ECR2
Economic Crisis: Resilience of Regions

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List of authors and principal contributors

Cardiff University:

Gillian Bristow

Adrian Healy

Laura Norris

FTZ-Leipzig

Rudiger Wink

Aristotle University

Grigoris Kafkalas

Christina Kakderi

Tartu University

Kerly Espenberg

Uku Varblane

Veiko Sepp

Gdansk University

Iwona Sagan

Grzegorz Masik

Manchester University:

Marianne Sensier

Alan Harding

Experian Plc:

Adam Swash

Heather Carey

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EXECUTIVE SUMMARY

The recent economic crisis has witnessed the most severe economic downturn in the history of the European Union. Yet not all regions experienced economic decline and rates of recovery have varied greatly. This differentiated experience raises important questions as to why some regions prove to be more resilient to economic shocks than others, and what influences the observed resilience outcomes.

The ESPON project Economic Crisis: Resilience of Regions (ECR2) 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. This report constitutes the Draft Final Report of the project. The overall objective of the project has been 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 doing so the project has focused on three principal themes:

- Identifying the territorial impact of the last economic crisis
- Estimating the territorial resilience of region
- Understanding the role of territorial policy responses in promoting economic resilience

Economic shocks are not particularly rare events and their likely occurrence can be broadly foreseen. The consequences of these shocks are much less predictable, as witnessed by the rapid unravelling of the economic order following defaults in the American sub-prime mortgage market. The consequences of which were manifested variously as an initial financial crisis, which sparked a wide-ranging 'credit crunch'; a sovereign debt crisis, where high levels of public debt (partly driven by the bail out of national banking sectors) proved difficult to sustain in financial markets, and a more traditional slump in demand, as adversely affected firms and households reduce their expenditure. It is the consequences of an event that tends to mark it out as a 'shock' to the system and, certainly, to attach the word 'crisis'. The severity of the recent crisis has promoted an increase in the concept of economic resilience in the face of economic shocks, amongst both academic researchers and policy-makers.

Within the developing literature on regional economic resilience, a broad distinction can be made between two different conceptions of the term. The first 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. The second definition is based on an adaptive notion of resilience which views the economic landscape as a complex adaptive system which is in a state of continuous flux. Here, resilience is defined as the capacity of a local or regional economic system to adapt to changing economic circumstances. Combining these two concepts we define resilience as:

"the ability of a regional economy to withstand, absorb or overcome an internal or external economic shock".

The consequences of the economic crisis across the European territory have been well-documented in recent years. The variable temporal geography observed as the downturn gradually spread from a small number of regions in 2007 to eventually incorporate almost 90% of the ESPON territory in 2009, reinforces the importance of the dynamic analysis adopted by ECR2. Our own analysis then reinforces the overall picture of falling levels of trade and investment followed by falling levels of employment, falling hours of employment, rising levels of unemployment, and stagnant wages. Spatially disaggregated analysis highlights the more nuanced territorial dimensions of the crisis, with many territories experiencing a different crisis to that experienced by other regions both across and within countries. The varied temporal and spatial geography of the crisis raises interesting questions as to the relative performance of regions.

In the relatively short timescale since the onset of the economic crisis, and certainly the limited time period for which robust and comparable data is available, we are only able to examine the first response of regional and local economies to the consequences of the economic crisis. This provides an important window on the ability of economies to withstand, absorb and recover from the first effects of an economic shock. Our work also provides an insight into the first stages of the economic transformations initiated as a consequence of the crisis.

The timescale of the study has proved to be advantageous for the study of the resilience, as it has allowed qualitative research to be undertaken whilst the effects of the crisis remain at the forefront of individuals minds, but sufficiently distant to allow for quantitative analysis through a series of datasets. The project has adopted a unique approach to the analysis of regional economic resilience in that it has dated the business cycle of each NUTS 2 and NUTS 3 territory in the ESPON space. This provides a much stronger assessment of the impacts of the crisis than relying on aggregated data, or setting an artificial beginning and end to onset of the economic shock.

Economic resilience is calculated for NUTS 2 and NUTS 3 territories across the ESPON space, as well as national economies. A territory is judged to have been resilient to the crisis if, by 2011, it has a level of employment (or GDP) that is equal to or greater than peak levels achieved prior to the onset of the economic crisis. We divide these resilient territories into two types:

- those that resisted (or withstood) the crisis and experienced no decline in employment (or GDP)
- those that recovered from an initial decline in employment (or GDP)

Territories that have not recovered to pre-crisis levels of employment (or GDP) are deemed not to have been resilient to the crisis. They are also divided into two types:

- Regions that have not recovered pre-crisis levels of employment (or GDP) but have recorded an upturn in employment (or GDP) and so begun the process of recovery
- Regions that have not recovered pre-crisis levels of employment (or GDP) and are still recording a decline in employment (or GDP)

We have chosen to use the number of persons employed in an economy as our primary indicator of resilience. This reflects the importance attached to 'having a job' in the popular view of a successful economy. It also reflects the social and health costs associated with employment losses. Economic output (GDP) is a common alternative measure of economic performance and so we include this for comparative purposes. Alternative measures considered included household incomes and the employment rate. These have merit but also associated conceptual and methodological difficulties.

One consideration for the study has been the extent to which macro-economic conditions might overwhelm otherwise resilient regions (or flatter regions that might otherwise be less resilient). In order to consider this context we have developed an indicator of Relative Regional Resilience (R3) for NUTS 2 regions. This provides a valuable contribution to the debate in that it highlights strong deviations from national performance in a small number of regions.

Of the 280 regions considered by ECR2, more than a tenth (12%) had weathered the crisis and not experienced any fall in numbers employed, whilst almost a quarter (23%) had experienced a fall in employment but, by 2011, had recovered to the pre-crisis peak. Two-thirds of regions were still to recover by 2011, divided evenly between those that had passed the trough of the downturn, and those still to register the end of employment decline. The distribution of regional economic resilience is set out in Figure ES2, which illustrates a strong geography of resilience, clearly influenced by national patterns. However, important pockets of recovery and non-recovery are also apparent within this overall geography. At the NUTS 3 level similar findings occur, albeit with a slightly greater proportion of resistant regions and slightly fewer non-recovered but in upturn. Localised variations in resilience are also apparent at smaller territorial scales in our case studies, highlighting valuable policy considerations.

Table 5.3 Employment Resilience of NUTS 3 Territories

Resilience	***Number of regions***	***Proportion (%)***
Resistant (RS)	214	16.19
Recovered (RC)	314	23.75
Not recovered but in upturn	364	27.53
Not recovered and no upturn	430	32.53

Source: adapted from study data

Figure ES2 Regional Economic Resilience

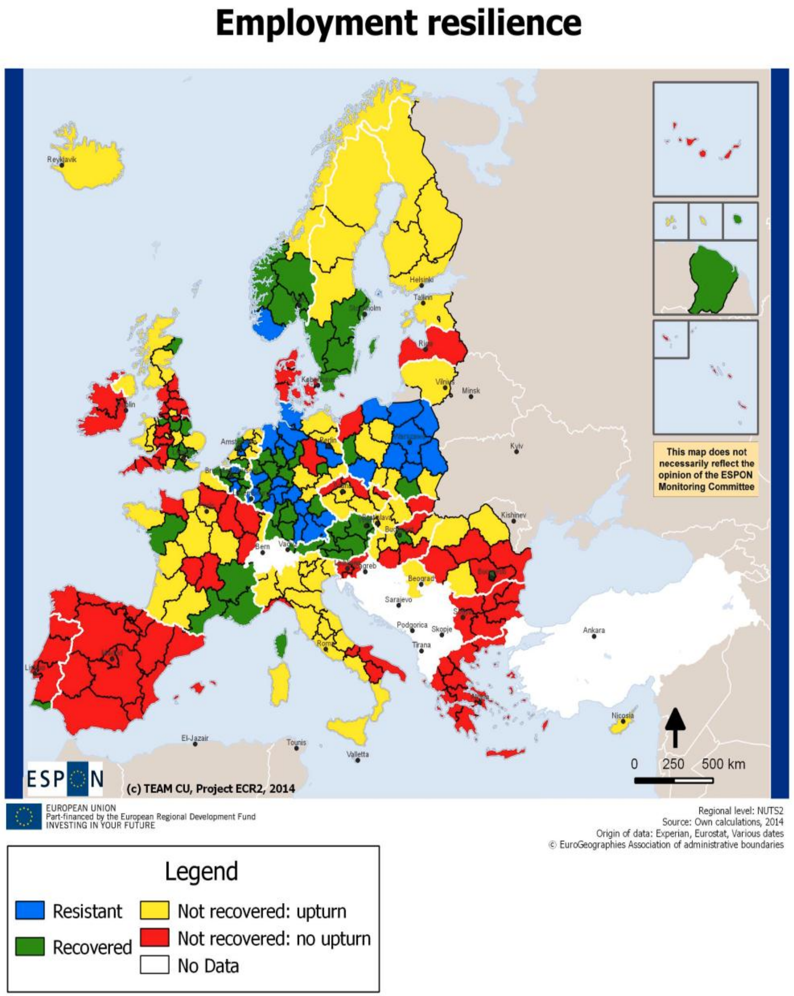
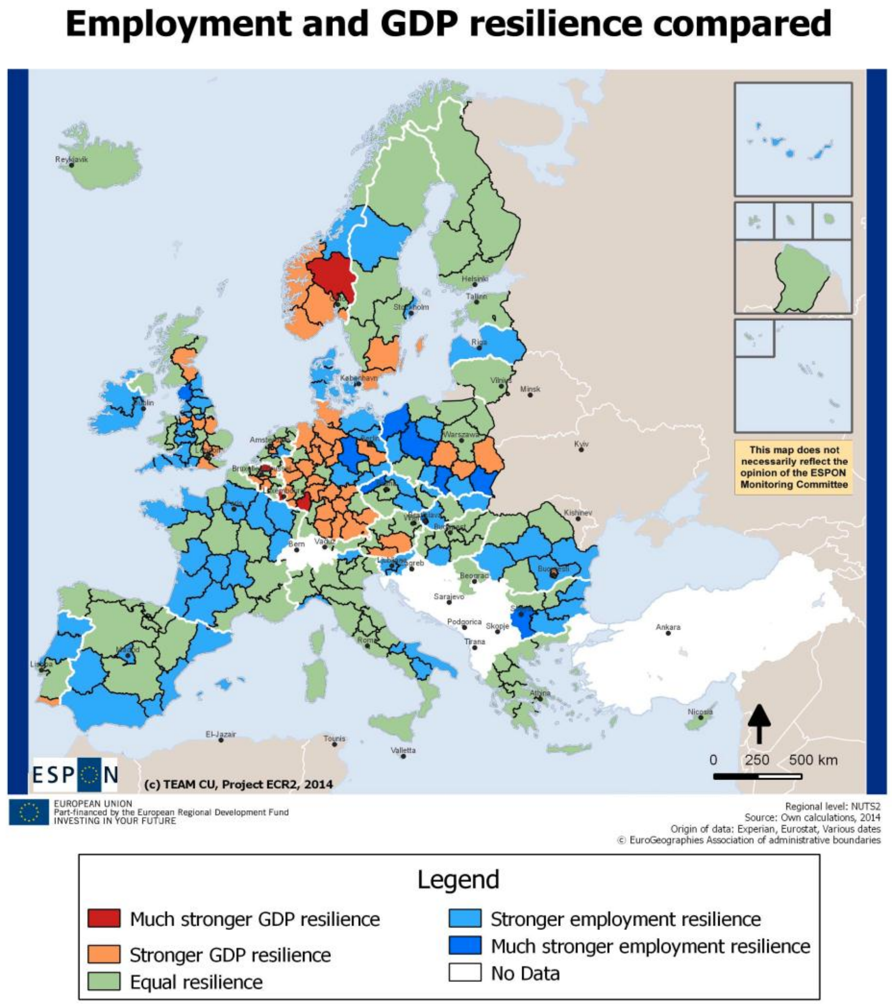


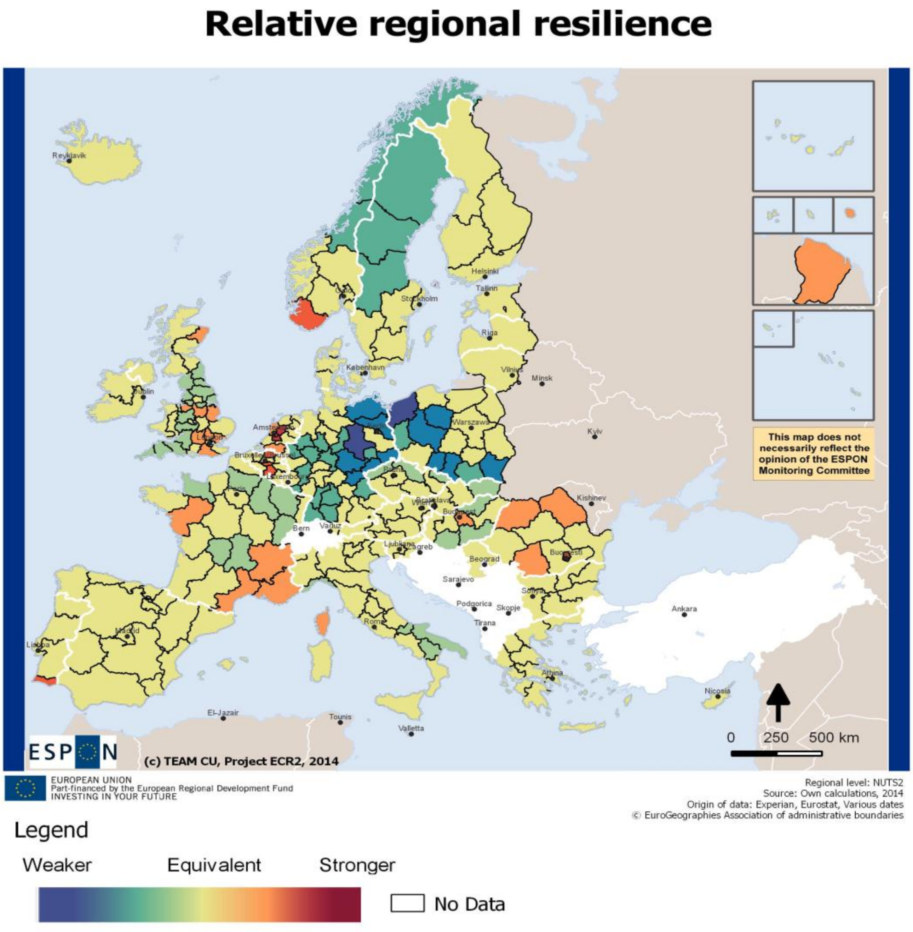
Figure ES3 Geographies of comparative resilience



Overall, around half of (NUTS 2) regions exhibit similar levels of GDP and employment resilience, with a third proving to have been more resilient in their employment performance (Figure ES3).

The distribution of regional resilience between Member States suggests that macroeconomic conditions and national policy regimes have an influence on the sensitivity of individual regions to economic crisis. Yet, there are also examples of where the experience of individual regions runs counter to national trends, or where there is strong variability within Member States. National effects may be expected to be stronger in small and medium sized Member States[1], where the influence exerted by national policy is proportionately greater. However, even in small Member States, variation in relative levels of resilience can be observed. The relative regional resilience across the ESPON space is set out in Figure ES4. Most regions exhibit a similar level of resilience to their national average. However, there are some significant outliers, where regions either exhibit stronger resilience, compared to the national average, or weaker comparative resilience.

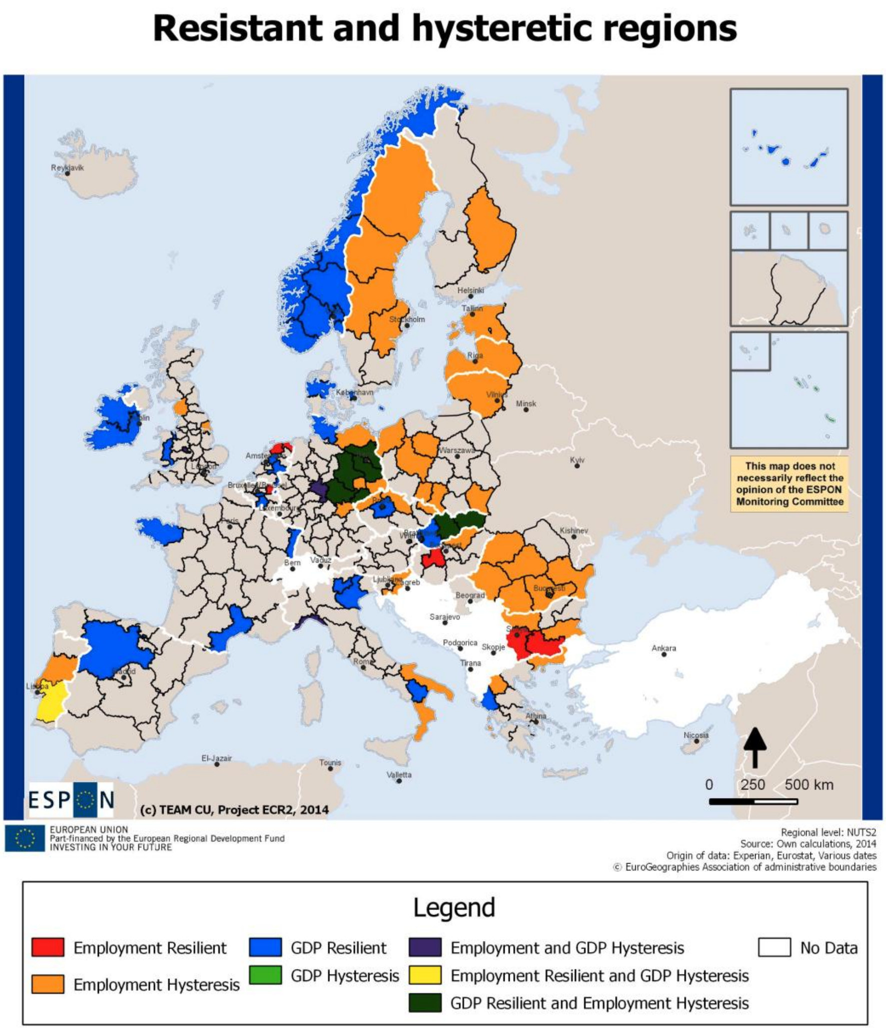
Figure ES4 Relative Regional Resilience in the ESPON space



[1] In small States (ie those with one NUTS2 region) the distinction between national and regional becomes rather artificial.

Comparison with the 1990s crisis supports the contention that the effects of the current crisis has been more strongly associated with reductions in GDP, and that the effects on employment have been less immediate. In the 1990s crisis less than 5% of regions were resistant to the employment effects of the downturn, compared to 12% during the current crisis. In contrast, almost a fifth of regions (19%) demonstrated GDP resistance, compared to just 5% during the most recent crisis. Most strikingly, a fifth of regions (52) have never regained their peak employment levels. For four regions (1%), located in Germany, Italy, Portugal and the UK, recovery to peak GDP levels has still not been achieved. This strong hysteretic effect cautions against any assumption that peak levels of employment should form a natural objective following an economic shock, but is also suggestive of the important interplay between the interaction of economic shocks and longer-term processes of structural transformation. We illustrate the distribution of resistant regions and those that demonstrate hysteretic profiles in Figure ES5.

Figure ES5 Historical resilience outcomes (economic shock of early 1990s)



The results of our quantitative and qualitative analysis suggest a range of features that are broadly associated with more resilient economies. Economic structure influences resilience outcomes through sectoral effects. Overall, a dependence on sectors such as construction and agricultural adversely affected resilience outcomes, whilst a concentration of higher-order service sector functions was beneficial. Economic structure is, though, only a partial explanation of resilience. Our qualitative research highlights that ownership structures, export orientation and market focus are all more significant. The presence of international companies, with access to financial resources and greater expertise, positively assists resilience, as does a strong export orientation to the economy, focused on a more modern production techniques. There is also a very strong positive relationship between higher levels of innovation performance and observed resilience outcomes. This is also present for other science and technology capacity indicators (such as Human Resources employed in science and technology).

Stronger levels of skills and experience, including managerial, tend to be associated with more resilient places. Areas with more highly qualified populations tend to have more positive resilience outcomes. However, simply increasing the extent of educational qualifications does not appear to confer greater levels of resilience, suggesting resilience is a long-term phenomenon, a suggestion reinforced by the finding that places with more stable longer-term growth patterns tended to be more resilient.

A strong feature of several of the case studies is the significant role played by a major urban centre in promoting the resilience of the surrounding economy. This is reinforced by quantitative results that demonstrate how the presence of an urban centre, particularly second-tier centres, is positively associated with resilience. By contrast, regions that are remote; have external borders, or have high levels of population living in mountainous or coastal areas all tend to have proven less resilient to the economic crisis. Further analysis of these results is required to control for potential uneven spatial distributions, which might bias the findings, but the greater challenges presented by these features is notable. Regions with higher levels of accessibility also tend to be associated with more resilient outcomes.

The ECR2 project sought to explore the role that community-based features could play in the economic resilience of the region as a whole. What emerges are a number of features that appear to have some impact on observed levels of resilience. Whilst rarely strong enough to impact directly on the ability of an economy to withstand the effects of an economic crisis they are able to play an important role in shaping the way in which it responds and the opportunities available to communities. Crucial considerations are the strength of social networks between firms and within communities, which play an important role in mediating resilience outcomes.

The role of community-based initiatives in countering the consequences of the economic downturn featured in all the cases studied. At the very local scale the development of strong localist agendas, epitomized by ‘buy-local’ campaigns formed one response to the crisis. In no case were significant initiatives identified that had made a strong impact on the observed level of resilience within the regions concerned. However, there is evidence from other locations of the role that a variety of long-standing initiatives, such as alternative currencies, can play in tempering the effects of economic downturns. The role of such potential ‘safety-valves’ in supporting resilience over the longer-term merits further consideration.

Across the cases studied the economic crisis has led to a renewed interest in the potential offered by entrepreneurship. Several of the regions already have strong entrepreneurial cultures and some report that this provides a greater diversity of activity and enables local communities to maintain economic activity. There is, though, limited evidence from the cases studied, or our wider quantitative analysis, of a more entrepreneurial culture making an observable difference to resilience experiences.

Finally, the project considered the role of governance in promoting more resilient outcomes. Overall, it was found that fragmented governance structures impeded resilience. Resilience appears to be enhanced where public authorities work together with neighbouring authorities; where different levels of government work together towards shared objectives, and where there is a collaborative approach to working with economic and social partners. Where local government has more limited powers, this appears to act against resilience, although the finding is not without exceptions. A key consideration appears to be the extent to which sub-national governments have the capability to act, not just the capacity. Equally, there also has to be the willingness to use those powers that are available.

Alongside important structural features that appear to influence levels of resilience the role of agency and choice also emerged as formative influences on the nature of response to crisis. This manifests itself in two key dimensions: the ability to learn, and the ability to adapt. Both influence the choices made, which, in turn, influences the resilience outcomes observed. In several cases this was the crucial dimension in the ability of an economy to absorb the effects of the crisis, to reorientate activity and so to recover to pre-crisis employment levels. There is evidence that a willingness, and capability, to adapt over both the short and the medium-term aids resilience outcomes. Evidence lies in the choices made by workers and employers in making short-term changes to working hours and compensation arrangements during the duration of the crisis. Equally, firms and economies that were able to develop new markets proved more able to manage the economic crisis than those that did not. Workers and households affected by redundancy also developed adaptive strategies, based on new labour market choices. It is in these adaptive strategies that we begin to see the first signs of transformative effects of the crisis emerging, such as increasing rates of entrepreneurship. However, in some cases the choices made appear to constrain adaptation.

Constraints on transformation was evident in the case of green economic transitions. There is some evidence that the crisis initially accelerated green economy ambitions and practices in some case study regions, particularly those where greening strategies were already in place, such as Wales and Puglia. However, this has not made a discernable impact on their observed resilience; whether this is because the green economy is not yet fully-developed; is not visible in any statistics, or does not have a positive impact on resilience is too early to tell. However, we also found some evidence that the crisis and the tighter fiscal conditions it ultimately promoted, significantly affected the priority afforded to greening strategies, suggesting that, in contrast to competitiveness and innovation, green growth is not seen as a priority at a time of fiscal tightening.

The consistent theme emerging from our cases, and quantitative analysis, is that not only does each region experience the economic crisis differently but that the interplay of factors that influence this is also uniquely different. Whilst the univariate and bivariate techniques employed by the project demonstrate strong, and relatively consistent, relationships between observed resilience outcomes (of both employment and GDP) and a number of key variables the results of multivariate techniques are more complex and offer poor levels of explanatory power. It is evident that the interactions are complex, that the direction of influence can often reverse depending upon specificities of regional contexts, and that the characteristics identified only explain a part of the resilience observed. It is likely that other factors are also at play, and that the role of policy will be a further important influence. In this context, it may be optimistic to assume that resilience at a regional level can be robustly modelled.

Policy roles in promoting resilience are significant. The foundations for resilient outcomes have been laid over a long-period of time, whilst the challenges facing non-resilient economies are equally long-standing. There is a clear role for policy makers in preparatory actions that support the development of resilience capacities and capabilities. Similarly, the project has identified a series of policy-approaches that successfully helped stabilize regional economies in the face of the economic crisis. These operated at an international, national and regional scale. Policy interventions were more readily mobilized where they could draw on pre-existing instruments and institutions.

Cohesion Policies formed part of successful policy responses to promote more resilient economies. They did so through sharing risks and mobilizing external fiscal support; through actions that helped to stabilize adverse economic pressures, and by helping to build absorptive, adaptive and transformational capacities. However, in many cases Structural Fund programmes found it more difficult to react and respond to the unfolding consequences of the economic crisis.

Responses to the economic crisis illustrate how economies reorientate as part of a process of economic recovery. They also provide glimpses of transformative effects engendered by economic shocks. However, the constraining effects of shocks on transformative actions are also visible, such as evidenced by our exploration of green development paths, navigating this complex environment is a key policy challenge.

The evidence suggests that rather than focusing on individual initiatives, resilience is based upon building the systemic ability of an economy to withstand, absorb and recover from economic shocks. To do so does not require radical changes to existing policy approaches, merely a slight change in emphasis. It does, though, require the concerted actions of policy actors at the European, national and sub-national scales. This requires the development of adaptive policies and institutions, that are able to evolve to meet the particularities of different shocks, rather than entrenching established models that lock an economy in to outmoded responses.

In considering future policy directions we emphasise four principles:

- Firstly, effective policy implementation requires the ability to react quickly to economic shocks.
- Secondly, concerted and coordinated efforts are required to assist economies to recover from the crisis.
- Thirdly, and most fundamentally, any roadmap for policy implementation must stress the importance of preparing for future economic shocks.
- Fourthly, policy makers should seek to anticipate the risks of any future economic shock.

Finally, we wish to re-emphasise the importance of place-based policy making in any policy roadmap. The effects of the economic crisis have varied across and within places and, consequently, the place-based approach is the most appropriate means of building resilience over the longer-term. The experience of the recent crisis illustrates the importance of seeing this as a shared responsibility between multi-level governance actors. The distribution of responsibilities will vary across contexts but the principle is sound.

Policies to develop the economic resilience of individual territories involves deploying available instruments in mix that responds to the particular characteristics of individual territories and national and international contexts. A resilience orientated policy mix is place-shaped as much as being place-based. Different solutions will be appropriate in different institutional contexts but enabling a multi-layered sharing of risk across and within territories, whilst supporting the development of endogenous adaptive capacity is crucial for the resilience of places. Resilience is both a property of a complex economic system and a shared responsibility for those involved in managing that system.

1 Introduction

The ESPON project Economic Crisis: Resilience of Regions (ECR2) 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 culminates in Autumn 2014. This report constitutes the Draft Final Report of the project.

The ECR2 study resonates strongly with the territorial challenges identified for ESPON 2013 projects. That the current economic downturn is having an asymmetric impact on regions and cities is explicitly recognised as one of the seven mega-trends facing the European territory. What makes some regions more resilient in the face of economic crises, and others less so, is a question that has strong relevance in the present economic circumstances.

1.1 Project objectives and structure

The objective 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 doing so, the project was asked 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 project was also provided with a number of associated policy questions and research questions, that form the foundations for the work undertaken. These were:

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.

The draft final report seeks to address each of these key themes in turn. Section 3 briefly introduces the adopted methodology and Section 2 provides a short consideration of the concept of economic resilience in the face of economic shocks. Section 4 focuses on the territorial impact of the current economic crisis, particularly on the spatial and temporal effects. Section 5 builds on this work, and explores which regions have proved to be resilient to the crisis, and which have not. Consideration is also given to how territories responded to past crises, namely that of the early 1990s. Section 6 considers those factors and characteristics that appear to influence the observed resilience of regions across the ESPON space based on the results of the quantitative and qualitative research undertaken by the project. In Section 7 the report draws on the findings of the research to consider the role of policy in promoting resilient economies. The report provides conclusions and summary recommendations in Section 8.

1.2 Regional Resilience

Regional Resilience is defined in terms of economic resilience – this does not underplay other forms of territorial resilience (to natural disasters or other hazards for example) but acts as the focus for this study. For definitional purposes it is defined in terms of a regional economy's ability to withstand or overcome a recessionary event in the wider economy. Extending from this, our working definition of resilience for this project is:

The ability of a regional economy to withstand, absorb or overcome an internal or external economic shock.

We capture resilience to economic shocks both in terms of the response of economic output (as measured by levels of total GDP) and employment (measured as total number of persons employed[2]). Other measures that were considered include number of persons unemployed (or rate of unemployment) and levels of household income. Both have their advantages in terms of conceptions of what constitutes resilience but were discounted for methodological reasons and based on wider discussions as to key policy concerns. In practice we have favoured the use of employment as an indicator of resilience, both because it is subject to fewer revisions over time than measures of GDP and because it resonates with the wider public, who tend to be concerned about the ability of an economy to support employment. For the purposes of this work we consider economic resilience at both the NUTS 2 and NUTS 3 territorial scales.

A full explanation of the methodology for calculating the observed resilience of regions to an economic shock is given in Section 2. Our approach identifies four categories of resilience:

- **Resistant regions (RS)** – those regions that have not experienced an absolute decline in economic activity following the economic shock.
- **Recovered regions (RC)** – those regions that experienced a decline in economic activity, but have since recovered to pre-shock activity levels.
- **Not-recovered, but in upturn (NR1)** – those regions that experienced a decline in economic activity, have passed the trough of the recession, but have not yet recovered to pre-shock activity levels
- **Not-recovered, still in decline (NR2)** – those regions that experienced a decline in economic activity, which was still ongoing at the time of the analysis.

It is worth noting that resilience to an economic shock does not necessarily imply that the economy is otherwise strong and performing well over the longer-term. It is a measure of how the economy responded to a particular economic shock. Resilience may thus differ from economic growth. Equally, regions that experience a very tight labour market prior to a shock may appear to be less resilient (owing to the difficulty of returning to artificially high employment rates). Furthermore, there may be a trade-off between resilience in the short-term and over the longer-run. These are considerations that are dealt with later in the report.

2 Method and approach

The study has employed a mixed methods approach that has combined quantitative data analysis with qualitative fieldwork. The key methodological stages have been:

- A review of existing literature concerning the definition of resilience, its component features and ways of measuring this
- The collation of datasets through which to assess the resilience of regions in practice
- The analysis of these datasets to assess the factors that might influence observed levels of resilience

[2] As part of the analysis we also consider total number of jobs in the economy concerned.

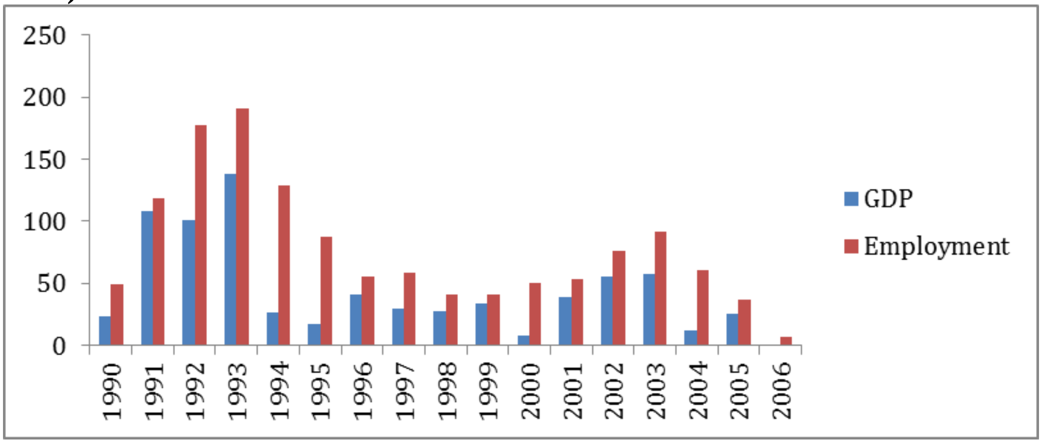
- The synthesis of data sources to assess the impact of the most recent economic crisis
- Mapping of key findings
- The completion of eight case studies to examine the effect of the crisis in practice

1.1 Quantitative approach

The primary data sources utilized have been provided by Experian plc, based on their European Regional Forecasting Service, and by Cambridge Econometrics, from their European Regional Database. Collectively these provide data across 24 indicators at various territorial scales. These have been supplemented with additional data drawn from Eurostat, other ESPON studies and composite indicators from sources such as the European Innovation Scoreboard. The principal indicators used have been employment and GDP at the NUTS 2 and NUTS 3 territorial scale. These form the basis for the calculation of regional economic resilience, and for the identification of when economic shocks occur.

National and regional economies are in continuous flux, as they expand and contract in response to events. Since 1990 there has only been one year where all regional economies in the ESPON space were experiencing growth (Figure 2.1). Differentiating between localized shocks and those that are more widespread is necessary in order to undertake comparative analysis. From the data it is apparent that there are two European-wide downturns within the period 1990-2007, prior to the most recent economic crisis. One occurs in the period 1992-93 and the other, smaller, event occurs around 2002-2003.

Figure 2.1 Annual incidence of employment and GDP decline at a regional level (1990-2006)



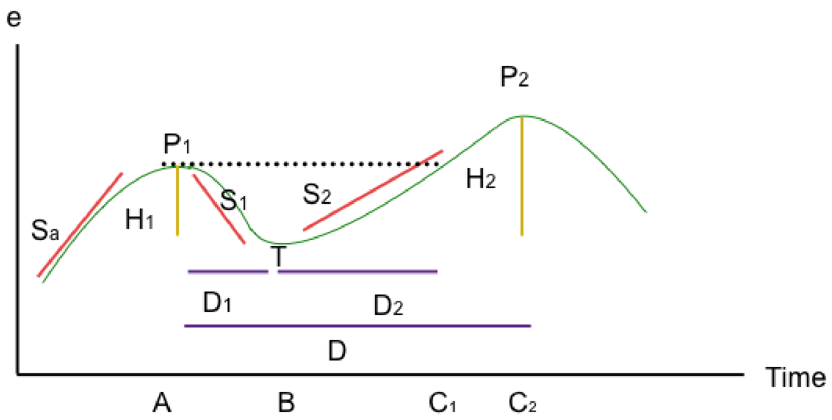
Source: adapted from study data (n=280)

To date these shocks, and to identify associated regional resilience outcomes, the project has applied a de-trending filter to annual time-series data for GDP and employment from the late 1980s to 2011[3]. This has enabled the project to identify peaks and troughs in the cycle of economic activity for each NUTS 2 and NUTS 3 region. We have used this business-cycle perspective to date the onset of economic downturn in each region of the ESPON space, the date the downturn ends and the date at which activity recovers to pre-shock peak levels. The

[3] This is the latest date for which data is available at March 2014.

approach builds on our definition of the various stages of an economy's response to a major economic shock (as set out in Figure 2.2). Where an economy is resistant to a shock, there is no downturn in activity. This enables the project to identify the dates of Europe-wide economic shocks and to identify which regions were resilient to a shock (categories RS and RC) and those that were not (categories NR1 and NR2).

Figure 2.2 Modelling resilience



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

In this model, recovery occurs at point C_1, when employment (or output) regains its pre-shock peak level (P_1). The time taken to recover is given by $D_1 + D_2$; whilst the duration of the whole business cycle is given by D. We have taken the year of 2011 as the cut-off date for recovery to have occurred in order for a region to be considered resilient to the most recent economic shock.

Following the identification of which regions were resilient in the face of the last economic crisis, and those that were not, the project has applied different quantitative techniques, focused on bivariate and multivariate analysis, to assess the significance of various territorial characteristics for resilience. Using a Business, People, Place and Community categorisation the results of this inform our reporting on the features that influence resilience outcomes.

1.2 Qualitative approach

The project complements the quantitative assessment of regional economic resilience with a qualitative analysis focused on eight case studies of regional experience during the past crisis. The eight cases were selected at the outset of the project on the basis of including a selection of diverse examples, including geographical situation; economic context; economic performance through the crisis, and governance context. Some cases were also requested in the Terms of Reference for the project. Two cases were included in order to meet the request to consider what role the development of green economic paradigms might be having on the resilience of regions to economic shocks. The project deliberately included cases that cover different territorial scales, where possible each case was considered in the context of the NUTS 2 and NUTS 3 territories, but also considered smaller territorial scales where this was appropriate to context. In one case, Wales, a NUTS 1 scale was selected owing to the governance and administrative structures present.

The cases selected were:

- Pomorskie, Poland
- Uusimaa, Finland
- Stuttgart, Germany
- Wales, UK
- Puglia, Italy
- Western Macedonia, Greece
- South West Ireland, Ireland
- Estonia, Estonia

Each study was conducted to a common format, which included the collation of locally-relevant data-sets and semi-structured interviews with representatives of local businesses, government and civic society. A workshop, or seminar, was also held in each region to gain insights from a wider range of actors. Each case includes: a description of the experience of the territory through the most recent crisis; an assessment of the characteristics of the territory that have contributed to the observed outcomes (following the Business, People, Place and Community categorization adopted for the quantitative analysis); a description of the policy responses to the crisis, and an assessment of the role policy and governance has played in the observed outcomes. The case studies also consider responses to previous crises in the territory since the 1990s; how these may have influenced the present situation, and what lessons might be learnt. In addition, each case study also included a consideration of the role of the Structural Funds in responding to the crisis, and how the crisis had affected Structural Fund programmes.

3 Concepts of resilience and crisis[4]

3.1 Economic shocks and crisis

Economies are continuously in a state of flux, caused by the interplay of decisions taken by a complex web of individuals, firms, public agencies and other organisations connected through a complex transactional web. Occasionally, the existing pathways of transactional connections of production and consumption are interrupted, with consequences at the individual, local, regional, national or even international level. For the purposes of this work we consider an economic shock to arise where the interruption occurs through shifts in the economic structures of the economy, rather than through a natural event such as an earthquake, although the latter may also have economic consequences, and the effects can be transmitted to more distant places in the form of an economic shock.

[4]Citation details are included in the Scientific Report

Economic shocks are not particularly rare events and their likely occurrence can be broadly foreseen. The consequences of these shocks are much less predictable (Taleb, 2010), as witnessed by the rapid unravelling of the economic order following defaults in the American sub-prime mortgage market. It is the consequences of an event that tends to mark it out as a 'shock' to the system and, certainly, to attach the word 'crisis'. Analysing crises is not an easy topic, because crises are by definition confusing and contested phenomena, which challenge existing ways of doing and understanding. Crises can disrupt existing institutions and cause uncertainty about future directions, which offers opportunities for substantial change that deviates from locked-in trajectories. Whether or not these opportunities are taken depends on how (causes and solutions) of crises are interpreted in different places and contexts.

3.2 What is resilience?

Resilience has become one of the leading ideas of our time for dealing with uncertainty and change and is a concept which is increasingly being utilised by authors keen to understand how local and regional economies deal with economic shocks and recessionary crises (e.g. Pendall et al, 2010; Hill et al, 2011).

Within the developing literature on regional economic resilience, a broad distinction can be made between two different conceptions of the term (Pendall et al, 2010). The first 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). The second definition is based on an adaptive notion of resilience which views the economic landscape as a complex adaptive system which is always dynamic and does not adjust towards any notion of equilibrium (Martin and Sunley, 2006; 2007). Instead, resilience is defined as the adaptive capacity of a local or regional economic system or 'the ability of the region's industrial technological, labour force and institutional structures to adapt to the changing competitive, technological and market pressures and opportunities that confront its firms and workforce' (Simmie and Martin, 2010; p. 30). Regional economic resilience from this perspective is conceived as a multi-dimensional property embracing not only *recovery* from the shock and *resistance* (the ability of regions to resist disruptive shocks in the first place), but also *re-orientation* (the extent to which the region adapts its economic structure), and finally, *renewal* (the degree to which the region resumes the growth path that characterised its economy prior to the shock) (Martin, 2012).

Studies from this perspective have highlighted the adaptive cycles of growth and decline, stability and change which may characterise regional economic systems (Martin and Sunley, 2010). As such, crises may often provoke or encourage the transformation of systems and the development of new, related or alternative trajectories or niches (Pike et al, 2010). Furthermore these system dynamics are path-dependent and critically shaped by past events and evolutionary histories. Shocks can thus have both temporary and lasting 'hysteretic' impacts on system functioning (Martin, 2012).

The existing literature also highlights the normative and political dimensions of resilience. A number of questions remain to be addressed about the intended state of recovery after a shock, or the required adaptations in regional economies or indeed when relevant crises and transformations can be considered to be over (Hudson, 2010). Rohring and Gailing (2010) observe that ‘resilience’ goals are the subject of social construction through regional discourses and forms of governance. Hill et al (2011) also conclude that regional economic resilience ‘inevitably has a subjective component’ and use an example to illustrate that the perceptions of leaders in a region about a region’s resilience may differ from measured economic performance. This serves to highlight the importance of combining quantitative and qualitative data on resilience and points to further questions around whether resilience is always a good thing. A resilient regional economy may be undesirable if it is characterised by unsustainable growth or behaviour, widespread inequality or excessive economic fluctuations, or social ills associated with continual upheaval and change.

3.2 What helps build or shape resilience?

Alongside the burgeoning literature on the meaning of resilience, there is a developing body of work on the factors shaping it. To date, this literature has primarily focused on factors pertinent to the structural features of regional economies and the agency of businesses or firms. Much less emphasis has been placed upon understanding issues around the agency of other (notably policy) actors in the system. What the existing literature also highlights is that there are no ‘magic bullets’ that both insulate regions from the harmful impacts of economic downturns and help them recover quickly. No regional characteristics or public policies do everything that one might like (Hill et al, 2011).

3.2.1 Structural factors – inherent or innate components of resilience

The structural factors shaping resilience might usefully be labelled as the ‘inherent’ components of resilience in social systems i.e. the factors which shape innate capacities to react, or the autonomous responses to shocks (Rose, 2004). These include the initial strengths and weaknesses of regions, their industrial legacy, the size of the market, access to a larger external market, as well as endowments in natural resources and in physical and human capital (Davies et al, 2010). A common finding in this literature is that regions with higher incomes or wages (independent of human capital) tend to recover more quickly from economic shocks (see Hill et al, 2011).

Another critical structural dimension appears to be the sectoral structure of regions. In general terms, a region’s vulnerability to adverse economic shocks is correlated with its sectoral specialisation (Davies et al, 2010). Studies suggest that regions which specialise in a narrow range of sectors are particularly vulnerable to sectoral shocks and run the risk of suffering permanent reductions in the numbers of firms and jobs (Davies et al, 2010) – or negative hysteretic effects (after Martin, 2012). A more diverse economic structure provides greater regional resistance to shocks than does a more specialised structure since risk is effectively spread across a region’s business portfolio, although a high degree of sectoral interrelatedness may limit this (Dawley et al, 2010; Martin, 2012). This creates an imperative to understand existing regional competencies and specialisms and how they may renew or atrophy, as well as the appropriate degrees of ‘related’ and ‘unrelated variety’ (Frenken and Boschma, 2007).

Some evidence points to the different effects of some innate regional characteristics on different aspects of resilience. For example, Hill et al’s (2011) analysis of the resilience of US regions demonstrates that a poorly educated population makes a region more likely to suffer from an employment downturn but makes it easier for the region to recover. Similarly, a high degree of existing income inequality makes a region’s income more resilient to economic shocks, but undermines the recovery of employment levels.

3.2.2 Adaptive capacities – purposeful action and agency

Whilst providing some very valuable insights, these perspectives on regional economic resilience to date have not paid as much attention to the agency of actors in the system and how they might shape resilience capacities and emergent outcomes.
If we take a complex adaptive systems perspective, then regional economies are understood to be characterised by an adaptive capacity, the dynamics of which are driven from the bottom up and by individual actors throughout the system. In social systems, agents have the capacity to react to crisis situations in positive ways. It is of course also possible that the actions (or inactions) of agents might result in less positive adaptation and weakening resilience over time. In short, if resilience is defined in terms of an evolutionary, complex adaptive systems approach, it must pay greater attention to human agency and embrace a people-oriented as well as a system-oriented perspective (Bohle et al, 2009). Clearly quantitative work on regional economic performance can provide descriptive results about the frequency of shocks and those regions which are shock-resistant and resilient. However, it is much less effective at illuminating ‘the processes through which regional actors protected their regions from or responded to downturns caused by economic shocks’ which remain a ‘black box’ requiring interrogation through more qualitative, case study work (Hill et al, 2011; p. 61).

Policy leaders in particular may take purposive action towards innovative restructuring in a manner which ‘improves the chance for a healthy region in the long run’ (Cowell, 2013; p. 213). Several studies have indeed highlighted the potential for targeted investment policies and long-term territorial development strategies at the metropolitan and regional scale to enhance adaptation to new socio-economic realities (e.g. LSE Cities, 2010; Hervas-Oliver et al, 2011). Citizens and civil society more generally are also increasingly understood to play a key role in finding innovative solutions to key development challenges and to helping build community and place resilience through social innovation. This reflects their capacity to tap into decentralised sources of knowledge and capability using an approach that mobilises not just large corporations and nations, but a wide and diverse ecology of citizens and global organisations (see, for example, McCarthy, 2010; also Magis, 2010).

Individual firms, business leaders and entrepreneurs also play a key role in effecting the sectoral shifts and diversification noted as important above, but also as collective agents of purposive adaptation through conscious entrepreneurial decisions or by acting as conduits for technological or product innovation (Simmie and Martin , 2010). Other analyses suggest regional resilience depends upon the existence of a large number of innovative and well-networked small firms with embedded regional capacities (Clark et al, 2010), whilst others emphasise the role of particular ‘pivotal’ firms in clusters which act as hubs in the innovation process (Kechidi and Talbot, 2010). Recent work has also suggested there is much to be gained from firms combining external sources of knowledge accessed through so called ‘global pipelines’ with the ‘local buzz’ (and vibrancy) that exists within their own geographical region (see Storper and Venables 2004, cited in Hervas-Oliver et al, 2011).

Much of the pertinent literature here indicates that critical to shaping behaviour, particularly positive anticipatory behaviour by all key agents in the economy, is learning (Folke et al, 2003). What particularly distinguishes economic and human systems from biological ones, is the role played by learning, adaptive management and the deliberate acquisition of knowledge. Systems with scope for embracing diverse perspectives, more novel ideas and ‘exuberant experimentalism’ are more likely to find creative solutions to crises (Bateson, 2000). As such, places with highly open networks for learning and knowledge exchange across business, sectors, citizens and institutions have been posited as more likely to display resilience (CLES, 2010; Bristow, 2010).

These literatures also suggest that critical to shaping these behaviours or micro-level rules is context. The contingency of context (e.g. through cultural norms) shapes adaptive behaviours such as business expectations and entrepreneurship / innovation, consumer confidence, labour market flexibility, migration tendencies and so on, and thus shapes how they emerge to effect regional resilience. Regions are shapers and not simply containers of economic agents and their activities. As well as cultural and social context, physical location and neighbours matter too (Hill et al, 2008). Helping to understand how context shapes regional economic resilience is thus an important element of this research.

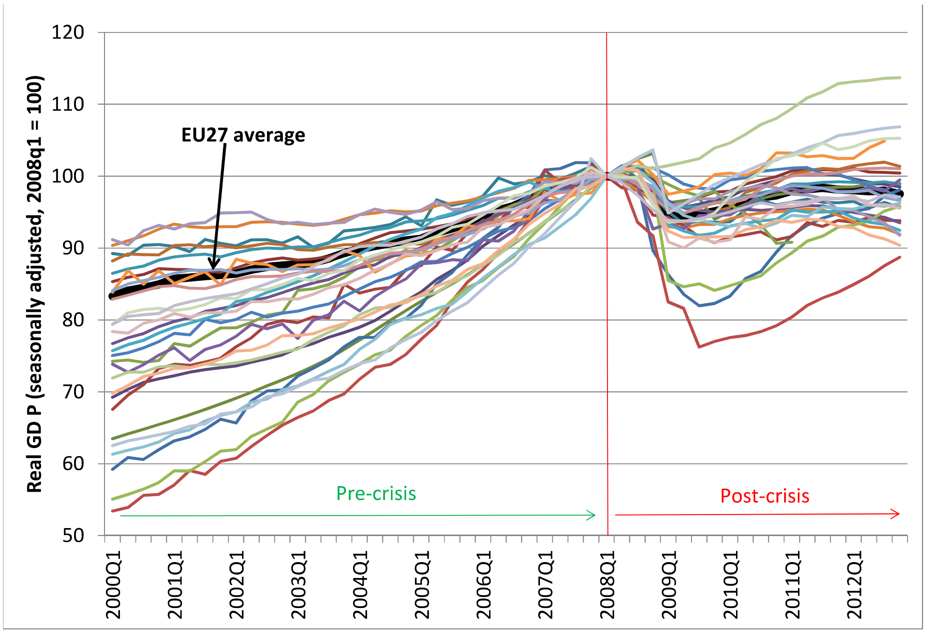
4 Territorial Impact of the Economic Crisis

The economic crisis did not affect all parts of the ESPON territory evenly. Some areas entered the economic downturn earlier, others later. Some have experienced a sharper downturn and others a more prolonged crisis. Analysis by Cambridge Econometrics (Figure 4.1) 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).

4.1 Spatial and temporal geography of the crisis

Although Cambridge Econometrics dates the crisis from 2008, isolated regions in Romania, Germany and the UK all experienced decline in the numbers employed in 2006, and the first signs of the emerging territorial impact of the unfolding economic crisis emerge in 2007, with declining employment numbers recorded in regions in both these countries plus the UK, Germany, Austria, Bulgaria and Portugal (Figure 4.2). It was national economies that entered recession in 2008. During 2008 the crisis gathered pace with regions in 13 Member States experiencing falling levels of employment.

Figure 4.1 GDP change in EU economies



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

By 2009, the effects of the economic crisis were apparent across most of the ESPON territory. At a national level Poland and Switzerland were the only States that had not experienced a fall in levels of GDP output and only Poland, Switzerland, Germany, Luxembourg and Belgium managed to retain pre-crisis employment levels. At a regional level, nearly all regions in the ESPON territory outside of Poland had experienced a downturn in GDP, with only slightly fewer also experiencing a decline in employment numbers. The first signs of recovery begin to be seen in 2010. The stronger performance of Malta, Germany and Southern France is evident in Figure 4.2, together with regions in Belgium, Luxembourg and, in isolated examples, the UK, Portugal and the Netherlands, with progress continuing to be visible in 2011.

4.2 Scale of the crisis

The decline in employment associated with the economic crisis has been extensive. Across the ESPON area (ESPON 31) total employment fell by 2.14% by 2011, with the EU15 experiencing a similar decline (Table 4.1). The experience of the Member States that have joined the EU post 2004 is somewhat worse, with an average fall in employment of 2.22%, despite the better performance of the Polish economy. This is dwarfed though by the difficulties evident in the Member States that sought assistance from the European Financial Stability Fund, where employment levels have fallen by almost a tenth. Membership of the Euro currency unit (the ‘Eurozone’) has been associated with a slightly stronger fall in employment than for non-euro States.

Figure 4.2 Temporal spread of economic crisis (2006-2011)

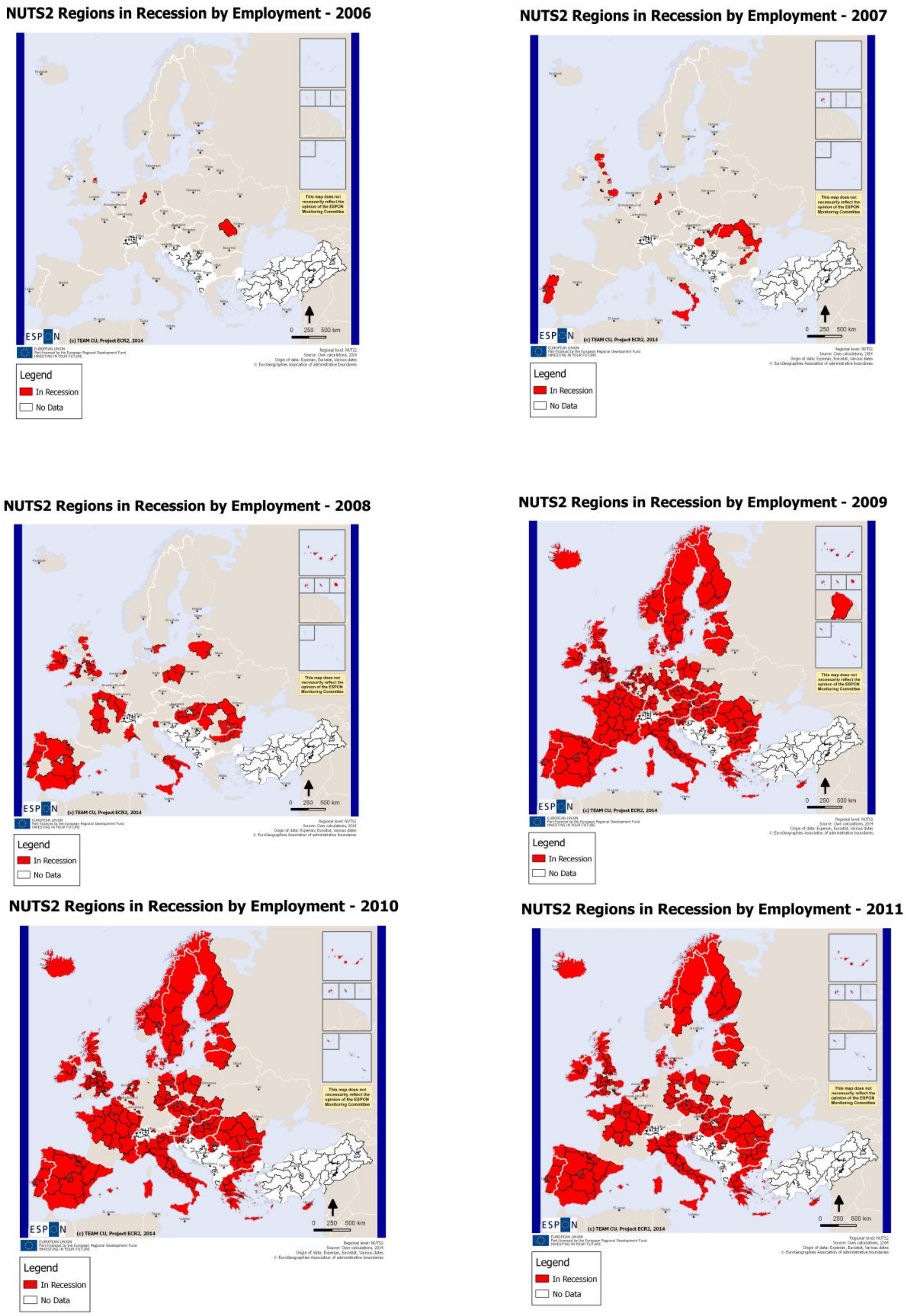


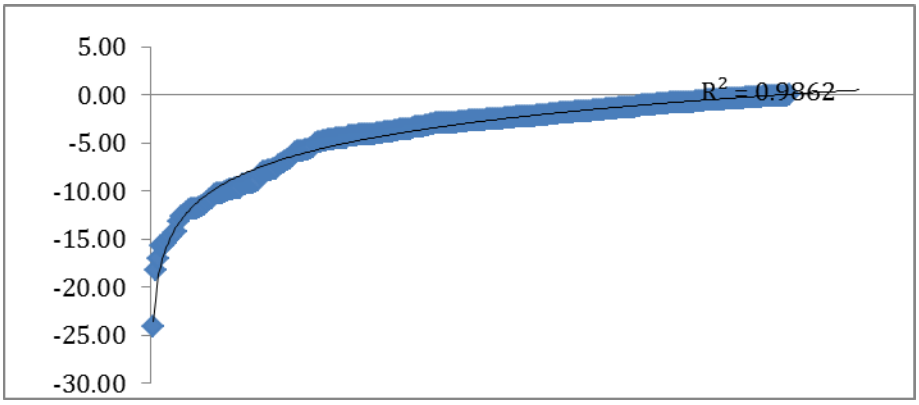
Table 4.1 Employment decline across territorial groupings (%, peak year to 2011)

	ESPON 31	*EU27*	*EU15*	*EU12*	*Eurozone*	*Non-Eurozone*	*EFSF*
% employment loss	-2.14	-2.22	-2.14	-2.55	-2.27	-2.11	-9.47

Source: own calculations. EU27 is used as Croatia was not a member of the EU until 2013.

The severity of the crisis has varied within the ESPON territory, with some regions being affected more strongly than others. Figure 4.3 illustrates the proportionate fall in employment in each region. Whilst employment levels fell by less than 5% in most regions, a small number of regions have been affected much more adversely. The most extreme case is Latvia, which has recorded a total fall in the number of persons employed that is approaching a quarter of the numbers employed at the peak of the boom. The distribution of employment changes across regions is non-linear and takes a logarithmic form, suggesting that there is a strong reinforcement mechanism at work. The spatial distribution of employment loss is illustrated in Figure 4.4, highlighting a strong peripheral geography to the most severe employment losses.

Figure 4.3 Employment decline by region (%, peak year to 2011)



Source: adapted from study data

4.3 Intra-national variation

The effects of the crisis are not necessarily evenly distributed within countries, although this can be the case. Figure 4.5 illustrates the distributional impact of the crisis within countries as indicated by the spread of employment losses between those regions most heavily affected within each country and those least affected. The median point within each country is indicated by the bar. We have excluded single region countries but included all countries containing more than one NUTS 2 region.

Whilst countries like Austria, Belgium, Denmark, Finland and Sweden all exhibit a relatively small range in terms of the recorded employment impact of the crisis, a much wider range of experience is visible in countries such as Spain, Bulgaria and Poland. Whilst the differential between regions might be expected to be less in small two-region economies this is not always the case.

Figure 4.4 Employment loss during the crisis (NUTS 2)

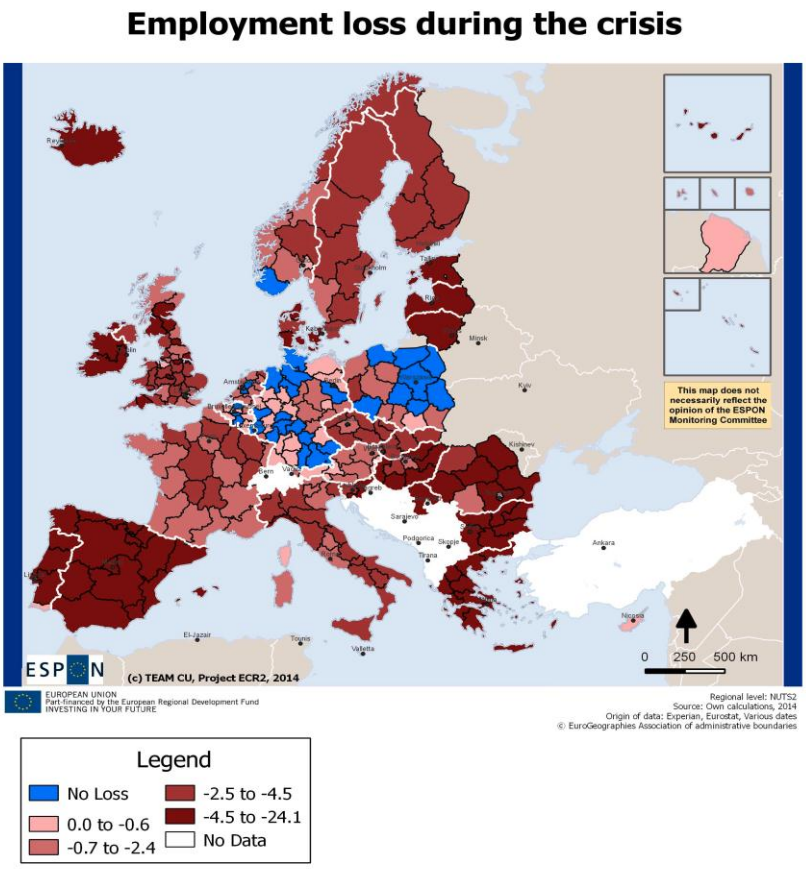
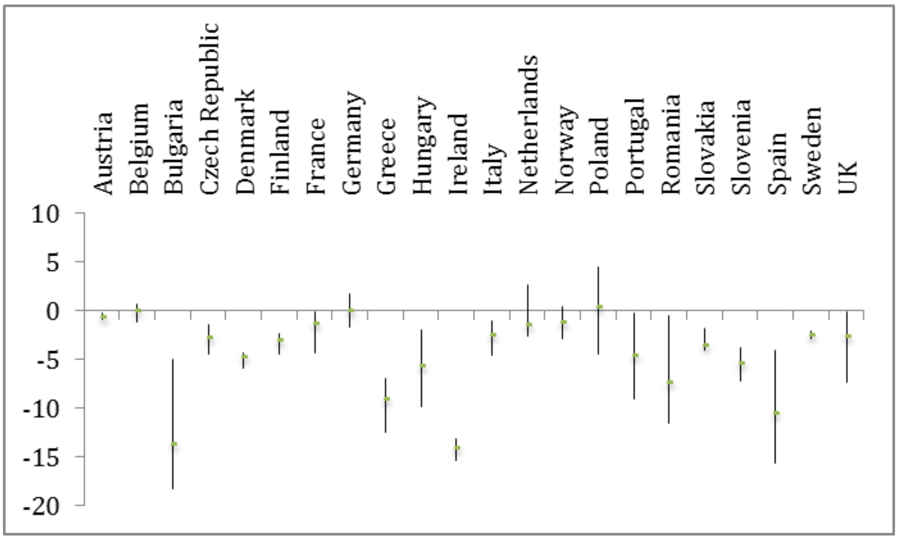


Figure 4.5 Impact of the crisis within ESPON states



Source: Study calculations

4.4 Wider dimensions to the crisis

4.4.1 Rising unemployment, and widening disparities

Amongst the headline effects of the crisis have rising levels of unemployment. An initial reduction in unemployment rates across the EU in 2010 proved shortlived as the developing fiscal crisis led to a further rise in recorded levels, with the median rate of registered unemployment reaching 8% in 2011. The first signs of a fall in unemployment have begun to emerge in 2013. Whilst unemployment rates have generally risen, actual rates of unemployment remained low (below 4%) in 17% of regions even at the height of the crisis (Table 4.2).

Within countries, there has been a reduction in the range of unemployment disparities in a small number of countries (Austria, Germany, Finland, the Netherlands and the Czech Republic) and they have remained the same in others (Belgium, Denmark, Poland and Slovenia). However, this is outweighed by the larger number of countries where disparities have risen between 2007-11 (Table 4.3).

Table 4.2 Regional rates of unemployment (2007 and 2011, NUTS 2)

Unemployment rate (%)	***Number of Regions (2007)***	***Number of Regions (2011)***
0-4	75	48
5-9	158	134
10-19	53	93
20-30	1	14

Source: adapted from Experian study data

The highest rises have been in Norway, Switzerland and Ireland, all countries where disparities did not previously exist (and so disproportionately represented by the calculation). Table 4.3 illustrates that the reduction in disparities has relied on peak rates of unemployment[5] falling (or remaining the same) rather than faster rising rates of unemployment in better performing regions. Only in the Czech Republic has this latter case been evident.

Table 4.3 Change in peak regional unemployment and disparities within states (2007-11)

	Lower peak unemployment	No Change	Higher peak unemployment
Widening disparities			FR, EL, IE, HU, IT, ES, SE, SK, PT, UK, BU, RO, NO, HR, CH
No change		BE, PL	SL, DK
Narrowing disparities	AT, DE, FI	NL	CZ

One of the real impacts of the crisis has been the dramatically rising level of youth unemployment, particularly, but not only, in Spain, Portugal and Greece (European Commission, 2013). Concentrations of youth unemployment are visible across much

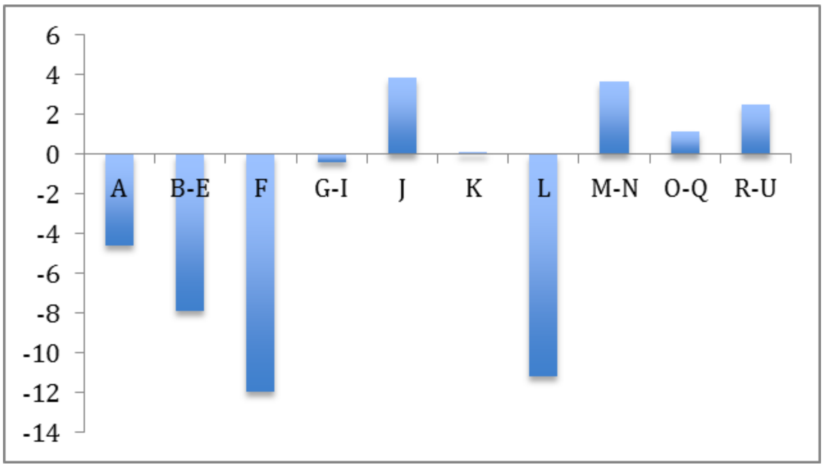
[5] This refers to the highest regional rate of unemployment within a country compared across the two years considered.

of the EU, outside of the core heartlands of Germany, Austria and the Netherlands. Rates of youth unemployment are particularly affected by labour market opportunities, but also by labour market policies and practices, which can preferentially protect older workers at the expense of younger workers on more flexible contracts.

4.4.2 Employment losses in construction, primary industries and manufacturing industry

Although total employment in the ESPON space has fallen during the crisis (by around 2%), this is not evenly distributed across sectors (Figure 4.6). Employment in sectors which have experienced job losses during the period of the crisis peaked in 2008, which has informed our choice of dates for the following analysis. Across the ESPON space, job losses during the crisis have been concentrated in the construction sector (NACE F) and the real estate sector (NACE L), reflecting the significance of the collapse in the property 'bubble' at the outset of the crisis. Other sectors that were badly affected included manufacturing industries (NACE B-E) and primary industries (NACE A). The number of persons employed in ICT (NACE J), Professional, scientific and technical services (NACE M-N) and Arts, entertainment, recreation and other services (NACE R-U) increased over this period; with public sector employment sectors (NACE O- Q) also registering a slight increase.

Figure 4.6 Employment losses by sector (NACE2, 2008-11)



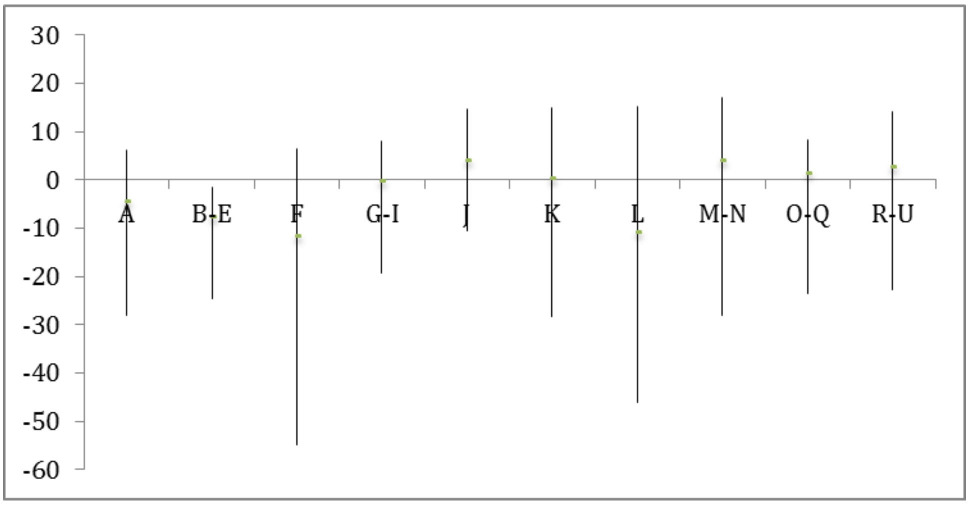
Source: Adapted from CE study data

Experience across the ESPON space varies. Whilst industrial sectors (NACE B-E) recorded employment losses across all countries, all other sectors experienced growth in at least one country). Equally, although five sectors recorded employment gains across the ESPON space, all recorded losses in particular countries. The significance of employment falls for some sectors in particular countries is evident for both the construction sector (NACE F) and Real Estate activities (NACE L). Mean employment change for the sector is represented by the bar (Figure 4.7).

4.4.3 Fall and rise of trade, exports and inward investment

One immediate impact of the crisis was falling levels of credit availability as banks faced a crisis of liquidity and confidence. This affected private firms who were unable to access credit terms or investment finance. This, together with falling levels of confidence, led to reducing level of trade and falling volumes of inward investment. The decline in inward investment flows occurred both within the EU and from sources outside the EU. The gradually recovery of inward investment flows from within the EU from 2009 and from external locations from 2010 highlights the recovery of the global economy. However, levels of domestic demand for products in the EU remain depressed, reflecting the tight economic conditions of EU markets in the face of austerity policies and high levels of household debt in many countries.

Figure 4.7 Variations in sectoral employment change across countries (Max-Min by country, %)



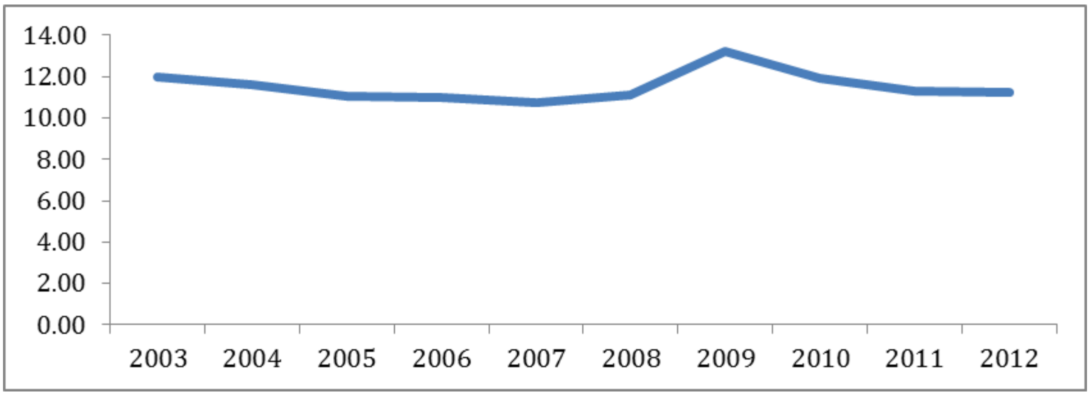
Note: omits outlier of 60% increase in Real Estate (L) employment in Bulgaria.
Source: Adapted from CE study data

4.4.4 Increasing indebtness overall, but some exceptions

Across the EU, the gradual decline in household debt as a proportion of income during the economic boom came to an abrupt halt as household incomes fell and their debts rose (Figure 4.8).

The aggregate figure for the EU hides some strong differences between countries (Figure 4.9). In four Member States levels of personal debt, relative to household income, have generally declined over the period of the crisis, although this is the exception. In most Member States, the debt:income ratio rose. It did so sharply, from comparatively low ratios, in the case of the Baltic Member States, before falling back. In three Member States, debt:income ratios continue to rise, whilst in a further two levels have only recently started to decline.

Figure 4.8 Ratio of gross household debt to income (EU28)



Source: adapted from Eurostat (nasa_ki)

The general trend of increasing indebtedness during the crisis, is mirrored by a trend of rising general government debt. By 2012, the ratio of Government debt to GDP had reached almost 160% in Greece. In contrast, in Estonia, also badly affected by the economic crisis, Government debt was just 10% of GDP. In two States (Sweden and Norway) there has been a noticeable decline in debt levels over the period of the crisis, whilst in other states, levels of Government debt are beginning to fall after rising during the crisis itself. Debt levels in Portugal, Greece, Ireland and Cyprus strongly increased between 2009-12.

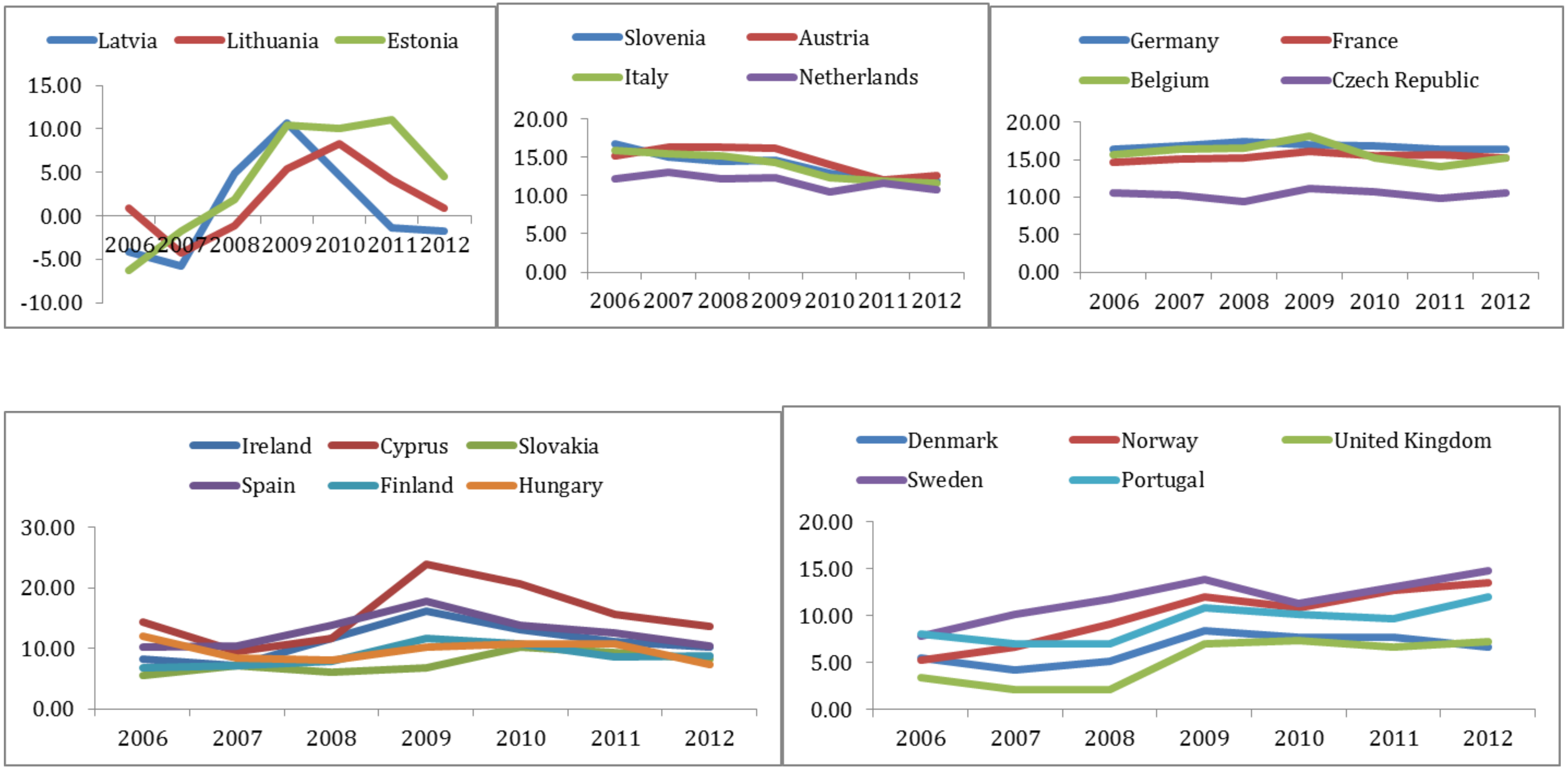
4.4.5 Falling wages, reduced working hours and rising levels of low work households

The crisis has been marked by a slight rise in the proportion of people living in households with very low work intensity, where adults worked less than 20% of their total work potential. Significant increases in low work intensity households were recorded in Iceland, Lithuania, Spain, Latvia and other economies badly hit by the crisis. In contrast, reductions in the proportion of the population living in low work intensity households can be seen in Germany Poland and Austria, as well as the Czech Republic and Austria. In 2012, the top five countries in terms of the proportion of their population living in low work households were: Ireland (24.2%[6]), Croatia (16.2%), Spain (14.3%), Greece (14.2%), Belgium (14.1%) and the UK (13%).

Overall, the crisis has also been marked by a slight increase in the number of hours worked (by 1% between 2005 and 2011). There is though a strong disparity in experience across the ESPON space, with the fall in the number of hours worked in 12 of the worst affected economies matched by a rise in hours in 14 economies.

[6] In 2011, no data available for Ireland for 2012.

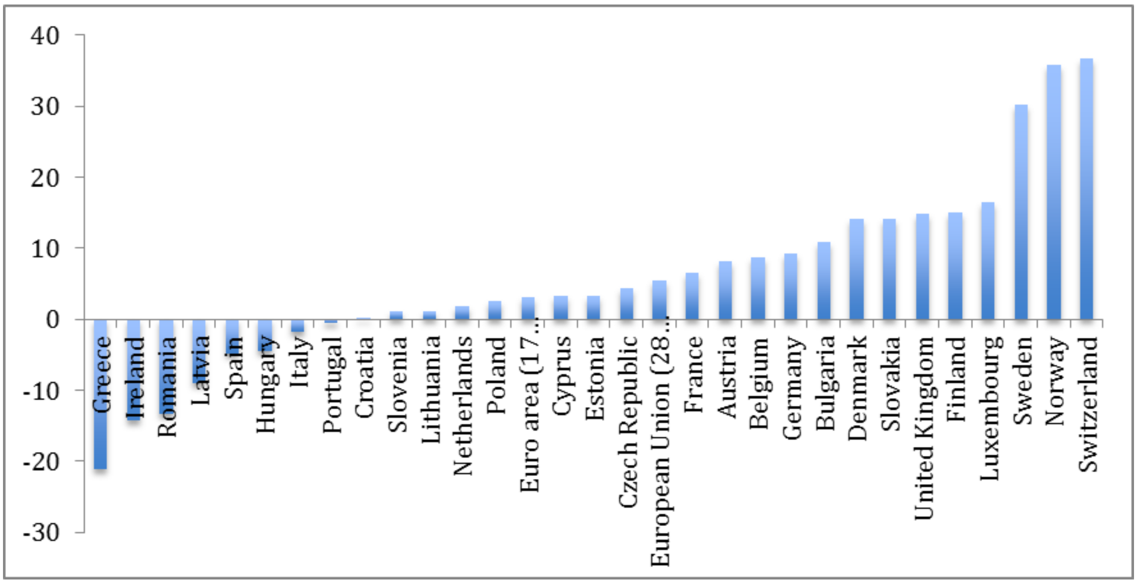
Figure 4.9 Patterns of household debt:income ratio during the crisis (Source: adapted from Eurostat (nasa_ki)



4.4.6 Rising household incomes, but mixed messages for proportion of population at risk of poverty

Across the ESPON space average disposable household incomes have risen by around 12% between 2005 and 2012. However, examining the period between the pre-crisis peak (2008) and 2012 the rise is around 6%. During this period household disposable incomes have fallen in eight countries, with significant falls recorded in Greece, Ireland, Romania, Latvia, Spain and Hungary (Figure 4.10). In Ireland and Greece household disposable incomes were lower than was the case in 2005, the only two economies where this was so in the ESPON space. The principle increases in household disposable income was to be found in Switzerland, Norway and Sweden.

Figure 4.10 Change in total household disposable income (2008-12, %)



Source: Adapted from Eurostat (nasa_nf_tr)

One possible consequence of the economic crisis is an increase in the proportion of the population at risk of poverty. The ESPON TiPSE project suggests that this is concentrated in southern Europe, but with important 'hotspots' identifiable elsewhere. Drawing on material from Eurostat, TiPSE identifies the significance of national welfare regimes as a mediator of the extent to which national populations are exposed to the risk of poverty.

4.4.7 Changing migration patterns

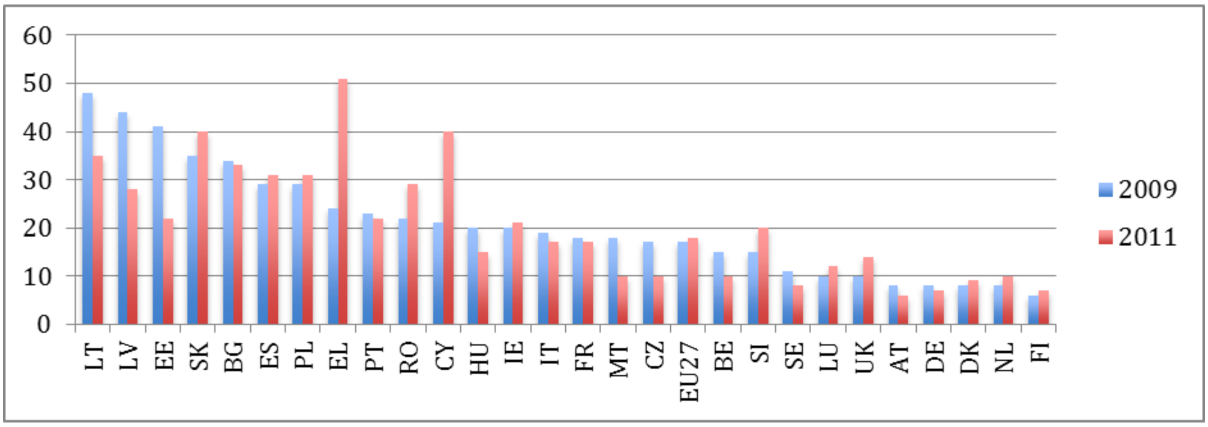
Overall there has been a reduction in levels of migration across the ESPON space, as labour markets tightened and changing economic circumstances reduced the attractiveness of late-career migration. According to the ESPON ATTREG project, many of the regions most affected by the crisis continue to experience net in-migration. The net migration figures available at a regional level, are not able to distinguish local effects, such as those highlighted in some of the case studies for this work, nor the reported out-migration of young adults from Spain, Ireland and other struggling economies in search of work in the more vibrant economies of countries such as Germany and, more often, globally.

4.4.8 Negative perceptions of the future

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.

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 4.11).

Figure 4.11 Proportion of respondents Not At All or Not Very Confident in their ability to keep their job (%)

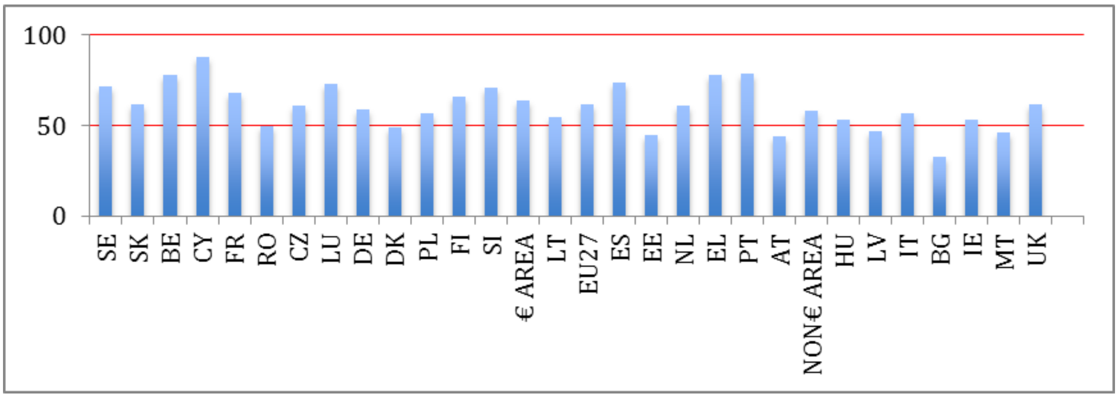


Source: adapted from Eurobarometer Flash EB no 286 (2010) and Flash EB no 338 (2012) Fieldwork in 2009 and 2011 respectively

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. 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.

Looking forwards from the 2012, most citizens of the EU believed the worst of the crisis remained ahead of them. This was particularly the case in Spain, Greece, Portugal and Cyprus, but also includes citizens of Sweden, Belgium and Luxembourg (Figure 4.12). Only in seven countries did most citizens believe that the worst is now past, and even here it was, on the whole, a fairly slim majority.

Figure 4.12 Proportion of residents who believe worst of crisis is still to come (%)



Source: adapted from Standard Eurobarometer 78 (2012 Autumn)

5 Economic Resilience of Regions

Economic resilience is defined as the ability of a region to avoid a fall in economic activity or to regain pre-crisis (or pre-shock) peak levels of employment or GDP. We include two categories of resilient territories: those that resisted the crisis (RS) and those that recovered from the crisis (RC). We also include two categories of regions that were not resilient to the crisis: those that have begun their recovery, but where employment (or GDP) has not yet returned to pre-shock levels (NR1) and those that remain in decline (NR2).

5.1 National economic resilience

Across the ESPON territory four countries, Luxembourg, Germany, Switzerland and Poland, have resisted the economic crisis and maintained, or increased, levels of employment in the period of the recent crisis. Only Poland also managed to maintain or increase its level of GDP. By 2011, eight countries had recovered to their pre-crisis peak of GDP activity, and five to their pre-crisis level of employment.

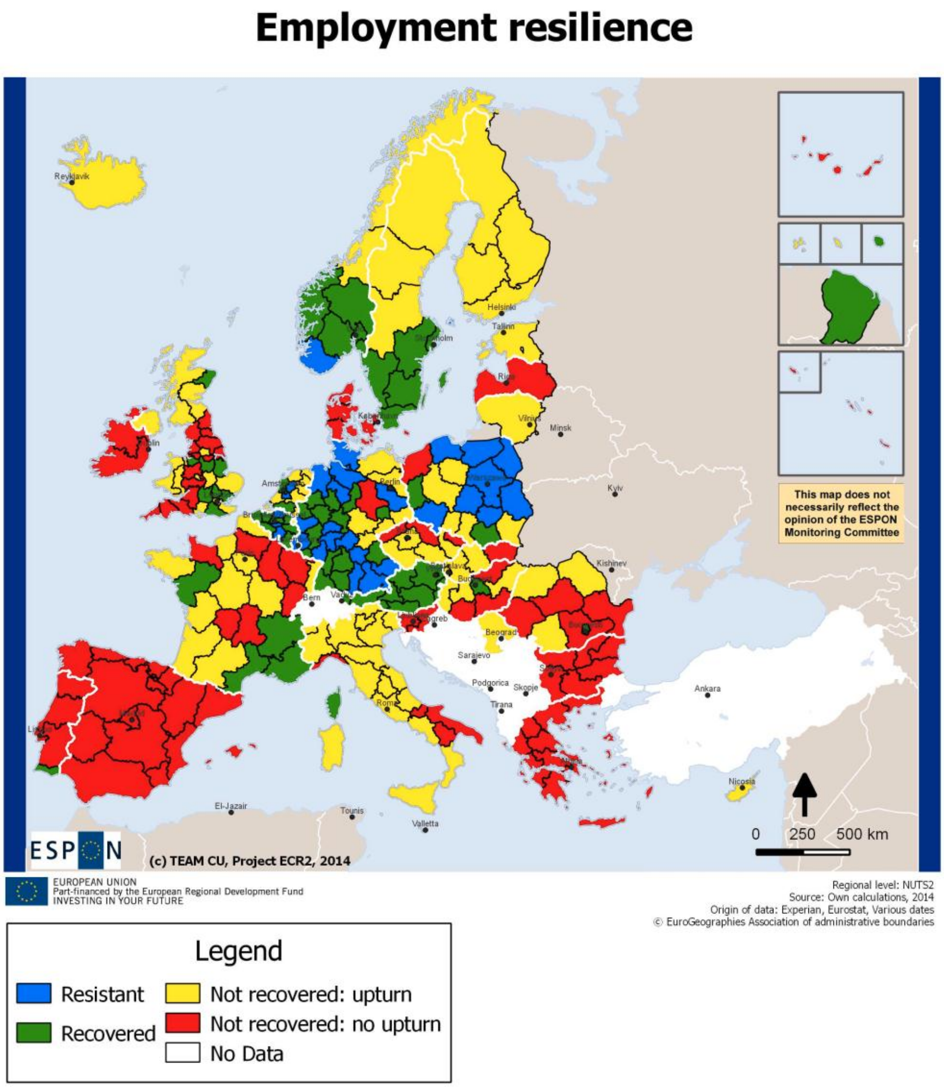
Table 5.1 National patterns of resilience to the current economic crisis

	Employment measure	***GDP measure***
Resisted	LU, DE, CH, PL	PL
Recovered	NO, SE, MT, AT, BE	DE, NO, SE, CH, AT, FR, MT, SK
Not Recovered: upturn	IS, UK, FR, NL, IT, FI, LT, EE, CY, CZ, SK, HU	IS, UK, IE, LU, NL, PT, ES, IT, DK, FI, EE, LV, LT, CZ, SL, HU, RO, BU, CY
Not recovered: no upturn	IE, PT, ES, DK, LV, SL, HR, RO, BU, EL	HR, EL

5.2 Regional Economic Resilience

Of the 280 regions considered, more than a tenth (12%) had weathered the crisis and not experienced any fall in numbers employed, whilst almost a quarter (23%) had experienced a fall in employment but, by 2011, had recovered to the pre-crisis peak. Two-thirds of regions were still to recover by 2011, divided evenly between those that had passed the trough of the downturn, and those still to register the end of employment decline. The distribution of regional economic resilience is set out in Figure 5.1, which illustrates a strong geography of resilience, clearly influenced by national patterns. However, important pockets of recovery and non-recovery are also apparent within this overall geography.

Figure 5.1 Distribution of regional economic resilience (NUTS 2)

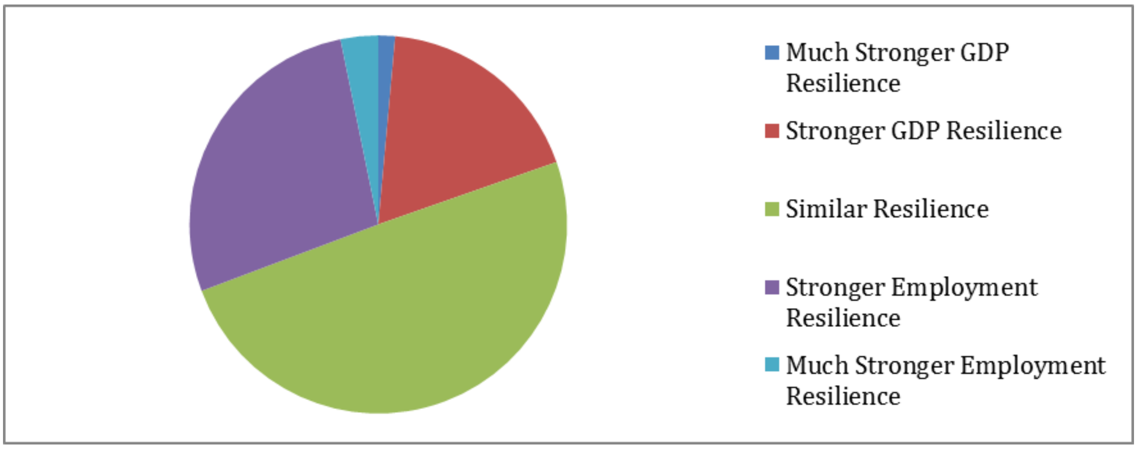


Focusing on those regions that have recovered to their pre-crisis employment levels, the average duration for this is 2.6 years. Whilst this currently captures the most responsive economies it does provide a benchmark for resilience against which comparisons can be made. Significantly, given that almost two-thirds of economies experienced peak employment in 2008, with downturn recorded in 2009, we should expect to see their recovery in 2012 – for which we still await data – if average performance is maintained. However, for this to occur we would expect to have witnessed the beginnings of an upturn by this stage. This is not the case for all of those regions categorized as NR2 – not recovered: no upturn. Only 10 regions entered the downturn post 2009, for these we would not necessarily expect recovery by 2011.

5.3 Comparing regional resilience by employment and GDP

Figures for GDP resilience at the regional level followed the pattern visible at the national level, fewer regions were able to resist the crisis than was the case for employment, but more have begun the process of recovery. Overall, around half of regions exhibit similar levels of GDP and employment resilience, with a third proving to have been more resilient in their employment performance (Figure 5.2 and Figure 5.3).

Figure 5.2 GDP vs Employment Resilience



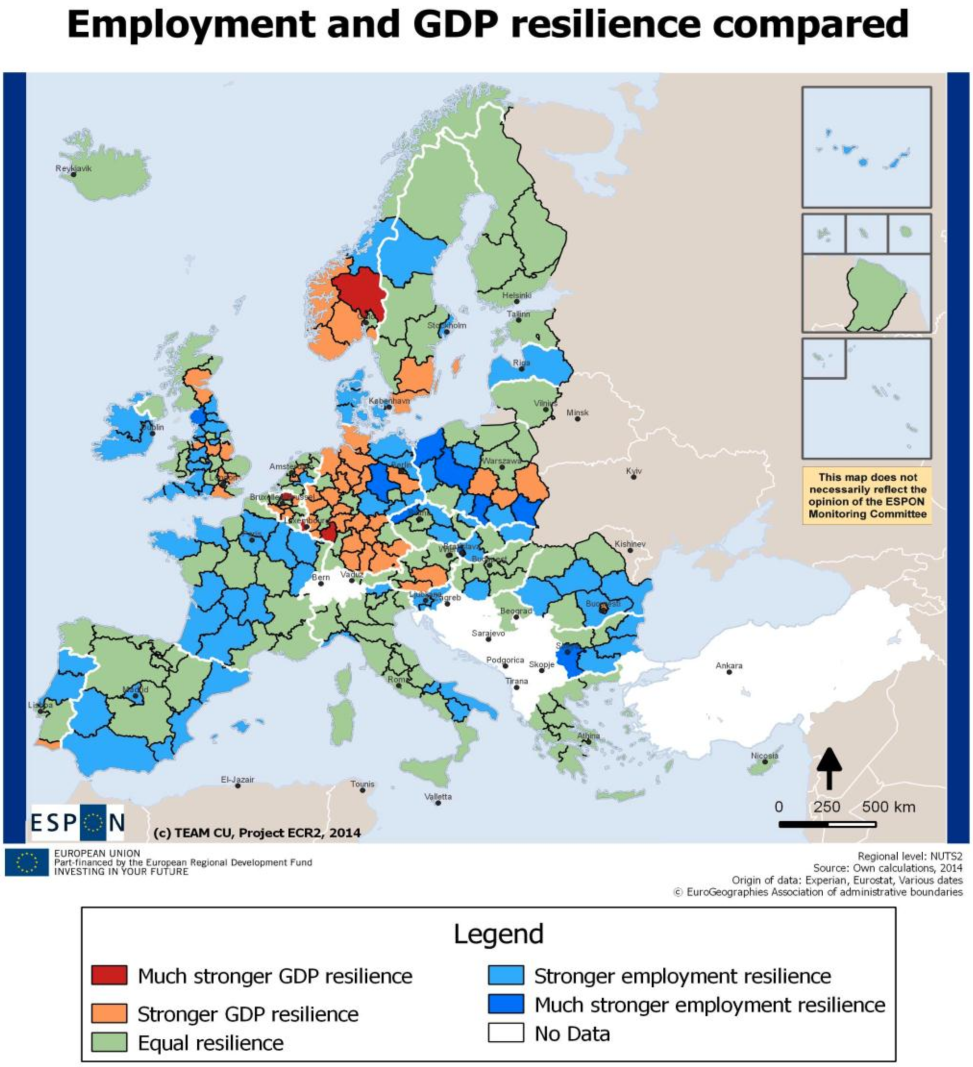
Source: adapted from study data

5.4 Relative resilience

The distribution of regional resilience between Member States suggests that macroeconomic conditions and national policy regimes have an influence on the sensitivity of individual regions to economic crisis. Yet, there are also examples of where the experience of individual regions runs counter to national trends, or where there is strong variability within Member States. National effects may be expected to be stronger in small and medium sized Member States[7], where the influence exerted by national policy is proportionately greater. However, even in small Member States, variation in relative levels of resilience can be observed.

[7] In small States (ie those with one NUTS2 region) the distinction between national and regional becomes rather artificial.

Figure 5.3 Geographies of comparative resilience

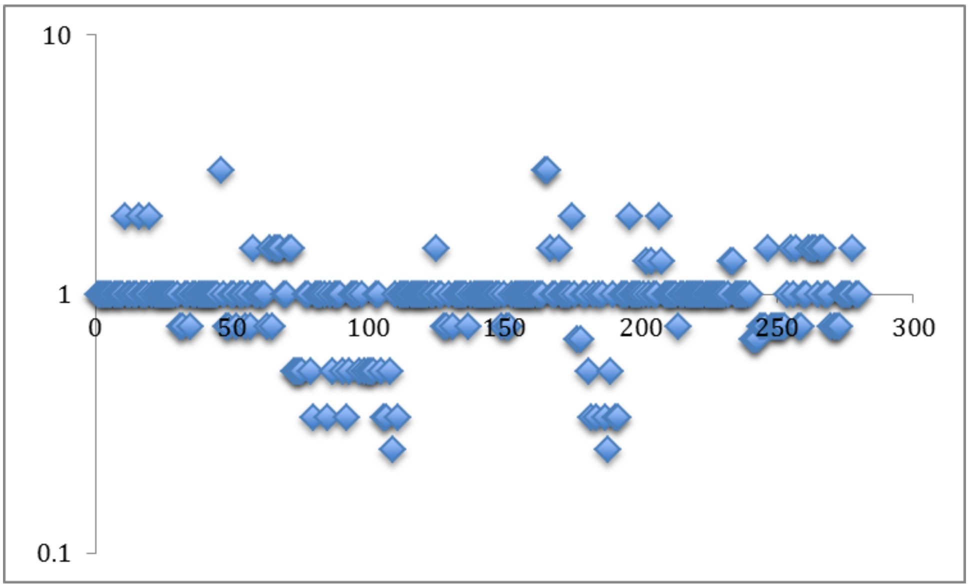


Our measure of relative resilience is based on our four resilience types, where the observed resilience category (employment) of each region is compared with its national counterpart. This is converted into a score, based on the number of degrees of separation between the regional and national experience, where 1 means the regional economy exhibits the same level of resilience as the regional economy, values above 1 means the region was more resilient and values below 1, less resilient. Regions can be divided into seven categories (illustrated in Figure 5.5):

- Regions with significantly stronger relative resilience
- Regions with stronger relative resilience
- Regions with slightly stronger relative resilience
- Regions with the same resilience as the national economy
- Regions with slightly weaker relative resilience
- Regions with weaker relative resilience
- Regions with significantly weaker relative resilience

The results of this are illustrated for our 280 regions in Figure 5.4. Most regions exhibit a similar level of resilience to their national average. However, there are some significant outliers, where regions either exhibit stronger resilience, compared to the national average, or weaker comparative resilience.

Figure 5.4 Relative regional resilience



Source: Calculated from CE study data

Those regions which exhibit a significant difference in their relative resilience compared to their national average are set out in Table 5.2. It is noticeable that those regions with significantly weaker relative resilience are located in Germany and Poland, partly reflecting the better level of national resilience recorded in those two countries. Stronger levels of relative regional resilience are, though, more dispersed, covering regions in Finland, Netherlands, Belgium, Norway, Portugal and Romania. These relatively resilient regions cover a mix of territorial cases, including an island region, capital city region and urban and rural economies with different sectoral economic strengths. The wider geography of relative regional resilience is illustrated in Figure 5.5.

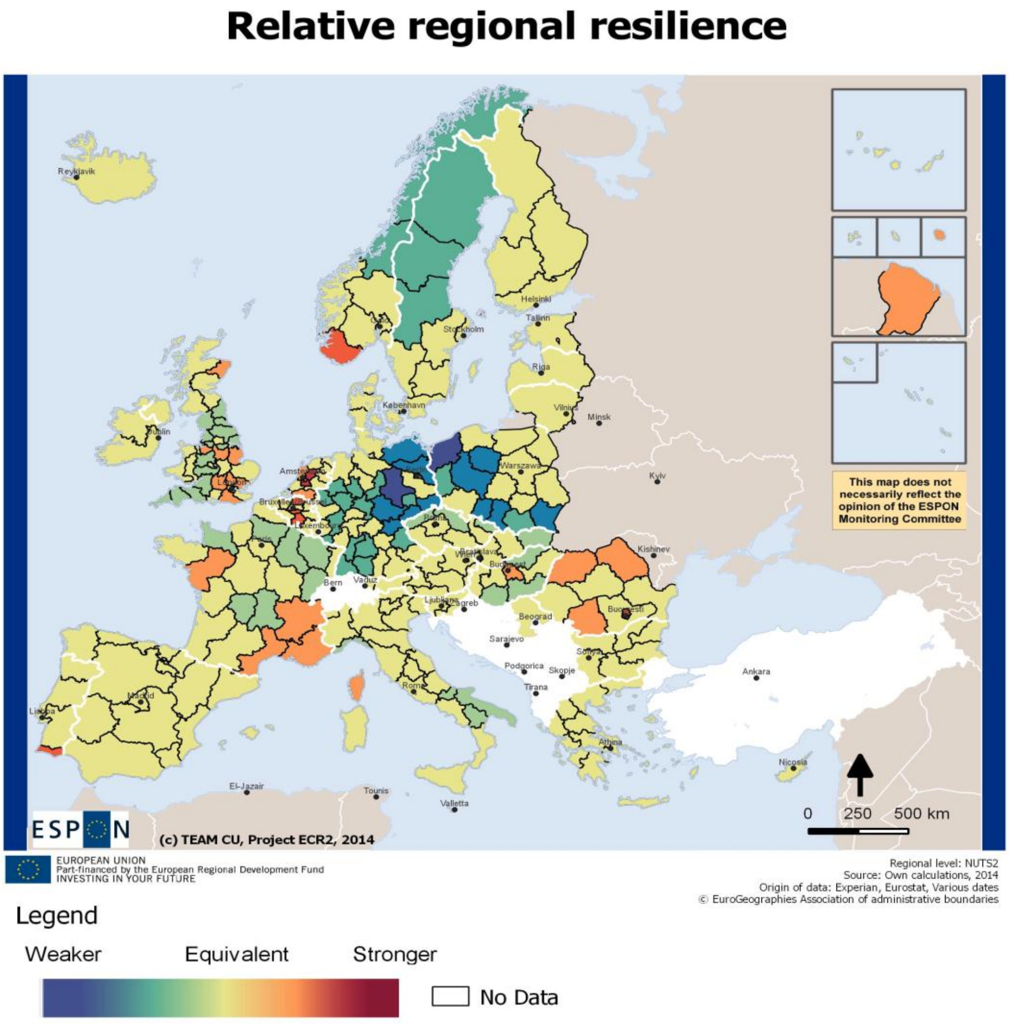
Table 5.2 Relative Regional Resilience: outlying cases

Relative Regional Resilience (R3)	***Region***
Significantly Stronger R3	Aland (FI[8]) Flevoland (NL)
Stronger R3	Antwerpen (BE) Brabant-Wallon (BE) Namur (BE) Agder og Rogaland (NO) Algarve (PT)

[8] Aland is an autonomous region of Finland.

	Bucuresti-Ifov (RO)
Weaker R3	Slaskie (PL) Podkarpackie (PL) Wielkopolskie (PL) Opolskie (PL) Kujawo-Pomorskie (PL) Oberfranken (DE) Mecklenburg-Vorpommern (DE) Thuringen (DE) Brandenburg-Nordost (DE) Chemnitz (DE)
Significantly Weaker R3	Zachnodniopomorskie (PL) Sachsen-Anhalt (DE)

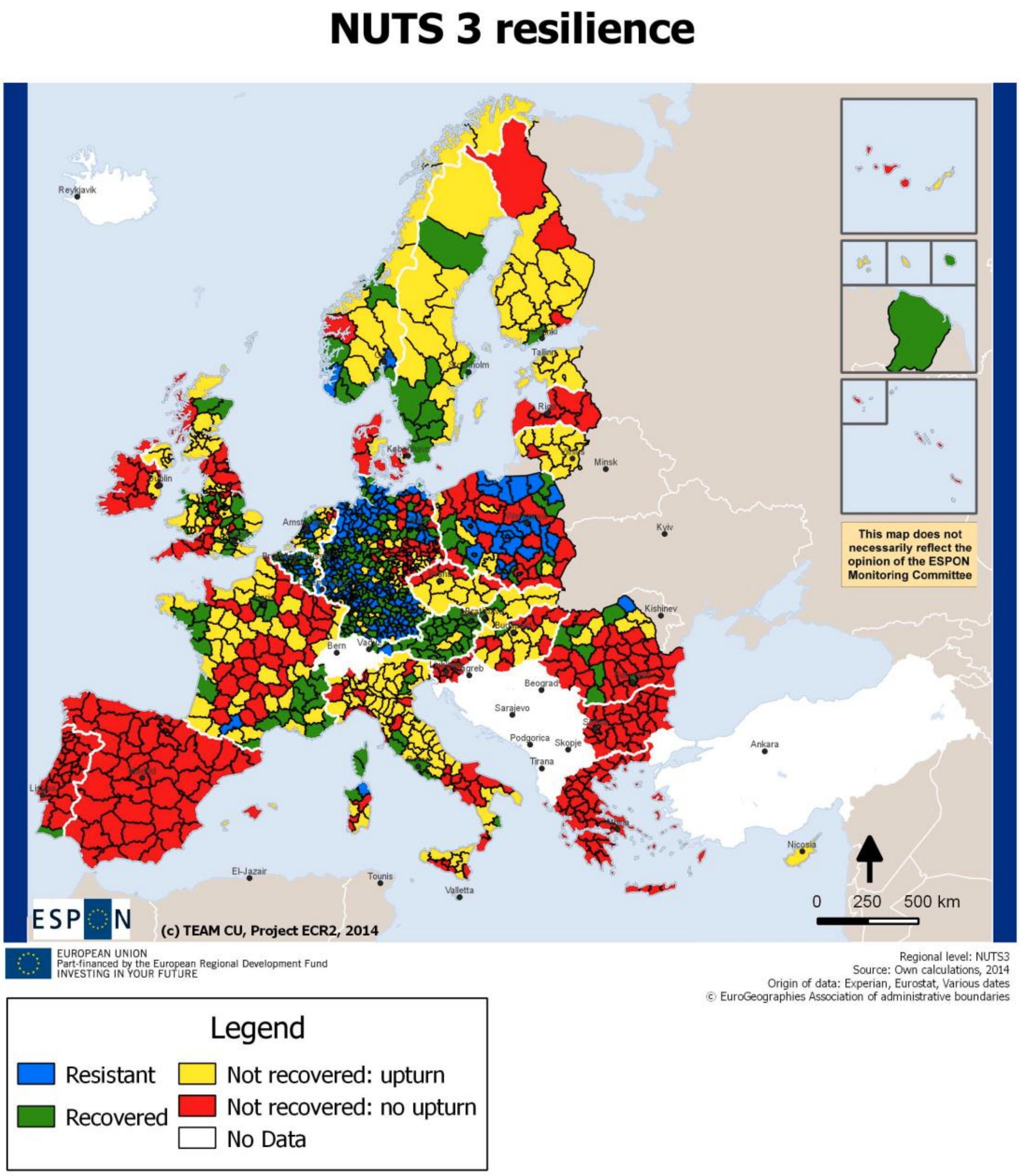
Figure 5.5 Relative Regional Resilience in the ESPON space



5.5 Localised patterns of resilience

An assessment was also made of the resilience of NUTS 3 regions of the ESPON space. This drew on data from 1,322 territories, using employment data provided by Cambridge Econometrics. A similar pattern of resilience was found to that of the NUTS 2 regions, albeit, with a slightly greater proportion of NUTS 3 territories having resisted the crisis and a slightly lower proportion of those that had not yet recovered having begun an economic upturn (Table 5.3). The distribution of localized resilience patterns is illustrated in Map 5.6.

Figure 5.6 Localised patterns of resilience



One of the key findings of the case study reports is the heterogeneity characteristic of observed resilience within the regions concerned. In South West Ireland, there is a strong contrast between the experience of metropolitan Cork and the western, more rural, areas of the region, particularly County Kerry. In Puglia, however, it is the rural parts that appear to have a stronger degree of resilience to the economic crisis than the urban centres. In Western Macedonia, the contrast is again apparent, with rural areas offering strong resilience characteristics, but also a contrast between areas dependent on the fur sector and those on the energy sector. The former has proven more resilient in the face of the crisis than the latter.

Table 5.3 Employment Resilience of NUTS 3 Territories

Resilience	*Number of regions*	*Proportion (%)*
Resistant (RS)	214	16.19
Recovered (RC)	314	23.75
Not recovered but in upturn	364	27.53
Not recovered and no upturn	430	32.53

Source: adapted from study data

Similarly, in Baden-Württemberg, three neighbouring cities provide contrasting experiences of resilience to the crisis. Freiburg, with its concentration of employment in service sectors, university and research institutes has demonstrated stable long-term economic growth rates; Stuttgart, with its focus on technology-based industrial manufacturing, recovered from a short-dip in activity during the crisis to maintain high employment levels (albeit with slightly increased unemployment) and high income levels; Pforzheim, in contrast, struggles with the economic restructuring of a more traditional metals-based industry, higher levels of debt and company insolvencies.

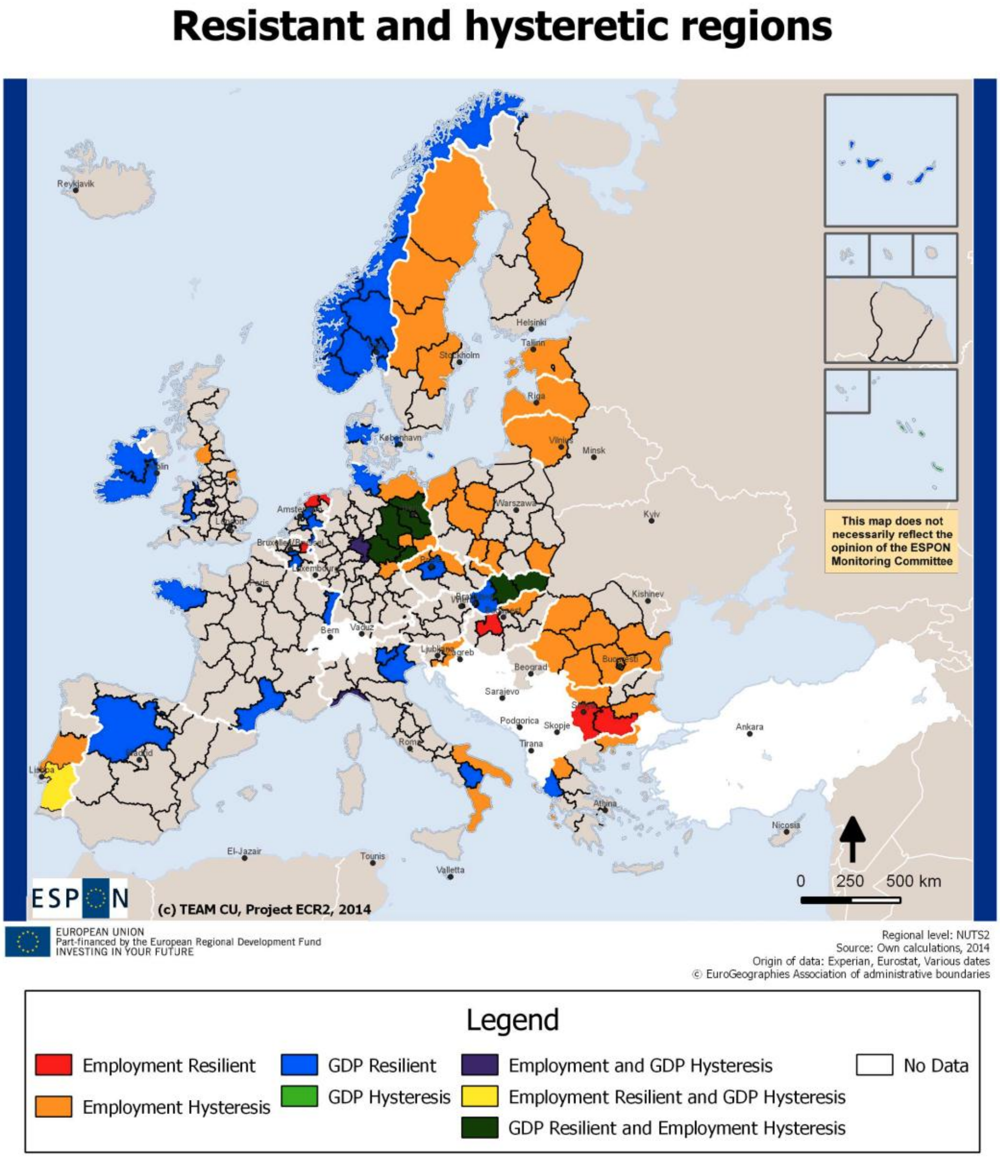
5.6 Historical resilience patterns

Comparison with the 1990s crisis supports the contention that the effects of the current crisis has been more strongly associated with reductions in GDP, and that the effects on employment have been less immediate. In the 1990s crisis less than 5% of regions were resistant to the employment effects of the downturn, compared to 12% during the current crisis. In contrast, almost a fifth of regions (19%) demonstrated GDP resistance, compared to just 5% during the most recent crisis. Most strikingly, a fifth of regions (52) have never regained their peak employment levels. For four regions (1%), located in Germany, Italy, Portugal and the UK, recovery to peak GDP levels has still not been achieved. This strong hysteretic effect cautions against any assumption that peak levels of employment should form a natural objective following an economic shock, but is also suggestive of the important interplay between the interaction of economic shocks and longer-term processes of structural transformation. We illustrate the distribution of resistant regions and those that demonstrate hysteretic profiles in Figure 5.7.

Further comparisons with the current crisis are difficult to make, as it is problematic to compare relative rates of recovery. Although some seven years have now passed since the first aspects of the economic crisis became apparent, experience from the

1990s crisis suggests that this is the average time it takes for a region to recover from such a deep shock. However, at one level, regions appear to be more resilient now than in the past, as they have generally recovered quicker from the current crisis than in the 1990s. It took four years for 22% of regions to recover to pre-shock employment levels following the early 1990s crisis, whereas 23% of regions had recovered within three years following the most recent crisis.

Figure 5.7 Historical resilience outcomes (economic shock of early 1990s)



6 Characteristics that influence economic resilience

In our conception of the potential features that influence resilience to economic shocks we highlighted the possible role of four main components:

- Businesses, economy and the business environment
- People and the population

- Place-based characteristics, and
- Community, or societal, characteristics

We also note the potential role that choices, or ‘agency’, could play. In the following section we review the evidence from both our quantitative analysis and the qualitative case study material to explore the relative significance of different territorial characteristics in the observed resilience outcomes, including consideration of the ‘greening’ of economic development paths. We maintain the, admittedly artificial, division between our four categories for presentational purposes, in practice the interplay between these four features of place is fundamental, complex and highly specific.

6.1 Business, economy and the business environment

The economic structure of an economy does have some influence on the level of observed resilience to the most recent economic crisis. The decline in the construction sector is particularly marked, with considerable implications for regions where this was a significant component of economic activity, whilst regions with higher levels of agricultural employment have also proved less resilient. Regions which had a greater dependence on the public sector were initially shielded from the worst effects of the crisis. However, since 2011 and the widespread development of austerity measures, our qualitative research suggests that this may now be a source of weakness in some places. Regions with high shares of employment in service industries have tended to be more likely to prove resilient. The relationship between the level of employment in manufacturing industry and observed resilience is complex in the case of employment resilience, but higher levels of manufacturing employment are associated with higher levels of GDP resilience.

From our analysis it is also apparent that dependence on particular sectors, or a small number of employers, is detrimental to the resilience of the economy. This was particularly apparent with the construction sector, but also extended to the manufacturing sector, with examples from the case studies as to how over-dependence had led to adverse outcomes, and where diversity had promoted more positive outcomes. There are also exceptions. Dependence on some sectors promoted resilience during the crisis, with concentrations of activity in Financial Services or a stronger exposure to high-tech, knowledge intensive industries, as well as niche production sectors and those less exposed to cyclical economic cycles (such as health and education), experiencing greater resilience. This is illustrative of the influence of differential sectoral experiences during the crisis.

Economic structure is, though, only a partial explanation of resilience. Our qualitative research, drawing on quantitative research within particular places, highlights that ownership structures, export orientation and market focus are all more significant. The presence of international companies, with access to financial resources and greater expertise, positively assists resilience, as does a strong export orientation to the economy, focused on a more modern production techniques.

There is a very strong positive relationship between higher levels of innovation performance and observed resilience outcomes. This is also present for other science and technology capacity indicators (such as Human Resources employed in science and technology). Whilst it is not yet possible to identify whether the resilience outcome is determined by the level of innovation, or whether innovation and resilience are both associated with a more adaptive economy, this is a significant finding.

Stable growth patterns prior to an economic shock appear to promote resilience. High levels of employment growth in the years preceding the crisis are associated with regions that proved less resilient to the crisis. Lower levels of unemployment prior to the crisis also characterise regions that have proved resilient to the economic crisis. Taken together this suggests that resilience is a longer-term phenomenon based on stable growth rates over longer periods of time. Whilst higher rates of employment are associated with regions that exhibit employment resilience this is less strong regarding GDP resilience.

Finally, our case studies also shed some light on the importance of particular business strategies in coping with and responding to the crisis. In certain case studies, there is strong evidence of the importance of learning from the effects of previous crisis in the development of effective strategic responses to this crisis. In Stuttgart in particular, the reactions by many firms in the region to the 2008 crisis were shaped by their previous experiences and helped create the strong imperative to keep human capital inside firms to avoid skill shortages in the recovery period. Firms here, and in Pomorskie, appear to have learnt from previous crisis experiences and developed a strong focus on self-financial strategies and innovation through the crisis as a means of preparing for the future. In other cases, our respondents reported that the limited previous experience of firms in dealing with economic downturn was a limiting factor.

6.2 People and the population

Population characteristics may have an influence on the economic resilience of individual places, particularly where this affects the local labour market. Certainly, lower rates of labour market participation are present in regions that have proved less resilient to the crisis. However, there appear to be few consistently significant relationships between population characteristics and resilience outcomes.

The relationship between demographic structure and observed resilience is not straightforward, and varies between employment and GDP resilience outcomes. Levels of migration prior to the crisis do not appear to have a significant influence on the observed employment resilience of regions, lower levels of in-migration do appear to be associated with regions with observed GDP resilience.

One area where relationships are more significant is in the field of qualifications. Areas with more highly qualified populations tend to have more positive resilience outcomes. However, simply increasing the extent of educational qualifications does not appear to confer greater levels of resilience. In our analysis the 'no upturn' group is the group with the second highest increase in educational attainment, after the 'resistant' grouping. Case studies also reported on the importance of workforce experience and managerial skills in promoting resilient outcomes.

The crisis not only affected the levels of employment but also influenced the number of hours that were worked, this impact was seen throughout the case study regions. The reduction of working hours in order to retain skilled labour and human capital was a common strategy adopted by firms and, broadly, accepted by workers as an alternative to higher levels of redundancy and potential unemployment. This mutually-agreed strategy is one reason that employment-resilience has proved stronger than GDP-resilience.

Although income might be expected to be related to economic resilience, the level of household disposable income does not appear to have any relation to observed levels of regional resilience, except at the highest quartile level - which has a limited relationship to employment resilience, but lower growth rates are positively associated with regions that resisted the crisis or recovered. Again, this may suggest that stable, longer-term, growth paths provide a greater degree of resilience.

Data from Ireland for the period 2006-2011 provides a window on the choices made by individuals and households in response to the crisis. This demonstrated a general decrease in the numbers reporting that they were looking after the home or family (but with a changing gender composition as the number of males doing so increased by 8% against a decline of 13% in the number of females). Significantly, whilst the number of males joining the labour force over this period has increased by 1% the number of females has increased by 12%.

6.3 Place-based characteristics

A strong feature of several of the case studies is the significant role played by a major urban centre in promoting the resilience of the surrounding economy. This was identified in the case of Cork, Ireland; the tri-city of Gdansk-Gdinya-Sopot in Pomorskie, Poland; Tallinn, Estonia and Helsinki, Uusimaa. This is reinforced by quantitative results that demonstrate how the presence of an urban centre, particularly second-tier centres, is positively associated with resilience.

By contrast, regions that are remote; have external borders, or have high levels of population living in mountainous or coastal areas all tend to have proven less resilient to the economic crisis. Further analysis of these results is required to control for potential uneven spatial distributions, which might bias the findings, but the greater challenges presented by these features is notable.

Regions with higher levels of accessibility tend to be associated with more resilient outcomes. This was reinforced by the findings of the case studies. In the case of South West Ireland, the port facilities were regarded as an important dimension of the ability of the region to engage with global markets. The significance of port facilities was also reported in Uusimaa, Pomorskie and Estonia. In Puglia, the port facilities were seen as a positive element for the economy, together with the connections promoted by the local airport. Air links were also important for the City of Cork and for Helsinki. In each case the links helped to underpin economic activity, and overcome peripheral geographic locations. Higher levels of broadband availability also appear to be related with regions with more resilient outcomes.

A high quality natural environment can also contribute to a higher standard of living in an area, with potential positive implications for the resilience of a region. This was the case in Pomorskie, Poland, where the quality of the natural environment was remarked upon as a positive element in the area's ability to attract inward investment and skilled labour. To a certain extent it was felt that this could act as a counterweight to the higher salaries on offer in the capital Warsaw. Strong levels of natural capital were also reported to underpin more resilient agricultural and tourism sectors in South West Ireland and Puglia.

Planning regimes and the property market, which act to shape places, can influence resilience, with the collapse of inflated property markets in both Ireland and Estonia major factors underpinning the economic crisis in each country. Planning regimes are reported to have had some impact on observed levels of resilience in a small number of our case study regions. Whilst the overall impact in South West Ireland was negative, owing to the readiness of the system to grant permission for residential and commercial development, some positive attributes are also identified. The Cork Area Strategic Plan (CASP) developed for the wider metropolitan area of Cork is widely regarded in the region as a model for strategic development planning, and is regarded as having moderated the excesses of the property boom, leaving Cork better-placed during the economic crisis. In Stuttgart, also, a strong strategic planning approach, that is able to combine plan-making with infrastructure investments alongside transport and economic policies, is argued to underpin the longer-term development of the economy and so contribute to their observed resilience.

Although not strictly a 'place-based' characteristic, it is also useful to consider the significance of a region's status under the EU's Cohesion Policy, as this influences the levels of external assistance provided through the EU's Structural Funds and can impact on levels of eligible aid intensity. Using eligibility status under the 2007-13 programming period, we find that regions that were eligible under the

Competitiveness and Eligibility strand of the Structural Funds proved to be disproportionately likely to have resisted or recovered from the crisis.

In contrast, regions eligible under the Convergence strand have proven less able to resist or recover from the crisis, with a significantly lower proportion of regions in the recovered category, and over-representation in both not recovered categories. Transition regions have also fared poorly in the crisis, with a particularly high proportion of regions still experiencing decline in 2011.

6.4 Community and societal characteristics

The ECR2 project sought to explore the role that community-based features could play in the economic resilience of the region as a whole. What emerges are a number of features that appear to have some impact on observed levels of resilience. Whilst rarely strong enough to impact directly on the ability of an economy to withstand the effects of an economic crisis they are able to play an important role in shaping the way in which it responds and the opportunities available to communities.

Several of our studies report on the significance of business networks, and inter-firm social capital, in shaping responses to the economic crisis. In Baden-Württemberg, it is reported that larger firms or owners of family owned firms often offered short-term guarantees and loans to help out firms that were facing insolvency. This corresponds with wider research reporting on how larger firms offered payment holidays, or made credit available to their supply chains. Similarly, formal and informal business networks in other regions were important agents in promoting adaptation and mutual support.

Amongst residential communities there is also some evidence that the strength of social capital networks have affected the ability of places to respond to the effects of the crisis. In both Uusimaa and Estonia it is reported that a tradition of self-reliance has resulted in communities taking responsibility for their own well-being during the crisis. Similarly in South West Ireland and Wales, strong levels of social capital have contributed to the response of communities to the crisis, although in the case of South West Ireland, the effect have been unevenly distributed and, in many ways, is being stimulated by the effects of the crisis and a senses of fending for themselves. Across several of the case studies an increase in volunteering bore witness to communities seeking local solutions and responses.

The role of community-based initiatives in countering the consequences of the economic downturn featured in all the cases studied. At the very local scale the development of strong localist agendas, epitomized by 'buy-local' campaigns formed one response to the crisis. In no case were significant initiatives identified that had made a strong impact on the observed level of resilience within the regions concerned. However, there is evidence from other locations of the role that a variety of long-standing initiatives, such as alternative currencies, can play in tempering the effects of economic downturns. The role of such potential ‘safety-valves’ in supporting resilience over the longer-term merits further consideration.

Across the cases studied the economic crisis has led to a renewed interest in the potential offered by entrepreneurship. Several of the regions already have strong entrepreneurial cultures and some report that this provides a greater diversity of activity and enables local communities to maintain economic activity. In areas where there has been less importance attached to entrepreneurship, such as Western Macedonia, the economic crisis has exposed the inability of existing structures to adapt and has led to an increasing interest in the potential alternatives offered by starting new businesses. There is, though, limited evidence from the cases studied, or our wider quantitative analysis, of a more entrepreneurial culture making an observable difference to resilience experiences. Evidence from South West Ireland, for example, suggests that higher levels of entrepreneurship have not led to stronger resilience outcomes.

There is also some evidence from the case studies that the nature of welfare regimes can influence the resilience of regions. This was reported in the case of Uusimaa, where the social compact provides for strong redistribution effects. Similarly in economies where there is an emphasis on collective bargaining the social compact between firms, states and workers can also impact on observed levels of resilience. This was remarked upon in the case of South West Ireland, in Uusimaa, in Stuttgart and in Western Macedonia. The effects of this were not uniform though.

Finally, the project considered the role of governance in promoting more resilient outcomes. Overall, it was found that fragmented governance structures impeded resilience. Resilience appears to be enhanced where public authorities work together with neighbouring authorities; where different levels of government work together towards shared objectives, and where there is a collaborative approach to working with economic and social partners.

Where local government has more limited powers, this appears to act against resilience, although the finding is not without exceptions[9]. A key consideration appears to be the extent to which sub-national governments have the capability to act, not just the capacity. Equally, there also has to be the willingness to use those powers that are available. In Western Macedonia it is reported that available resources from the Compensatory Fund, available from the DEI operations, were not fully utilized, whilst in South West Ireland, it is also reported that County Kerry did not make use of the opportunity to levy an economic development fund, unlike the neighbouring County and City of Cork.

[9] Including where greater levels of power or autonomy are associated with reduced levels of resilience

6.6 Green development paths and resilience

Overall, the crisis has had no clearly discernible or obviously transformative effect upon their development path. For some regions, such as Pomorskie in Poland and Baden-Württemberg in Germany this is because progress towards renewable energy is seen as a both an existing pathway and a long-term commitment, and is somthing largely unaffected by the crisis. In Baden-Württemberg, political decisions at federal and state level in support of renewables such as on-shore wind energy were regarded as more significant in influencing this pathway than the economic crisis. In most of our other regional case studies, it is either simply too early to discern what, if any, transformative effects the crisis has had, or the efforts of dealing with the crisis has been all-consuming and has limited the potential for anything more than rhetorical statements from regional actors to emerge as yet.

There is some evidence that the crisis initially accelerated green economy ambitions and practices in some case study regions, particularly those where greening strategies were already in place, such as Wales and Puglia. However, this has not made a discernable impact on their observed resilience; whether this is because the green economy is not yet fully-developed; is not visible in any statistics, or does not have a positive impact on resilience is too early to tell. However, we also found some evidence that the crisis and the tighter fiscal conditions it ultimately promoted, significantly affected the priority afforded to greening strategies, suggesting that, in contrast to competitiveness and innovation, green growth is not seen as a priority at a time of fiscal tightening. Our case studies also highlight the importance of understanding greening strategies and transitions in their contexts. They clearly reveal the importance of national and federal government agendas and strategies in shaping regional government agendas.

At a more ‘grass-roots’ level, the economic crisis raised fundamental questions about the basis of a market-led economy driven by financial institutions, leading to a groundswell of popular counter-movements and an exploration of alternative possibilities. Whilst our case studies, and wider research, has cast doubt on the extent to which the development of more sustainable, and greener, development pathways affected the resilience of particular places, they do offer glimpses of alternative possibilities. In particular, this focuses on the role of green, sustainability-based activities not as a driver of economic growth and development but as insulation from the perturbations of market cycles. Such activities are not an alternative to mainstream economic activities. However, they might act to complement such activities, providing societal outcomes that could include the potential to act as a buffering influence on the possible risks associated with future economic shocks.

6.7 Agency and choice

Alongside important structural features that appear to influence levels of resilience the role of agency and choice also emerged as formative influences on the nature of response to crisis. This manifests itself in two key dimensions: the ability to learn, and the ability to adapt. Both influence the choices made, which, in turn, influences the resilience outcomes observed.

The significance of learning from past events was a consistent message across the cases studied for this project. In Baden-Württemberg, businesses sought to retain labour owing to the lessons learnt during the previous shock of the early 2000s when they cut staffing levels to fast and too deep. In South West Ireland, politicians from the City of Cork highlighted how they had learnt from the dramatic 'smokestack' collapse of traditional manufacturing in the 1980s and were still applying the lessons learnt then regarding the importance of a diverse and competitive export-orientated economy. In other cases, it was remarked that the fact that there had been no experience of similar downturns in the past had hindered the ability of firms or government actors to respond.

There is also evidence that a willingness, and capability, to adapt over both the short and the medium-term aids resilience outcomes. Evidence lies in the choices made by workers and employers in making short-term changes to working hours and compensation arrangements during the duration of the crisis. Equally, firms and economies that were able to develop new markets proved more able to manage the economic crisis than those that did not. Workers and households affected by redundancy also developed adaptive strategies, based on new labour market choices.

It is in these adaptive strategies that we begin to see the first signs of transformative effects of the crisis emerging, such as increasing rates of entrepreneurship. However, in some cases the choices made appear to constrain adaptation. It is suggested by sme firms that this is the case in Uusimaa, Finland, where short-term subsidies to reduce workforce losses effectively locked-in structures which, it is argued, require transformation to ensure future competitiveness. Similarly, in Western Macedonia, the choices made in the past to further tie economic success to the fortunes of DEI, are affecting the ability of the region to respond to the current crisis.

6.8 Regions are complex systems

The consistent theme emerging from our cases, and quantitative analysis, is that not only does each region experience the economic crisis differently but that the interplay of factors that influence this is also uniquely different. Whilst the univariate and bivariate techniques employed by the project demonstrate strong, and relatively consistent, relationships between observed resilience outcomes (of both employment and GDP) and a number of key variables the results of multivariate techniques are more complex and offer poor levels of explanatory power. Numerous models have to be run before ones demonstrating a good fit between observed outcomes and potential independent variables can be identified, and these tend to rely heavily on the significance of dummy variables.

In turn, the inter-connectivity of places, through value-chains and supply-chains, may also impact on levels of resilience. This is remarked upon in the case of Estonia, whose firms benefited from efforts to stimulate the Finnish economy. Arguably, it also serves to underpin observed resilience in Pomorskie and Baden-Württemberg where German competitiveness is supported by a pool of low-wage, well-educated and highly productive workers in Poland, whose firms benefit from German market access. Detailed data on these inter-relationships is not yet available, although academic work on this is ongoing.

It is tempting to think that more data may enable more robust models to be derived but the analysis makes clear that the interactions are complex, that the direction of influence can often reverse depending upon specificities of regional contexts, and that the characteristics identified only explain a part of the resilience observed. It is likely that other factors are also at play, and that the role of policy will be a further important influence. In this context, it may be optimistic to assume that resilience at a regional level can be robustly modelled.

7 The role of territorial policy responses

The scale of the economic crisis precipitated a substantial level of intervention by public authorities. These interventions occurred at an international, national and subnational scale, as authorities sought to stem the effects of the economic shock rippling across global and European economies. The economic crisis has reinforced the policy focus on jobs, enterprise, growth and competitiveness that was visible prior to the crisis. However, it has also led to a renewed attention being directed to the potential role of public policy in enhancing the capacity of national and regional economies to absorb the effects of an economic shock, to adapt to the consequences of this and to use it as a stimulus for transformation, with a strong emphasis on the importance of adaptive capacities

7.1 Policy roles in promoting resilience

Whilst it is tempting to focus on policy responses in the aftermath of a shock, our case studies demonstrate that it is policy decisions taken in the years and even decades prior to a shock that shape the capability of the region to respond to the shock itself. It is thus worth considering how policy can:

- React to a shock – stabilising the situation
- Respond to a shock – promoting recovery
- Prepare for future shocks – building resilience

A key role for public policy in the aftermath of an economic shock is to stabilize the situation, both through its own actions and through helping to reduce the uncertainties facing households and firms, and so assist in maintaining investment and consumption decisions. Clear examples of stabilization polices are present throughout our study.

These were most visible at international and national levels, partly owing to the intensity of the economic shock experienced, ranging from fiscal stimuli; initiatives to maintain credit and liquidity flows; automatic fiscal stabilisers, and measures to maintain labour markets. Sub-national examples are also present, particularly regarding labour market support measures, although these were often tied to national initiatives.

Evidence from the cases studied all points to the significance of having familiar but flexible policy instruments available as positive influence on the ability to react to a shock. It takes time for new policy instruments to be agreed, and additional time for beneficiaries and implementing organisations to become familiar with new instruments. Familiar, or at least known, instruments are more able to be applied quickly. In Germany the short-time working allowance proved remarkably effective at maintaining employment levels in firms through a period of reduced demand and enabled firms to respond positively to the subsequent upturn in global markets. This instrument has been available since the 1950s, but in the face of the crisis, policy makers were able to rapidly extended it from a 6-month subsidy period to a two-year subsidy period and increase the amount of support available to individual firms. In contrast, both Ireland and Greece reported that the development of new financial support instruments took several years.

Very often, our cases have found that firms, households and communities have reacted to the crisis without the intervention of policy-makers. Firms provided suppliers with payment holidays, others provided credit guarantees or soft loans to firms with temporary cashflow problems. Similarly, firms, workers and unions agreed temporary reductions in working hours and/or wages to counter the effects of the crisis. This emphasizes our previous point that a key role of policy should be to seek to ensure that mutual insurance schemes are available throughout regional economies (and more widely) to enable self-organising response and adaptation mechanisms to operate effectively. There is some evidence that these can be as effective and certainly more responsive than public-policy led interventions.

One reaction to the economic crisis of course has been the austerity measures implemented as one part of the prevailing sovereign debt crisis. This has precluded many traditional counter-cyclical policy instruments (and so places greater store on self-organised mutual response mechanisms). It has also highlighted the important role played by international institutional arrangements for sharing risk. The role of Cohesion Policy instruments, such as the Structural Funds, takes on a heightened importance in this regard, as they offer a mechanism for transferring external resources to fiscally constrained economies. Reaction to the crisis was relatively rapid and there are numerous examples, even from our limited sample, of programmes flexibly responding to changing circumstances. Amendments to the Regulations governing the Structural Funds provided room to manouevre by programme authorities, even if not all took advantage of the opportunities available.

The challenge for policy-makers is how to respond to an economic shock over the medium-term and promote recovery. In part this requires consideration of the question as to what extent a shock changes the underlying conditions facing an economy. There are positive examples of how policy-makers have recognized that circumstances are changed and have sought to introduce new modes of activity. There has been a strong emphasis in many economies on policies to stimulate entrepreneurship and establish vehicles for financial investments in firms. The aftermath of an economic shock offers the opportunity to take stock and consider new development pathways. In Baden-Württemberg, for example, policy-makers are now more aware that the economy is overly-dependent on a small number of key sectors and major firms. In Uusimaa, firms and policy-makers are questioning whether the economy requires further transformation, in the light of its slow recovery. The ability to reflect, and to learn from past experience, is a crucial skill for resilient economies.

These learning processes operate over longer timescales and emphasise the importance of existing policy measures that can adapt to economic shocks. It is perhaps noticeable that there have been very few fundamental changes to the Structural Fund programmes (2007-13) during the crisis itself. In general, programme amendments have amounted to a re-distribution of resources amongst previously agreed priorities and measures. This appears to have been led by logic of financial absorption, although programme authorities argue that it reflects the fact that the underlying logic of the programmes remains sound over the longer-term. This reflects the argument that the Structural Fund programmes are broadly regarded as supporting longer-term, structural, economic adjustment rather than acting as a short-term stimulus measure. This perspective holds even in those programmes that are described by participants and programme authorities as ‘small-scale’ or ‘niche’.

The foundations of resilient economies are formed over a sustained period of time. Policies that support the development of competitive, diverse, export-orientated economies with high-levels of innovation performance take time to bear fruit. This is clearly demonstrated in the case of South West Ireland, where the observed relative resilience of the Cork metropolitan area is founded on three decades of consistent policy development. By contrast, our case study research also demonstrates the potential perils of an over-dependence on mono-functional economies. The role of sub-national authorities in supporting the development of more resilient economic structures is crucial, given the importance of place-based policy making.

A longer time horizon also favours the development of policies promoting more stable growth paths. Regional economies that grew most rapidly prior to the economic crisis, often fueled by pro-cyclical policies, tended to be less resilient than those with lower growth rates, as evidenced in South West Ireland and Estonia. There is a role for coordinated efforts here at both the national and sub-national scale.

In preparing the ground for a more resilient economy, policy-makers should move beyond traditional socio-economic concerns. Whilst efforts to secure economic growth and jobs are fundamental to long-term economic resilience equally important is the adaptive capacity of the economy. This indicates a new consideration for policy-makers, one aimed at stimulating the ability of firms, households and communities to adapt to changing circumstances. The significance of this was demonstrated across all of the case studies, with adaptive characteristics the signature of resilient outcomes.

The role of government during an economic shock is then to provide short-term support in order to facilitate change, whilst considering the implication of the existing economic shock, and adopted policy measures, for resilience to potential future shocks. In so doing, consideration should also be given to the adaptive capacity of public authorities themselves and the policies and institutions that are available. Evidence from the case studies is that the ability to react to the economic crisis partly depended upon the pre-existence of suitable policy measures, and institutional capacity, that could be adapted to new circumstances.

Similarly, in some circumstances long-standing institutional structures proved to be unsuited to the demands imposed by the economic crisis, and can be seen as a contributory factor to lower resilience outcomes. Crucially, on several occasions authorities were found not to have made use of the powers and authorities available to them, often hindering their ability to develop more robust and resilient economic structures.

The lead in time of policy emphasizes the importance of policies that are anticipatory, as well as reactive. Whilst it is not possible to predict the precise timing and format of an economic shock, it is certainly possible to predict that economic shocks will occur in the future. A key role for policy is to consider the implications of this, and how the development of the economy affects the economic resilience of the region. Have short-term responses and reactions to the crisis left the economy better or worse placed to meet the demands of a future shock for example? How vulnerable is the region to future shocks. A possible role for public policy here is to act as a monitoring agent, examining the potential resilience of the economy to future economic shocks, rather than the more traditional economic performance monitoring. In this way the policy approach to economic resilience goes full circle, from preparation to reaction to response to anticipation and back to preparation.

7.2 Place-based policies – policy integration and co-production

From the evidence available, it is clear that place-based and integrated actions can play a very strong role in promoting resilience. Endogenous conditions tend to become more important during an economic downturn than in the upturn, weaknesses are accentuated and strengths rewarded. Thus, it is essential to tackle the specific challenges facing particular places. These tend to be most fully understood by sub-national policy actors. Locally-based actions can also be better targeted to meet the particular needs of local economies. Social and business networks are also centred on places, which provides a further stimulus to the value of place-based actions.

However, the experience of sub-national authorities during the past crisis, and in the time leading up to it, also demonstrates the limitations of local-actions. The ability to mobilise finances and resources are greater at the national level, particularly when not all places are experiencing the economic shock to the same extent. Resilience is strengthened where risks can be shared across territories. The value of this has been seen across the EU, with the Structural Funds providing resources to support transformative actions and fiscal stimulus in adversely affected regions. However, where national policies withdraw from localities so resilience can be weakened as the ability to respond to the crisis reduces.

The emergent message is that actions that integrate national and sub-national approaches are to be preferred over those that focus exclusively on one or the other. This raises new challenges for places that have less capacity, or capability, to engage with national policy initiatives. In particular it suggests that there are new roles for sub-national authorities, to act as signposts to alternative sources of support or to facilitate the ability of others to access this, rather than to directly intervene themselves.

Reliance on national policy initiatives can raise questions as to how places that may be passed over by national initiatives, owing to the structure of their economy for example, can strengthen their own resilience. Equally, there are questions as to how effective national initiatives can be in the face of localized shocks, or highly differentiated sub-national experiences. These are not insurmountable.

Actions that integrate different policies tend to be best constructed at the sub-national level, as local specificities demand a more nuanced approach. This forms the foundation of any place-based approach. The example in Baden-Württemberg of combining ESF-financed training alongside Federal short-time working allowances is a powerful one, although debates on its overall effectiveness continue. To facilitate policy integration a more objectives-led approach might offer dividends, compared to the problem-led approach that is often adopted.

The fundamental role of place-based, and integrated, policies is less about how it can react and respond to economic shocks, but how places can be strengthened to make them less vulnerable to shocks in the longer-term. Here there are clear gains to be made from taking place-based approaches. However, there are also limitations to place-based actions. Local actors do not always make good choices. The effects of the crisis have been exacerbated in Ireland by the loose application of planning powers by local planning authorities. A similar experience is reported in Spain, coupled with large municipal and regional debts. Authorities also do not always make use of the powers available to them. There is role for oversight and for a sharing of responsibility.

7.3 Promoting adaptive approaches

There are numerous traditional policy instruments available to policy makers that can enhance the resilience of regional economies. We have highlighted some examples of these. The evidence suggests that rather than focusing on individual initiatives, resilience is based upon building the systemic ability of an economy to withstand, absorb and recover from economic shocks. To do so does not require radical changes to existing policy approaches, merely a slight change in emphasis. It does, though, require the concerted actions of policy actors at the European, national and sub-national scales. This requires the development of adaptive policies and institutions, that are able to evolve to meet the particularities of different shocks, rather than entrenching established models that lock an economy in to outmoded responses.

Policies should also be developed that support the ability of firms to adapt to new circumstances. There is a role for short-term policies that support firms in the immediate aftermath of a shock, but more significant are policies that build longer-term adaptive capacities, these include supporting innovation-capabilities, access to new market opportunities and developing higher-level skills and experience.

Policies that support households and workers to adapt to new economic circumstances are also to be encouraged. Again, some of these will be short-term mitigation measures, but others will focus on building skills and experience that are transferable and that promote entrepreneurial skills. Policy makers will want to consider how short-term responses to economic shocks, such as reductions in wages or hours-worked, do not become permanent as the economy recovers.

Policies will also need to build the adaptive capacity of particular places. This will differ according to place, but will include consideration of the economic structure of the economy; developing innovation capabilities, and seeking to avoid over-dependence on a narrow range of activities. Policy makers will also wish to avoid short-term solutions that replicate or enhance existing vulnerabilities in regional economies and which delay the introduction of transformative actions. Similarly, there is a strong role for counter-cyclical policies that dampen unsustainable growth rates. In the context of a wider monetary union, policy-makers may have to explore alternatives to the traditional roles played by interest rate policies.

Policy makers may also wish to facilitate the adaptive capacity of the wider community, to enable the community to do more and public authorities to do less. The significant role played by social networks, both in business and between citizens, is a notable feature of more resilient communities, able to self-organise and mutually-support. Facilitating the growth of embedded social capital takes time. Consideration might also be given to the potential role of investments in alternative market activities, that enable residents to reduce their dependency on earned income. Alternative currencies are one example here, another is in the field of community-based energy schemes.

An important role for policy-makers will be in terms of monitoring the potential vulnerability of their economy to economic shocks, not in the sense of being able to predict particular shocks, but rather the ability of an economy to absorb the effects of potential shocks. Here, traditional indicators may be of limited value. Of more significance is the shared knowledge that is developed of an economy in a more qualitative sense. Potential considerations include:

1. How vulnerable is the prevailing economic system to disruption
2. How vulnerable are key components of the system
3. What are the prevailing directions of change
4. Available policy responses
5. Assessment of adaptive capability
6. Risk assessment of key dependencies

The role of monitoring tools is not solely to provide information on which an authority may act. It is a shared endeavour that also seeks to influence the perceptions and actions of others. One of the less remarked roles of policy makers is how they construct narratives and influence behavior, through (knowingly and unknowingly) informing choices made by households and firms. The constructed narrative can serve to enhance the resilience properties of a region, or weaken them. The effects of both have been visible before and during the present crisis. A dimension to this role is the potential that policy makers offer to reduce uncertainty and so encourage investment.

Finally, we should not overlook the importance of the capacity and capability of policy makers themselves. The crisis has highlighted the importance of experience, resources and aptitude for positive policy making, for taking responsibility for change rather than leaving it to others. It emphasizes the importance of learning cultures in learning regions. This capacity and capability is not available in all cases and national reforms are, in some cases seeking to overcome identified weaknesses. More significant will be to take the opportunity to build the capacity to develop adaptive policy approaches over time. Consideration should be given mechanisms for building the capacity and capability for sub-national policy making across Europe. This should not seek to replicate existing good practices but rather to build the knowledge and awareness of alternative approaches and to build the capacity to act in the future.

7.4 Policy conclusions

There is no single set of policies that can, or should, be applied consistently across all territories approach to promote resilient economies. No two shocks are the same, nor do any two territories respond to a shock in the same way. Small variations in starting conditions can lead to extremely divergent results, whilst looking backwards only tells us what worked there then. There is also a risk that we equate policy, actions and results, when in fact the causal relationships are much less certain.

However, certain lessons can be learnt from the most recent crisis, and those that preceded it, as to the role that policy can play. The role of policy itself can, perhaps, be summarized as seeking to prevent a shock from becoming a crisis. To do so involves three, inter-related, sets of actions:

- To stabilize the situation following a shock, and prevent circumstances worsening further
- To share the risks associated with a shock, in order to limit the absolute effects on particular individuals or localities
- To reduce the vulnerability of an economy to a shock event, in order to limit the absolute effects as a whole

Through our work the need for policy to support the development of adaptive capacities in firms, households and communities has come to the fore. It is this adaptive capacity that enables regional economies to withstand, absorb and respond to economic shocks and so strengthens the economic resilience of the territory. Our research highlights that to support resilience policies also need to be adaptive, and that public authorities have the capacity and capability to make the best use of the tools available.

Resilient economies are not the outcome of activities by any single agent, it is a collective endeavour shaped by policies operating at multiple scales, as well as by the activities of other economic and social actors. One important role for public authorities is in shaping a narrative and understanding of resilience and economic shocks, such that it guides the actions of others, without direct intervention.

8 Conclusions and Recommendations

The recent economic crisis has witnessed the most severe economic downturn in the history of the European Union. Yet not all regions experienced economic decline and rates of recovery have varied greatly. This differentiated experience raises important questions as to why some regions prove to be more resilient to economic shocks than others, and what influences the observed resilience outcomes. ECR2 sought to answer these questions, whilst considering the territorial impact of the most recent crisis, the observed resilience of regions to the crisis and the role of policy in strengthening resilience and promoting recovery.

Although the crisis is generally regarded to have begun in 2008, the first signs of impending problems were visible in 2007. This is reflected in the data, where significant proportions of regions began to experience economic decline in 2007, with the depth of the crisis broadly experienced in 2009. The first signs of recovery began to emerge in 2010, but progress has been slow.

The economic crisis has not been a single event, but rather consists of three distinct – though interrelated – elements: an initial financial crisis, which sparked a wide-ranging ‘credit crunch’; a sovereign debt crisis, where high levels of public debt (partly driven by the bail out of national banking sectors) proved difficult to sustain in financial markets, and a more traditional slump in demand, as adversely affected firms and households reduce their expenditure.

The effects of the crisis across the ESPON space have been well-documented. It has led to a fall in economic output, a decline in overall levels of employment and an increase in unemployment. Economic trade and levels of foreign investment initially declined but soon rebounded, whilst different economic sectors have recorded differential performance. Overall, wages have stagnated and austerity measures have affected many economies severely. Not all regions have been equally affected and more detailed analysis of national data illustrates the varied spatial geometry of the crisis, setting a clear macro-economic context for the economic resilience of regions.

Despite the severity of the economic crisis around a third of NUTS 2 regions have proved resilient to its effects. Of these around a tenth (12%) of all regions did not experience any decline in employment levels and 23% have since recovered to their pre-crisis peak employment levels. Of the remaining two-thirds of regions, one half have begun the path to recovery, but the remainder remain mired in decline. There are strong national patterns identifiable in the spatial distribution of national economic resilience, but this is not a sufficient explanation for the observed resilience on its own. Our exploration of relative regional resilience provides a useful insight into which regions exhibit relative strengths, and weaknesses, within states.

Evidence from past crises, particularly that of the early 1990s, suggests that the average recovery duration can last up to seven years, suggesting that recovery would only be occurring now and so not picked up by our data. Indeed, from the evidence available it appears that the rate of recovery under the current crisis is proceeding slightly faster than occurred in the 1990s. However, evidence from the 1990s also highlights the long-tail of regions that took more than ten years to recover to pre-crisis employment levels, and that a fifth of regions never achieved this, despite the long economic boom during the first decade of the Millenium.

Our analysis has highlighted a number of factors that are positively associated with more resilient regions. These include more diverse, export-orientated economies, with the presence of international companies. Sectoral composition is also important. Strong concentrations of construction and agricultural activity are associated with less resilient economies. Economies with a higher share of service-based activities tend to have proved more resilient. The significance of manufacturing industry is less clear, demonstrating a need for greater disaggregation but also that the industry sector is less influential than the business models adopted. A flexible and adaptive workforce, with higher levels of skills and qualifications, also aids resilience. However, simply increasing the density of qualifications in the population does not appear to offer a short-cut route to resilience. There is a strong relationship between the innovation performance of a region and its observed resilience outcomes.

Initial analysis of the data suggests that place-based characteristics can also influence observed levels of resilience. Urban areas, and those close to urban areas, tend to be more resilient, with more remote regions proving less so. Similarly regions with higher proportions of population living in mountainous and coastal communities have proven to be less resilient to the current crisis. These findings deserve further exploration. Regions with external borders are also disadvantaged in their resilience outcomes, with internal borders (EFTA and EU) having some impact but with less significance. The accessibility of a place can also influence levels of observed resilience.

The role of community features in resilience merits further exploration. It appears that social networks are a significant mechanism for mediating the effects of an economic shock, whilst community-based responses can provide important opportunities for limiting local impacts. The significance of these mechanisms for overall resilience outcomes could not be tested. Equally, the project finds evidence that weak and fragmented governance structures impede resilience outcomes, but finds contrasting evidence for the potential role of greater levels of fiscal autonomy.

Policy roles in promoting resilience are significant. The foundations for resilient outcomes have been laid over a long-period of time, whilst the challenges facing non-resilient economies are equally long-standing. There is a clear role for policy makers in preparatory actions that support the development of resilience capacities and capabilities. Similarly, the project has identified a series of policy-approaches that successfully helped stabilize regional economies in the face of the economic crisis. These operated at an international, national and regional scale. Policy interventions were more readily mobilized where they could draw on pre-existing instruments and institutions.

Cohesion Policies formed part of successful policy responses to promote more resilient economies. They did so through sharing risks and mobilizing external fiscal support; through actions that helped to stabilize adverse economic pressures, and by helping to build absorptive, adaptive and transformational capacities. However, in many cases Structural Fund programmes found it more difficult to react and respond to the unfolding consequences of the economic crisis.

Responses to the economic crisis illustrate how economies reorientate as part of a process of economic recovery. They also provide glimpses of transformative effects engendered by economic shocks. However, the constraining effects of shocks on transformative actions are also visible, such as evidenced by our exploration of green development paths, navigating this complex environment is a key policy challenge.

Our work clearly demonstrates the validity of the place-based approach to policy action. The effects of the economic crisis have varied across and within places and, consequently, the place-based approach is the most appropriate means of building resilience over the longer-term. The experience of the recent crisis illustrates the importance of seeing this as a shared responsibility between multi-level governance actors. The distribution of responsibilities will vary across contexts but the principle is sound. Resilience is both a property of a complex economic system and a shared responsibility for those involved in managing that system.

Promoting resilience involves supporting the development of adaptive capacities and capabilities throughout the system. This raises new roles for public authorities and highlights the significance of adaptive and responsive governance institutions as a critical feature of resilient regions.

Recommendations

There is no one route to resilience and recovery, it is place-dependent and contextually texturized. Rather than focus on particular policy approaches that will only be appropriate in particular contexts we draw our wider recommendations here. A key recommendation is that building resilience capabilities should be a founding objective for public policy.

To achieve this we recommend that a key role for policy is the building of adaptive capacities and capabilities within economies, rather than solely focusing on economic growth and employment. In doing so, consideration should also be given to building the adaptive capabilities of public policy bodies and policy institutions.

There is an important role for EU Cohesion Policy here. The focus on convergence and competitiveness should remain – as foundations of resilient outcomes, but we recommend that consideration should also be given to features identified as promoting the longer-term resilience of regions (including risk-sharing and stabilization mechanisms).

We recommend that policy actions should be shaped by the places in which they are to act. Place-shaped policy making is an essential component for economic resilience. The effects of individual shocks vary across time and space. This adds weight to Territorial Agenda 2020. Place-shaped policy making is a collective, multi-level, endeavor centred on locally-based expertise, coupled with national and international resources and knowledge.

We recommend that the economic resilience is regarded as a shared responsibility across all governance scales. The form that this takes will vary by place and depend on institutional context. To encourage stronger economic resilience at the regional scale we further recommend that the capability of local and regional authorities is strengthened and cross-national learning encouraged.

We recommend that regional, national and international authorities begin considering their state of preparedness for a future economic shock now. As part of this process we recommend that regions begin a real-time heathcheck of the vulnerability of the local economy to potential, yet unknown, shocks and an assessment of its socio-economic adaptive capacity and capability.

Further research

Our research has been based on a comprehensive data exercise, and there are few data gaps in the key indicator sets. Our work suggests the following as worthwhile areas for future exploration:

- A deeper examination of the significance of territorial characteristics for resilience outcomes.
- Research into the complex inter-relationships between resilience characteristics within places, which traditional multi-variate techniques have found challenging to assess.
- To continue to consider the longer-term transformative effects of the crisis which will play out over a longer duration, and lay the foundations for future resilience outcomes
- To further explore the role of agency and adaptive capability in the responses of businesses, households and communities to economic shocks.
- A deeper assessment of the role of government in promoting resilience outcomes, particularly through adaptive system-strengthening activities
- Appropriate metrics for dynamic, realtime analysis of resilience processes, to help inform adaptive policy making, as opposed to static comparative models.

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