

“Investigation of the Regional Innovation Paradox”

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Overview of Presentation

- Introduction
- Regional Innovation Paradox
- Theoretical Framework and Literature Review
- Research Objectives
- Methodology

Introduction

- Early stages of a doctoral research project
- Part of WIT's new PhD Scholarship Programme, launched in 2013-14
- Research undertaken at the Centre for Enterprise Development and Regional Economy (CEDRE), WIT
- Main focus of presentation – feedback on proposed methodology

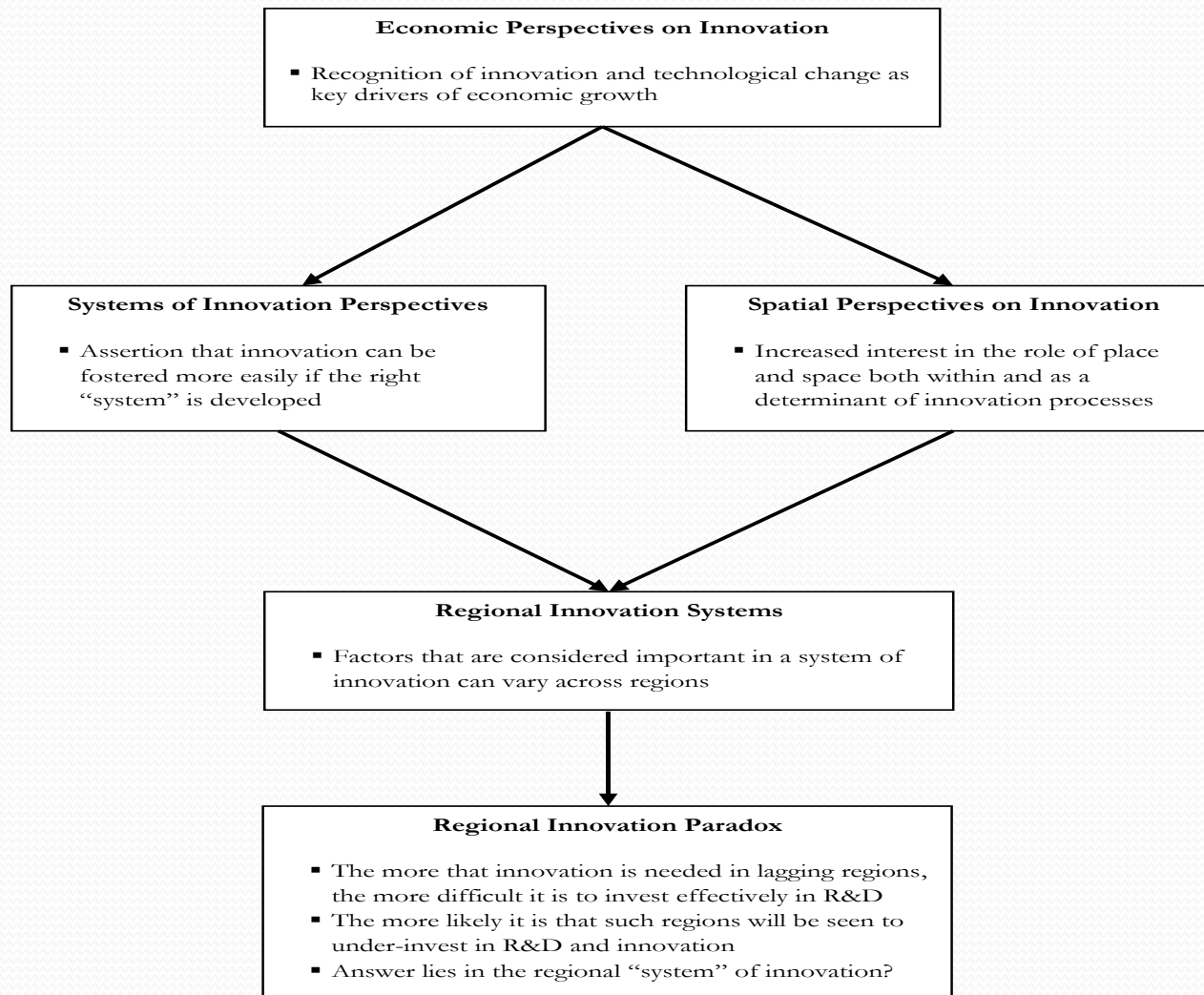
Regional Innovation Paradox

- First highlighted by Oughton et al (2002, p.98)

“... the apparent contradiction between the comparatively greater need to spend on innovation in lagging regions and their relatively lower capacity to absorb public funds earmarked for the promotion of innovation and to invest in innovation related activities, compared to more advanced regions”

- Suggested that means to address paradox lies within “regional innovation systems” (e.g. Cooke, 1998, Howells, 1999)
- Referred to periodically in the literature since then, e.g. De Bruijn and Lagendijk (2005), Pinto (2009)
- Recent renewed interest in and analysis of the paradox in the EU’s Regional Innovation Scoreboard (European Commission, 2014) and in Reid et al (forthcoming)

Towards a Theoretical Framework



Economic Perspectives on Innovation

- Widespread acceptance of the importance of innovation as a driver of economic growth
- First pioneered by Schumpeter (e.g. 1939, 1976, 2008)
- Shift from exogenous (e.g. Solow, 1956, 1957) to endogenous (e.g. Romer, 1986, 1990) perspectives
- Shift from linear (e.g. Solow, Romer) to “chain linked” perspectives (e.g. Kline and Rosenberg, 1986)

“Systems of Innovation” Approaches

- Pioneered by authors such as Lundvall (1992), Nelson (1993), Edquist (1997)
- Complex, interactive, evolutionary nature of innovation (Edquist, 2004, Nelson and Nelson, 2002)
- The right “system” fosters better innovation conditions (Lundvall, 1992)
- Firms, public sector, education and training system, financial sector, R&D activity and organisation etc (Iammarino, 2005)
- Emphasis on knowledge and learning, interaction and networking, conventional and “abstract” institutions (Lundvall, 1992)
- Feedback loops, habits, norms, tacit knowledge, trust, “social capital” (Puttnam, 1993)

Spatial Perspectives on Innovation

- Concepts that emphasise a perceived place-specific and place-embedded nature of innovation processes
- “Innovative clusters” (Porter, 1998), “knowledge spillovers” (Audretsch and Feldman, 1996), “learning regions” (Florida, 1995, Morgan, 1997), “technology districts” (Storper, 1992), “innovative milieux” (Crevoisier, 2004)
- Key resources, knowledge inputs and competences typically found in specific places (Malmberg and Maskell, 1997)
- Literature places emphasis on local “coherence” through regional and local identities, practices, assets, capabilities (Uyarra, 2007)
- Role of geographical proximity, tacit knowledge (Malmberg and Maskell, 1997, Howells, 2002, Boschma, 2005, Torre and Rallet, 2005)

Regional Innovation Systems

- Pioneered by authors such as Cooke et al (1997), Cooke (1998), Howells (1999)
- Cross-over of spatial innovation/systems of innovation (Cooke et al, 1997, Asheim et al, 2011)
- Influence in a normative EU policy context (Morgan, 1997, Asheim et al, 2011), which continues to be evident (European Commission, 2014)
- Importance of specific regional resources, characteristics or intangible assets, interaction and learning processes, multiple actors, localised capabilities, proximity, tacit knowledge, “embeddedness” (Doloreux and Parto, 2005, Iammarino, 2005, Uyarra, 2007, Asheim et al, 2011)
- More systemic nature, more enhanced governance arrangements and institutional infrastructures (Cooke, 1998, Carrincazeaux and Gaschet, 2006, Asheim, 2007)

Regional Innovation Systems

- But ... no commonly agreed definition, or consensus on what a system looks like in reality (Markusen, 1999, Cooke, 2001, Evangelista et al, 2002, Doloreux and Parto, 2005)
- Different types and scales of system, different levels or stages of development (Cooke et al, 1997, Cooke, 1998, Cooke, 2001, Asheim and Isaksen, 2002, Heraud, 2003)
- Perceived criticism for lack of clarity on key issues ...
- ... definition of “region” (Doloreux and Parto, 2005, Uyarra, 2007, Asheim et al, 2011), links to other spatial levels (Asheim and Isaksen, 2002, Heraud, 2003, Doloreux and Parto, 2005, Uyarra, 2007), treatment of diversity and path dependency of regions (Feldman, 2001, Iammarino, 2005, Uyarra, 2007, Asheim et al, 2011)

Literature – Implications for Research

- Study of innovation suggests that complexity and diversity are a constant in the nature of innovation and in innovation processes
- There is a lot more than just investment (and access to it) that drives innovative performance
- Tension between relative importance of different spatial levels (global, national, regional)
- Need for a better understanding of how such other factors influence the regional innovation paradox

Research Objectives

- Examine the relationship between increases in investment in R&D and changes in innovative performance in lagging regions
- Understand how public funds influence R&D and innovation policies and practices in lagging regions
- Examine to what extent, and in what ways, do institutional structures or other salient factors influence the relationship between levels of R&D investment and innovative performance in lagging regions

Next Steps – Methodology

- Planned methodology set out in two stages
- Mixed methodology – quantitative and qualitative
- Stage 1 – data analysis
- Stage 2 – case studies

Stage 1 – Data Analysis

- Data analysis of innovation performance of “Objective 1” regions in the EU in the 2000-06 Structural Fund programming period
- Dynamic rather than static perspective, i.e. how performance has changed over time, growth
- Goal, however, is also to help to identify lagging regions that would be of interest for more detailed case study analysis, e.g.:
 - regions showing improved R&D investment and improved innovation performance
 - regions showing evidence of failure to absorb public funds and generate R&D investment
 - regions showing improved R&D investment levels, without improving innovation performance

Data Analysis – Menu of Possible Indicators

Inputs

- Public and private expenditure on R&D (€mn or PPSmn)
- Public and private expenditure on R&D (% of GDP)

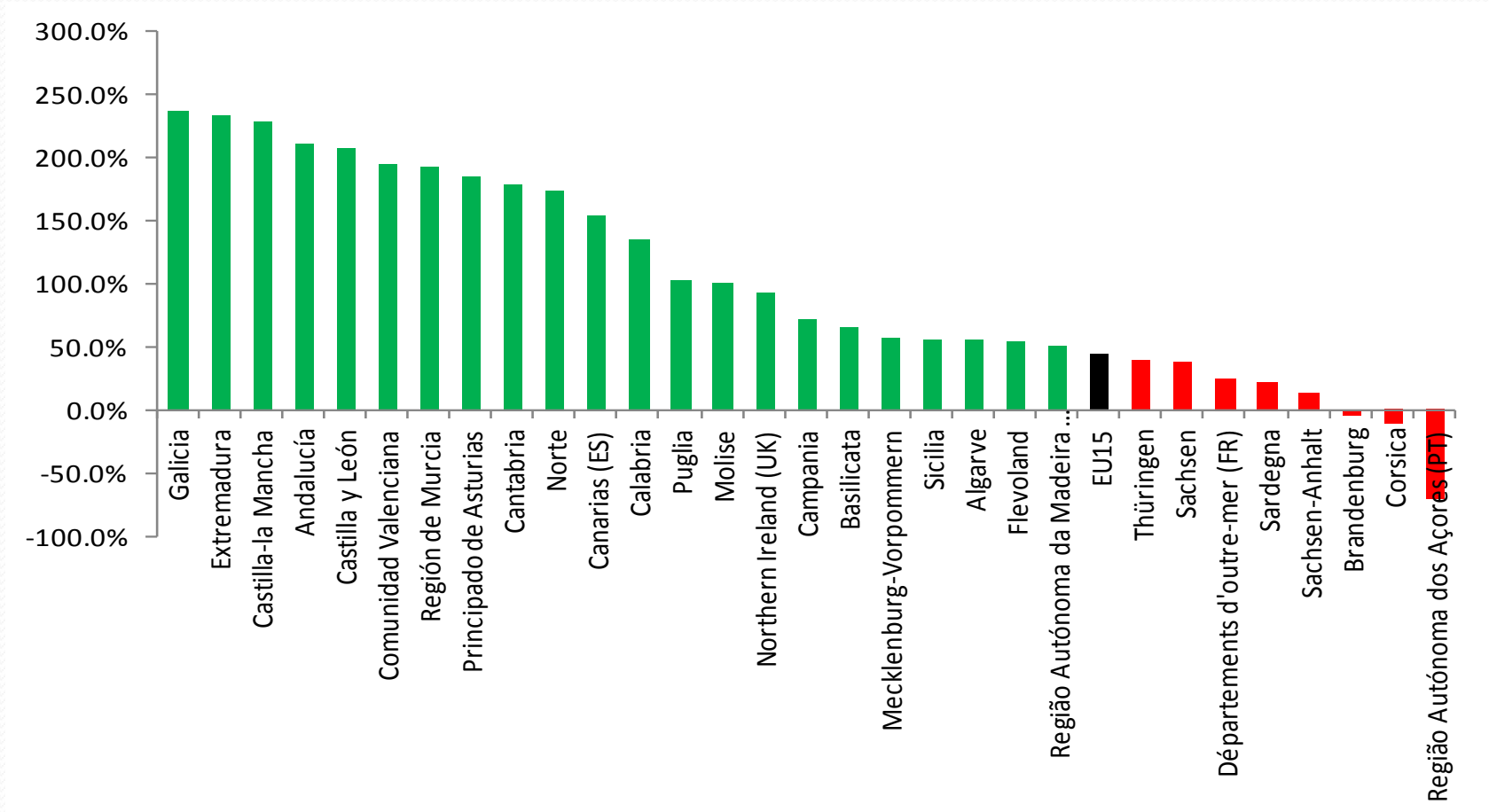
Outputs

- European Patent Office (EPO) patent applications per million population or per million labour force
- EPO high-tech patent applications per million population or per million labour force
- Employment in high and medium-high technology manufacturing, knowledge intensive services, high technology sectors in regions (head count or full-time equivalents, percentage of active population or percentage of workforce)
- Public and private R&D personnel in regions (head count or full-time equivalents, percentage of active population or percentage of workforce)
- R&D local units in regions

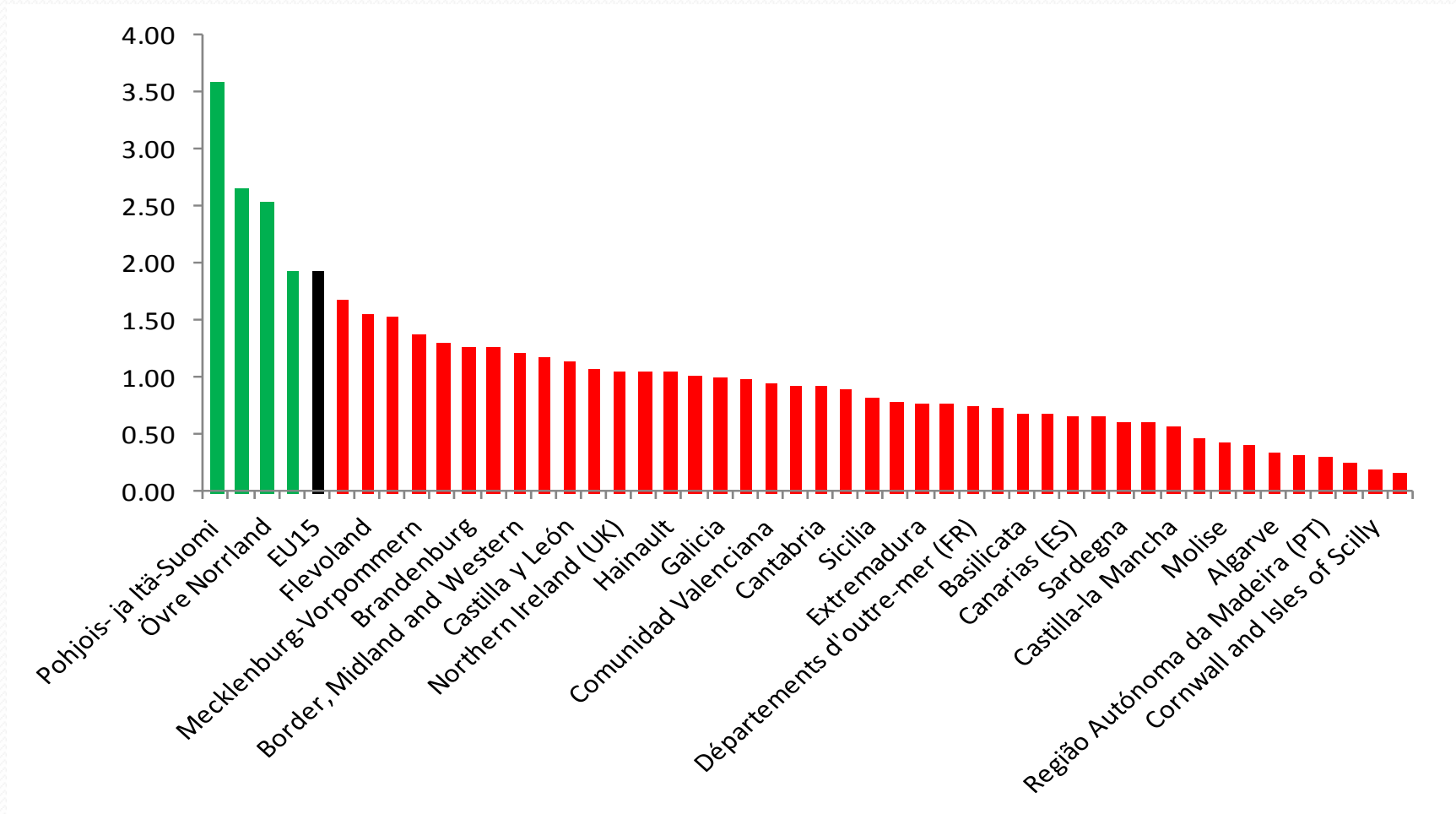
Other?

- Knowledge – % of working age population that have completed higher education
- Economic or demographic data (GDP per capita, population size etc)

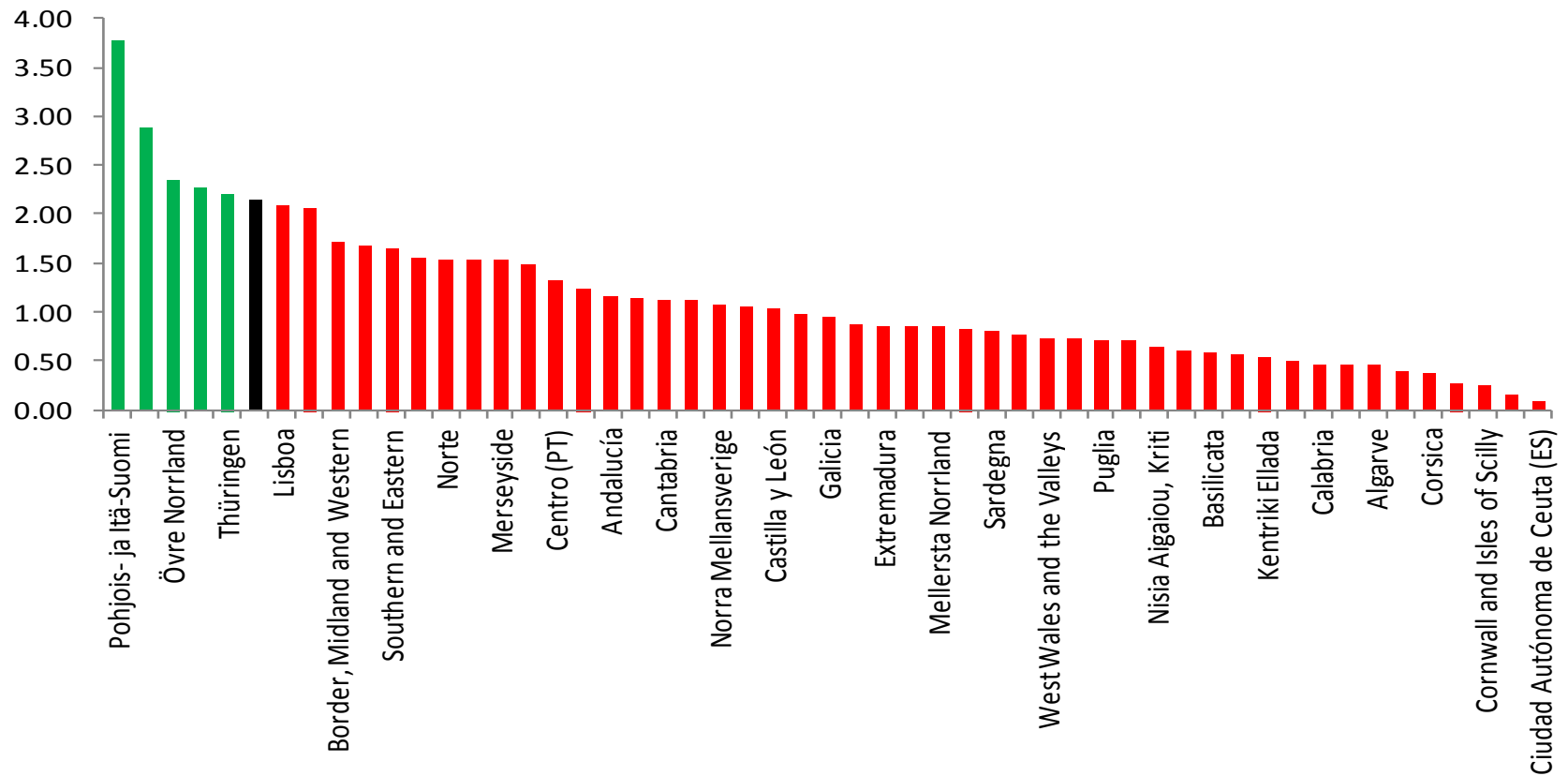
Lagging Regions – R&D Investment Growth – 99-07



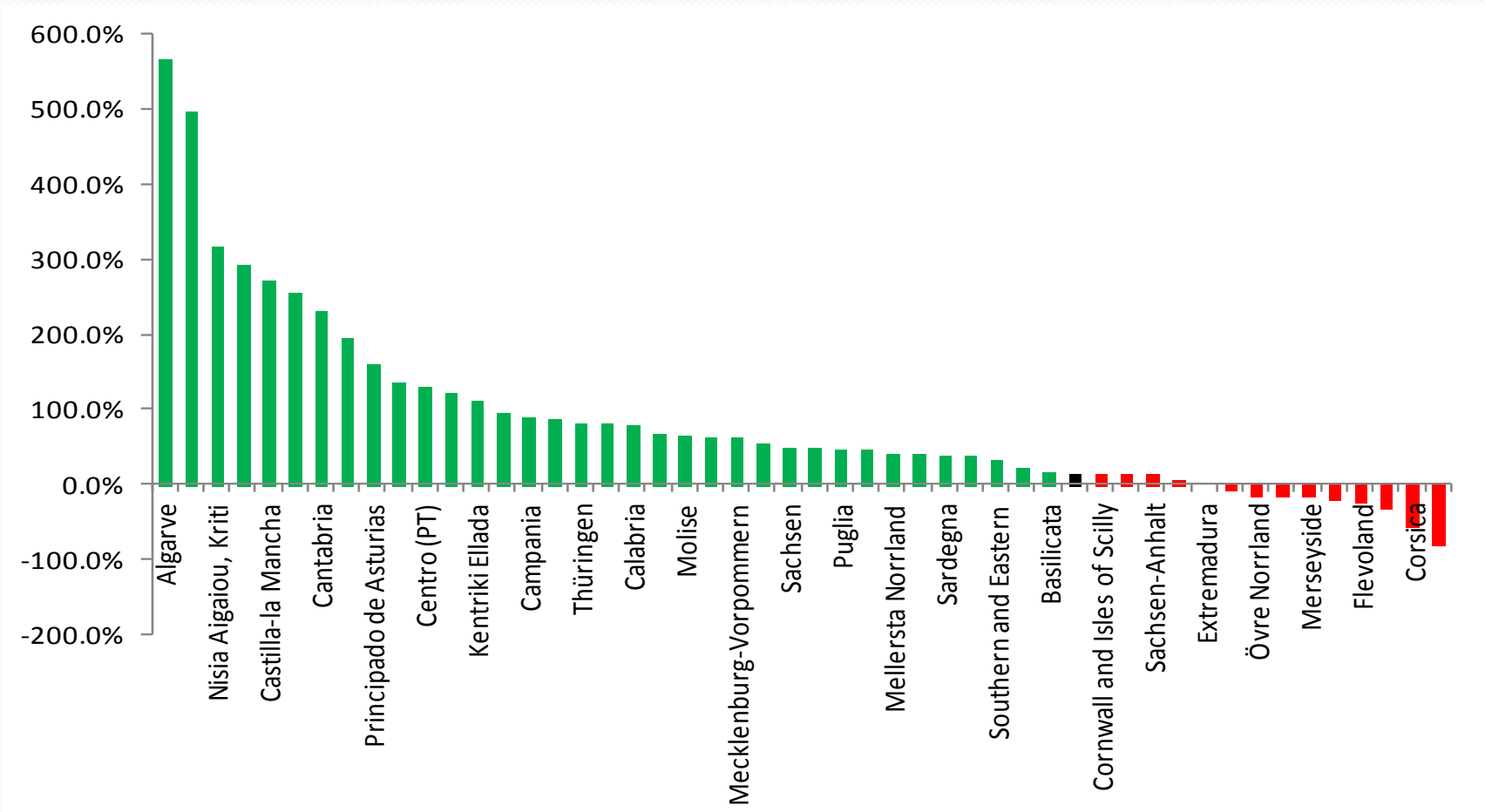
Lagging Regions – R&D Investment – % GDP – 2007



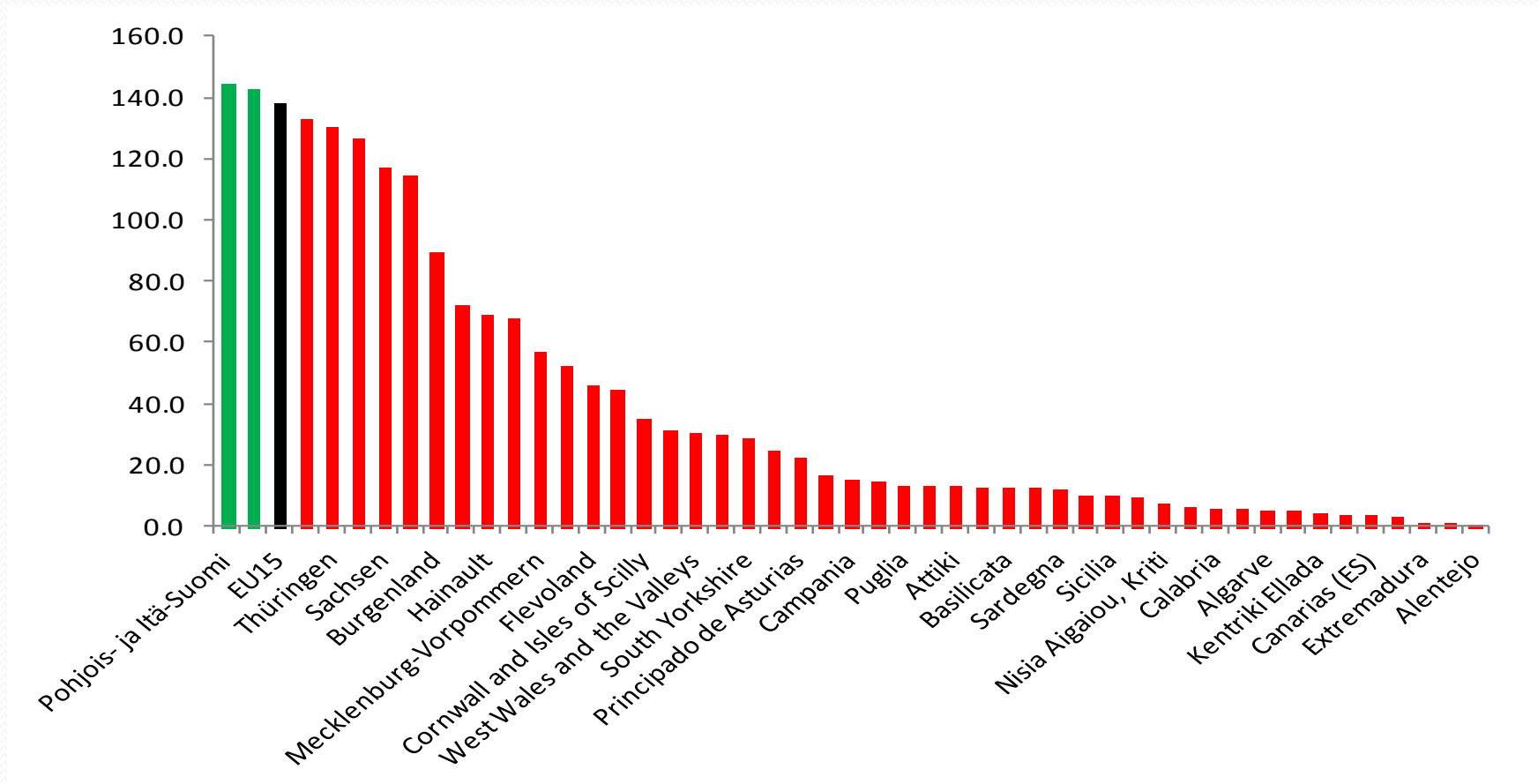
Lagging Regions – R&D Investment – % GDP – 2011



Lagging Regions – Patents Growth – 99-09



Lagging Regions – Patents – per Mn Pop – 2009



Stage 2 – Case Studies

- Indicative plan for 2-4 case studies
- Key goal will be to examine the impact of wider factors influencing innovation performance, not just public investment
- Examined from an RIS “lens” or perspective (e.g. Iammarino, 2005)
- Review of innovation policy documents/strategies, examination of reports on regional innovation performance, further contextual data analysis
- Dialogue with key informants and stakeholders inside and outside chosen regions (local, regional and national government, public sector agencies, funding agencies, higher education, enterprise representative bodies etc)
- Case studies intended to add a “richness” to findings that cannot be extracted from analysis of data



Thank you