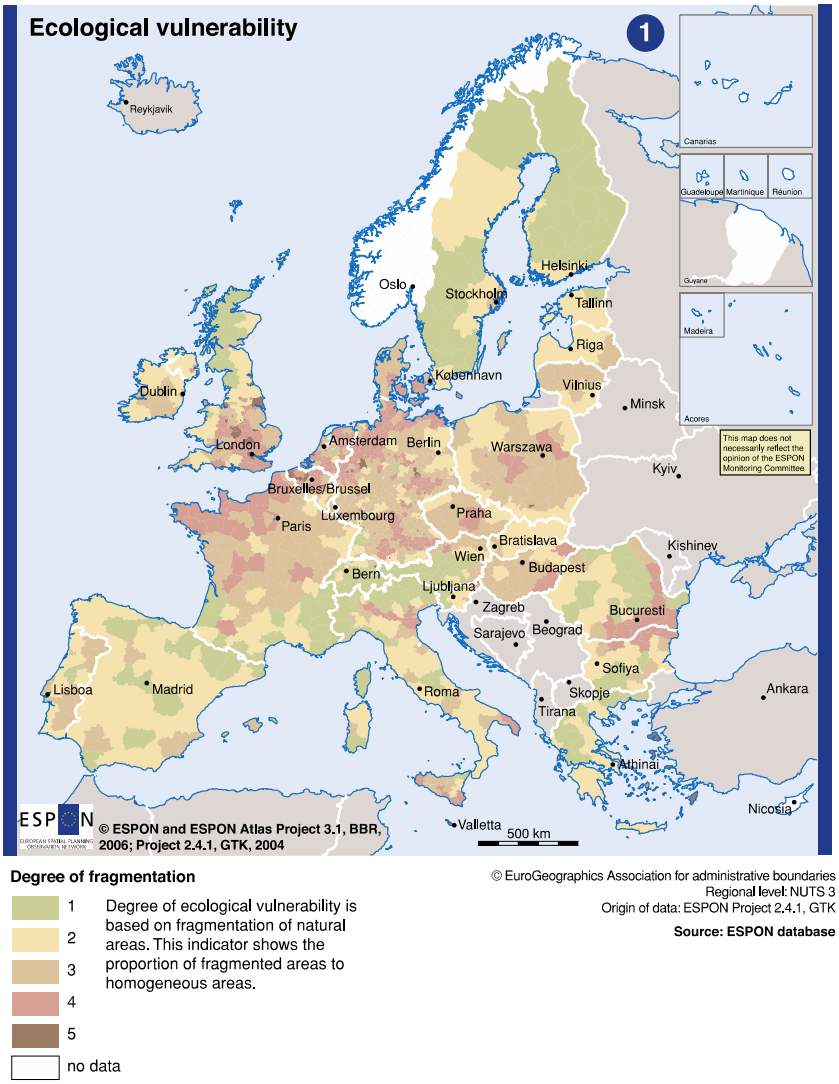
The study will examine whether Sparsely Populated region status has an influence on measured levels of resilience (Figure 31)

Figure 31 Sparsely Populated Regions

Natural Capital

We will make use of the ESPON Atlas here, taking the concept of ecological vulnerability – based on the fragmentation of landscapes – and reconfiguring this to identify areas with high levels of contiguous natural landscape. These areas will be considered as those with strong levels of natural capital. This provides a proxy for the presence of natural resource based assets (Figure 32).

Figure 32 Extent of natural capital



Source: ESPON Atlas (p.46)

Spare Capacity

Whilst spare capacity has been highlighted by commentators in the field of economic resilience it is a challenging indicator to measure on a regional cross-national comparative basis. It is also unclear whether all forms of spare capacity are fully transferable, raising the spectre of shortages in the supply of some forms of capacity whilst surpluses exist elsewhere. It is considered that this indicator will need to be treated in a more qualitative context.

Local property market (vacancy rates/house prices)

Whilst there is good evidence of the potential offered by this indicator at the local level it remains difficult to operationalise across the ESPON territory. Further work will be undertaken in this area.

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The ESPON 2013 Programme is part-financed by the European Regional Development Fund, the EU Member States and the Partner States Iceland, Liechtenstein, Norway and Switzerland. It shall support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory.

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