Regional differences in R&D expenditure. 
Implications for regional governance

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Introduction
Increasing overall EU expenditure in R&D is one of the core elements of the Lisbon Strategy, embodied in the so-called Barcelona target (3% of GDP should be spend on R&D, of which 2%-points should be private). Within the system of Integrated Guidelines and open co-ordination, this EU wide target serves as a reference value at the national and regional level.

Current regional differences in R&D expenditure (as a share of regional income) are vast. Most regions show R&D expenditure well below the 3% level; only 21 out of 254 regions reach the 3% target (2002 figures). These regions can be found in Germany (11), Finland (3), France, Austria and the UK (2 each), Netherlands, Sweden and the Czech Republic (1 each). Braunschweig (G) leads (7.1%) followed by Pohjois-Suomi (FI, 4.2%), East of England (UK, 3.9%) and Střední Čechy (CZ, 3.5%), Vienna (A, 3.4%) and Île de France (FR, 3.4%). We find very low income proportions spend on R&D in southern and eastern regions. Regional disparities are considerable both within the EU as a whole as within member states.

The main question the presentation deals with is **whether it is sensible to reproduce the Barcelona target on a regional scale.** Does it make sense to expect each and every of 254 (NUTS-2) regions in the European Union to spend 3% of their regional income on R&D? The answer is no. Subsequently, the presentation discusses **an alternative approach to policies to enhance regional competitiveness**, based on local-global interfaces.

Challenging the basic assumption: from R&D to innovation to growth
The Barcelona R&D target assumes a uniform and linear relationship between R&D expenditure on the one hand and growth on the other hand. The idea is: if we increase R&D input, we will increase R&D activities, resulting in more R&D output, which in its turn will lead to more innovation in production processes, which will translate in (productivity) growth. As can be shown by relating regional R&D expenditure levels to regional innovation performance and/or regional growth figures, this assumption simply does not hold, for a number of reasons.

First, innovation (as the key target of R&D activities) is important, but it is not the prime driver of growth. Regional (productivity) growth is influenced by other factors than regional innovation, and often these factors are of more importance than innovation as such. Such (“hard”) factors comprise taxation, (labour market)
regulation, and (intercontinental) accessibility of regions (BAK Report 2006). The (stability of the) macro-economic framework at large is also of great importance. Secondly, regional innovation does not only depend on R&D expenditure, but also on regions’ organizational and social capacities, as innovation is not just based on research, science or technology. The Barcelona target uses a mechanical view of innovation (technology driven), which may have been adequate in the 50s-80s of the previous century, but which does not hold anymore. The impact on productivity growth of common innovation indicators like R&D expenditure and share of labor force involved in R&D is generally not large. These common indicators (seen as input factors for innovation processes) do not fully grasp the phenomenon of modern innovation. This is especially true for the services sector.

Thirdly, the elasticity of R&D expenditure to growth matters. If this elasticity is less than 1, improvement of the effectiveness of R&D rather than an increase of R&D expenditure as such is called for. Elasticity is influenced heavily by the regional skills to absorb the know-how resulting from R&D in production processes. Generally, private R&D is more effective (i.e. has a larger elasticity than public R&D). Fourthly, it is not entirely clear whether public funding of R&D crowds out private R&D expenditure. Is there substitution of private R&D expenditure with public R&D expenditure and vice versa, or are they complementary? Research findings are simply not clear (Czarnitzki & Fier, 2002). It could well be that raising public R&D expenditure results in less private R&D, which may result, due to elasticity differences, in less growth rather than more growth.

**Challenging the basic policy: Explaining regional differences in R&D expenditure**

But even if we suppose that increasing R&D expenditure does directly translate into increased growth, we may question the use, within the Lisbon Strategy, of reference values as the Barcelona target. Setting a R&D reference value for all 25 member states and reproducing such a reference on the regional level ignores the investment character of R&D expenditure and the existence of geographical patterns of economic activity within the EU. Investments in R&D (especially private investments) are made where they give the highest return. This explains the fairly high amount of R&D expenditure done in the US by EU-based companies, as research done in the US generally is more on the frontier of scientific progress and EU companies want to stay in touch with latest developments. Similar patterns of R&D investment can be found within the EU. Companies do not make investments “across the board” throughout the EU, but want to connect to where the R&D action really is. Clustering of R&D activities gives a higher return on investment.

More generally, within economics there has been an ongoing debate on whether economic regions in Europe, facing globalization, monetary union and the refinement of the internal market, will converge or diverge. Differences in regional production technologies, in history, in geography and institutions, are found to be more dominant than the equalization of production factor incomes. There is (conditional) divergence rather than convergence. Europe is made up of economic clusters, concentrated in the so-called “Blue Banana” (carrying from London to Milano) and the “Sunbelt” (carrying from Milano to Valencia).

**Implications for regional governance within the Lisbon Strategy**
In short, the Barcelona target is too simple and out of touch with the more complex economic reality. Our –considerable- knowledge of that reality is insufficiently incorporated into the Lisbon policies. What does this imply for regional governance?

The Lisbon strategy uses the open method of coordination and rests heavily on benchmarking. Although the open method of coordination was introduced to cater for diversity, its application has increasingly led to the set-up of regional policies with similar objectives, similar instruments and similar policy concepts. In Europe, too many policymakers try to simply copy the success of well-known best practices and aim for regional competitiveness by creating favorable conditions for the formation of high-tech clusters in the field of information technology, biotechnology and nanotechnology. This disregards that only a limited number of regions can be expected to succeed as high-tech regions. Most regions in Europe are either traditional industrial regions or peripheral agricultural regions. Traditional industrial regions face the legacy of an economic mono-structure and have problems in socio-economic conversion. Peripheral agricultural regions have depended for centuries on agriculture and face specific problems like the outward emigration of young people. Rather than jumping on the bandwagon of investing in high-tech clusters low-tech regions should invest in policies that face these specific problems and make the best use possible of their own competitive advantages.

However, traditional regional policies dealing with restructuring of “old economies” has not always been successful, for a number of reasons:
- they often involve a mixture of possibly conflicting goals (restructuring, employment, environment, regional prestige);
- they often do not cure the underlying problems, especially due to “subsidy addiction” which maintains inertia and does not constitute an incentive for real reorientation.

How can we avoid these pitfalls? In current research on regional policy, attention is increasingly drawn to so-called creative global-local interfaces through which local traditions are brought in line with global trends. An example of such an interface is the Danish region of Jutland, which has successfully combined its local tradition in furniture-making with the global trends of lifestyle and product quality, resulting in Danish design furniture. Another example is the French region North Pas-de-Calais which has combined its traditional local clothing sector with the global trend of convenience shopping by setting-up mail order services. Yet another example is the Polish region around Krakow where traditional building and painting know-how is combined with global sustainability trends, resulting in flourishing restoration services.

Interestingly enough, the new combinations mentioned above were realized from the bottom-up, involving local and regional stakeholders (local firms, residents, universities, business associations and governments) rather than by a subsidy-based top-down policy. Moreover, such combinations do not require cutting-edge technologies; they make an intelligent use of existing opportunities. Rather than focusing on high-tech R&D most European regions should focus on how to organize processes by which old crafts are combined with new tricks.

(References of underlying research available from the author upon request)