Handbook of Regions and Competitiveness

Contemporary Theories and Perspectives on Economic Development

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EE Edward **Elgar**
PUBLISHING

Cheltenham, UK • Northampton, MA, USA

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7. Regional competitiveness: connecting an old concept with new goals
*Karl Aiginger and Matthias Firgo**

7.1 INTRODUCTION

The quest for 'competitiveness' is a top agenda item for firms, politicians and the media. It is often used to describe a problem or a fear (competitiveness lost or endangered) and sometimes a defensive goal (regaining or sustaining competitiveness under globalization). The mainstream use of the term in economic policy and media persistently sticks to the specific aspect of cost competitiveness, resulting in the call for low wages, taxes, and social and ecological standards. This happens despite the majority of literature[1] emphasizing that for nations as well as regions productivity and technology are at least as important as costs, and that the performance of firms in sophisticated, heterogeneous markets is determined by capabilities, unique selling propositions and the ability to permanently upgrade the user value of products (Aiginger, 2006).

The aim of this chapter is, firstly, to provide an overview of the development of the concept of competitiveness from the firm level to the national level and from the cost perspective to the outcome perspective, including the new perspectives of broader 'Beyond GDP' (gross domestic product) goals as proposed in the WWWforEurope Project.[2] These changes (as shown in section 7.2) in the meaning of competitiveness are not only a theoretical exercise; they have deeply changed the policy conclusions derived from the concept. Secondly, we present a concept of regional competitiveness that is compatible with the drivers of performance of firms and regions, and with the goals of delivering welfare as specified by the Beyond GDP goals. We also introduce a set of indicators for input and outcome competitiveness. The data allow a descriptive analysis as well as some econometrics for evaluating regional performance and its drivers.

Section 7.3 discusses competitiveness at the regional level. The term 'regional competitiveness' refers to the performance between regions within and between countries (including issues of core and periphery), as well as to the performance of countries within larger, integrated areas such as the European Union or the United States.

Specifically, we assess 'outcome competitiveness' not in reference to GDP or employment, but under the new perspective of a more socially inclusive and ecologically sustainable growth path, as envisaged in the WWWforEurope research programme, in which 33 European research groups are taking part. Evaluating competitiveness requires both an input assessment (costs, productivity, economic structure, capabilities) and an outcome assessment. We define regional outcome competitiveness as the ability of a region to deliver Beyond GDP goals. For regions in industrialized countries, this ability depends on innovation, education, institutions, social cohesion and ecological ambition.

Section 7.4 applies the proposed concept to European Nomenclature of Units for Territorial Statistics (NUTS) 2 regions, reporting this outcome competitiveness under

new perspectives (New Perspectives Outcome, NPO) as well as its drivers (inputs). We rank regions according to the new concept and illustrate the dynamics over time as well as differences between regions. We investigate how the outcomes are related to their individual 'pillars'. We focus on a descriptive analysis, but also present econometric results on the drivers of NPO. Given this new perspective (of broader Beyond GDP goals), social investments and ecological ambitions should not be considered as costs, but rather as drivers of 'high-road competitiveness'. This is compatible with a new innovation policy fostering non-technical innovations and a new industrial policy supporting societal goals. Applying this concept to European regions, we show which regions take the 'high road' to competitiveness and compare our results with the existing literature. Section 7.5 relates the result to other recent attempts to measure regional outcome competitiveness, and section 7.6 concludes.

7.2   NATIONAL LEVEL: FROM A COST PERSPECTIVE TO THE ABILITY TO DELIVER GOALS

The concept of competitiveness originated at the firm level (Krugman, 1994a, 1994b, 1996a; Porter, 1990, 2004). In a homogenous market with many competitors (perfect competition), prices are given and a firm has to match the average costs of other firms. Otherwise, it is not 'competitive' and has to exit. Changing to the dynamic perspective, neither prices nor costs are given. Furthermore, in heterogeneous (differentiated) markets, costs across firms may differ and firms can go for a cost advantage, productivity lead or quality lead. The Strategic Management Theory stresses that firm performance is based on competitive advantages. It investigates characteristics allowing firms to sustain advantages over time (see the literature on persistent profit differences; for example, Mueller, 1983; Gschwandtner, 2005). That this is not pure theory can be seen in the 'road shows' held by large enterprises trying to sell their stocks: they very seldom try to convince buyers that they are low-cost suppliers, by some fortuitous circumstance have lower energy and labour costs, or that their government has set low ecological standards. They instead emphasize the uniqueness of their capabilities, asserting that they are producing ever-increasing consumer value and offering solutions for tomorrow's problems.

Cost Competitiveness: the Narrow and Enlightened Versions

The narrowest definition of cost competitiveness is 'low absolute wages per worker or per hour'. A slightly broader definition includes other cost components such as capital costs (including subsidies), costs of energy and raw materials, and taxes. Irrespective of whether only labour costs or also other cost positions are considered, we label a definition looking at only costs as the 'narrow concept' of cost competitiveness.

   In the 'enlightened version', productivity is added and cost competitiveness refers to a balance between wages and productivity per unit. If costs are higher, but the same holds for productivity, then a firm or economy can still compete successfully. Catching-up countries often grow faster, as the cost advantage is larger than the productivity lag. Germany rebuilt its large export surplus (which it had temporarily lost after unification) by exercising wage restraint relative to its high productivity. The role of productivity is
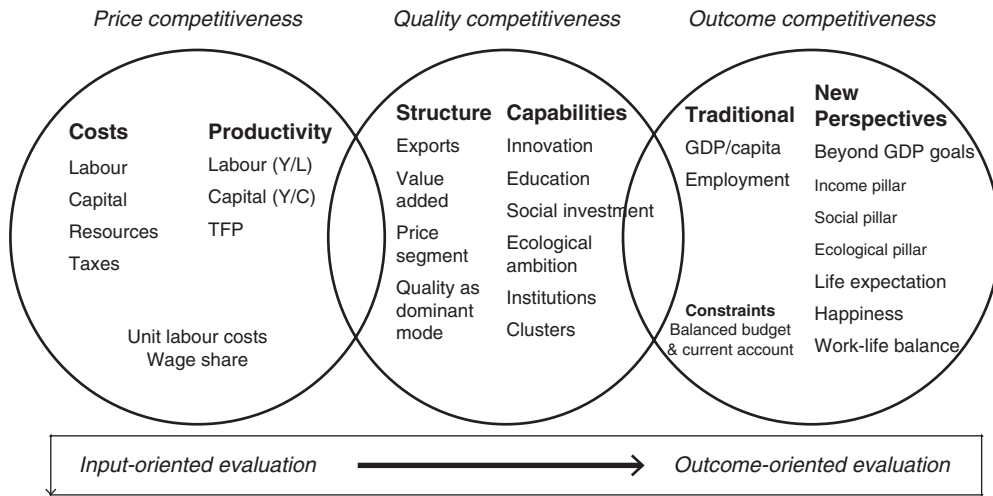
Figure 7.1 Towards a concept of competitiveness under new perspectives

sometimes emphasized to the extent that authors consider productivity the only meaningful measure of competitiveness (Porter, 1990; Kohler, 2006). This may de-emphasize costs too much. It distracts from quality components, as well as from the role of institutions as drivers of competitiveness.

Concepts of cost competitiveness in the narrow sense (costs only) or the more balanced approach (looking at costs and productivity simultaneously) are complicated when all cost components (labour, capital, energy, taxes) and all productivity components (labour, capital and resource productivity, government efficiency) have to be addressed (see the first circle in Figure 7.1). These extensions are usually implemented in cost benchmark studies that sequentially examine individual cost components or in studies on total factor productivity (TFP), which use a production function approach.

Structural Change and Capabilities

Over time the literature has incorporated structural change, the quality of products, and technology (Grupp, 1995; Janger et al., 2011) into the assessment of competitiveness; see the second circle in Figure 7.1. Specifically, rich countries are analysed with respect to their technological competitiveness (Fagerberg, 1988, 1994; Unterlass et al., 2015), such as excellence in leading technologies or high-tech products. Whether a country offers products in the higher price segments or adds consumer value to its products, and whether firms can charge a 'quality premium', is investigated. Trade theory tells us that the relative importance and price of production factors change with rising income and that countries therefore have to climb up the 'quality ladder'. Structural change from price-sensitive industries to industries with other competitive advantages becomes important for qualitative competitiveness (Aiginger, 1997, 1998).[3]

Aiginger et al. (2013a) use the term 'capabilities'[4] to define five drivers of competitiveness: innovation, education, institutions, social capital and ecological ambition. While innovation and education are closely related to quality, as seen in the discussion on technological competitiveness, the other three capabilities are not as common. In growth theory, the term 'institutions' describes the importance of a set of institutions in establishing rule of law, corruption control, democracy and trust as growth drivers. In the literature on national competitiveness the role of government in supporting industries is well discussed, along with its impact on Porter's (1990, 2004) four determinants of competitiveness: firm strategy, factor conditions, demand conditions and related industries. At the regional level institutional quality is also crucial to development (Rodríguez-Pose, 2013) and is found to be an important determinant in the migration decisions of highly mobile, skilled human capital (Nifo and Vecchione, 2014).

The role of clusters and university–firm relations, and finally that of smart specialization, is related to institutions, and will play a specific role if we switch from the national to the regional perspective (see, for example, Thissen et al., 2013). Investments in social capital are related to a new approach toward social welfare: for instance, so-called activation or active labour market policies. Ecological ambition is related to Porter's idea that sophisticated environmental standards in regulation and consumer behaviour may create a first-mover advantage for firms (see also Porter and van der Linde, 1995a, 1995b).[5]

The latter two capabilities are specifically important in shifting the perspective of economies from the goal of maximizing GDP (and maybe 'GDP plus employment' as in Delgado et al., 2012) to the broader goals of the Beyond GDP approach (Stiglitz et al., 2009). They directly support the social and ecological pillars of outcome competitiveness. The inclusion of social investment and ecological ambition as capabilities challenges the old view that social expenditures and ecological standards invoke costs and therefore reduce (cost) competitiveness.[6]

Outcome Competitiveness under New Perspectives (NPO)

Costs (narrowly defined or including productivity) and quality competitiveness (structure and capabilities) are inputs to the economy and are the core of an input-oriented evaluation of competitiveness. This is shown in the first two circles in Figure 7.1 and labelled 'input competitiveness'. Other evaluations concentrate on the outcomes of the processes. Outcome competitiveness was initially measured using trade or current account balances, with deficit countries deemed uncompetitive.[7] However, balancing external accounts is not the ultimate goal of a society. The goal is to enable high and rising incomes, to provide employment opportunities and to improve living conditions.[8] This was reflected in defining competitiveness as the 'ability to sell' (Orlowski, 1982) and in using GDP plus employment as indicators of outcome competitiveness (Delgado et al., 2012). We call this latter approach the 'traditional' view of outcome competitiveness. This concept dominated the assessments of the Organisation for Economic Co-operation and Development (OECD) and the European Commission in the 1990s (European Commission, 1995, 2011; OECD, 1995; Aiginger, 1997, 1998; Oughton, 1997).

Finally, the WWWforEurope project that seeks to delineate a new growth path for Europe proposes to define outcome competitiveness in a broader way, as 'the ability . . . to deliver [B]eyond GDP goals' (Aiginger et al., 2013a, p. 3).[9] To make this task opera-

tional, WWWforEurope proposes to cluster the numerous indicators available to measure performance and well-being into three pillars: an income pillar, a social pillar and an ecological pillar. The income pillar measures net income, per capita income, disposable income and per capita consumption. The social pillar includes poverty reduction through transfers, limiting differences in net incomes through progressive taxation, guaranteeing pensions above the poverty level, achieving gender equality and providing broad access to the health system. Ecological sustainability can be evaluated in terms of low CO_2 emissions and energy intensity or a high share of renewable energy. The traditional as well as this new perspective is shown in the third circle of Figure 7.1.

Defining competitiveness as the ability to deliver welfare as measured by Beyond GDP goals is certainly unusual from the point of view of the firm or industry, and it differs from definitions popularly used in policy discussions.[10] We follow this approach, as it connects a formerly 'dangerous' and 'misleading' concept based primarily on costs (Krugman, 1994a) to the goal of an economy, namely to provide welfare ('outcome competitiveness'). In contrast to the theoretical literature on welfare, the framework delineated in Figure 7.1 also enables policy conclusions focusing on drivers of competitiveness (costs, structure, capabilities), as stressed in the theory of the firm and in growth theory. This new framework indicates that competitiveness is created at the firm level but is also influenced by economic policy and framework conditions. Competitiveness indices ranking countries or regions, such as by IMD (1994), Porter et al. (2000) or the European (regional) competitiveness indices (for example, Huggins et al., 2004; Annoni and Kozovska, 2010; Annoni and Dijkstra, 2013; Annoni and Dijkstra, Chapter 3 of this volume), have always used a wide set of Beyond GDP indicators, but do not differentiate between drivers and outcomes of competitiveness and are often not related to a theoretical or macroeconomic perspective. Furthermore, they usually do not consider the environmental dimension of competitiveness (neither ambitions nor outcomes).

7.3   FROM NATIONAL TO REGIONAL COMPETITIVENESS

Conceptual Differences at the Regional Level

Regional competitiveness differs from concepts at the national level in two main aspects: first, absolute (dis)advantages are more important than relative ones compared to the definition at the national level (Camagni, 2002); second, spatial interrelations are particularly significant at this meso level (Cellino and Soci, 2002). The latter may also influence national performance, but are not usually addressed in a comparison of countries.

With respect to the first aspect, at the national level absolute costs may be relevant to welfare, while differences present no obstacle to trade and competitiveness, as they can be adjusted via exchange rates and factor prices (Krugman, 1996b). At the regional level, mechanisms to adjust absolute cost differences are available to a very limited extent, if at all.[11] Consequently, if a region lacks price competitiveness, its exports may approach zero at exogenously given exchange rates. Furthermore, a region may also exit from the market for highly mobile production factors such as highly skilled labour or foreign direct investments.

As for the second aspect, regional competitiveness is neither a spatial disaggregation

of national competitiveness nor the sum of the productivities of individual firms within a spatial unit (Cellino and Soci, 2002). Instead, regional competitiveness is regarded as successful competition among extremely open 'spaces of flows' (Doel and Hubbard, 2002) in attracting and retaining production factors in order to become or remain hubs ('sticky places', Markusen, 1996) of (inter)national trade, investment and knowledge flows.

Still, the term 'regional competitiveness'[12] shares the critique found at the national level: (1) a lack of clear meaning; (2) whether the concept of competing units makes sense at all; and (3) how much it should focus on productivity in the tradition of Porter (1995, 1998, 2000) or on regarding productivity as a necessary condition for positive development (Reinert, 1995) alongside the analysis of capabilities. Bristow (2005) criticizes the tendency to analyse regions at the micro level as directly competing, internally coherent, atomistic and bounded spatial entities (equivalent to firms each possessing a specific competitive advantage). She argues that regions should instead be regarded as social aggregations with specific economic and political structures. This meso level perspective implies that productive assets can be delimited as the specific characters and combinations that co-determine the performance of firms within a region and thus the region as a whole (Begg, 1999). Consequently, a region's competitiveness crucially depends on its ability to provide a favourable entrepreneurial, institutional, social, technological framework and infrastructure that local firms can use as 'external advantages' (Camagni, 2002; Bristow, 2005). The OECD (2001), Camagni (2008; and Chapter 10 of this volume) and Camagni and Capello (2013), among others, use the term 'territorial capital' to describe the wide set of tangible and intangible, private, public or mixed territorial assets that help to enhance the efficiency and productivity of local activities. Especially in a globalized economy such specific local qualities in a business environment may contribute to maintaining long-run competitive advantages, because they are harder to imitate by other regions (Storper, 1997; Porter, 1998; Boschma, 2004; Ketels, 2006).

The relevance of absolute local (dis)advantages in the absence of national adjustment mechanisms is empirically corroborated by findings for within-country developments in Crespo Cuaresma et al. (2014). They show that, while regional convergence in economic growth between European Union (EU) countries is driven by the catching-up of the new member states, evidence for convergence within countries is found only for the old member states. Firgo and Huber (2014) illustrate that GDP per capita levels diverged in nearly half of all NUTS 2 regions of the EU with respect to their national averages during the last two decades. Both studies identify the infrastructure associated with a national capital city as well as high education levels of the local population – both of which indicate absolute regional advantages – as the main predictors for regional performance within countries.

The World Bank (2009) and Glaeser (2011) highlight the absolute competitive advantage of large city regions due to the increasing returns to agglomeration. Thissen et al. (2013) name innovation, human resources and creativity, specialization as well as clusters, networks and transportation capabilities as the most fundamental means of influencing competitiveness also available to smaller regions. Economic structure and structural change matter, but structural policies fostering specialization and clustering in sophisticated or high-tech sectors do not necessarily increase a region's outcome competitiveness. Rather, policies have to be adapted to a specific territorial context ('smart specialization')[13] and have to focus on the embeddedness, relatedness (Frenken et al., 2007) and/or connectivity of their actions (Thissen et al., 2013).

Thissen et al. (2013, p. 101) emphasize that, beyond commonly measurable indicators, a region's competitiveness is also determined by its trade connections with other regions ('revealed competition'): 'A situation in which too many regions compete for the clustering of the same sector may result in a disastrous waste of public resources'. While a number of studies find positive effects of sectoral clustering (Falck et al., 2010; Delgado et al., 2010, 2014a; Ketels and Protsiv, 2013), others point towards poor cost–benefit relations (McDonald et al., 2007; Yu and Jackson, 2011). There is also evidence that clusters that build on existing strengths with respect to regional economic structure are more successful than others (Duranton, 2011; Martin and Sunley, 2011; Delgado et al., 2014a, 2014b). New cluster initiatives should therefore focus on diversification in sectors ('smart diversification'; for example, Unterlass et al., 2015) related to existing strengths, rather than creating new sectors associated with high growth potential (Ketels, 2013).

Martin (2011) cautions that rapid growth and development can impose strains and pressure on the environmental, social and physical resources of a region. This could give rise to negative externalities and erosion in the quality of local fundamentals. The author thus calls for an evolutionary view of regional competitiveness. Also, with respect to Beyond GDP goals, policy efforts that place too much emphasis on high (quality) productivity and innovation intensity may increase aggregate prosperity, but also widen the gap between different skill groups in the population. Additionally, high innovation rates neither automatically lead to social inclusion nor to environmental sustainability (Lee and Rodríguez-Pose, 2013; OECD, 2013b, 2015). In line with these arguments, social and environmental outcomes play a key role in the evaluation of a region's overall competitiveness in the present approach.

Indicators to Proxy the Specifics of Capabilities at the Regional Level

While the dimensions and indicators on outcome competitiveness relevant at the national level are rather similar, some input dimensions (capabilities) are more relevant at the regional level.[14] First, we emphasize (in)tangible infrastructure and amenities. Camagni and Capello (2013) use indicators on entrepreneurship, creativity, density of transport infrastructure and growth receptivity to proxy 'territorial capital'. Kienast et al. (2009) provide a set of variables on (intangible) amenities that determine a region's potential to attract highly mobile, high-skilled human capital (Rodríguez-Pose and Ketterer, 2012). Quality-of-life considerations become increasingly important in Europe with the deepening of the economic integration and declining information costs in migration (Partridge, 2010). Thus, the potential to provide good quality-of-life conditions can be regarded as an absolute competitive advantage in regional outcome competitiveness.

Apart from infrastructure and amenities, the share of high-skilled labour and employment in knowledge-intensive sectors as well as the share of the creative workforce are relevant indicators. While the latter group of the population are regarded as a necessary asset in a region's ability to be a 'hotbed' of new ideas (Florida, 2002), the former are also key to creating new knowledge and recombining existing knowledge leading to innovation. The share of employment in creative industries or knowledge-intensive business service clusters[15] can provide a proxy for the potential positive effects of clusters in sectors regularly associated with high innovation and growth potential. Since the seminal paper by Frenken et al. (2007), numerous studies have provided evidence of the importance of

the relatedness of diversified economic activities with respect to their potential in generating (growth-inducing) inter-sectoral knowledge spillovers. Measures of entropy such as the Shannon index (Shannon, 1948) on the (un)related variety of sectoral employment (Frenken et al., 2007) can proxy the structural embeddedness of a region's economic activities.

Thissen et al. (2013) emphasize the importance of regional interconnectivity in evaluating a region's potential for high competitiveness based on given structural and other capabilities. The authors provide a concept for measuring the economically valued relations between regions, which would support regions in developing place-based smart specialization strategies.[16] While such place-based concepts are – by definition – beyond measurable benchmarks comparing regions' competitive capabilities, there are still a number of spatial indicators that may proxy differences in regional interconnectedness and market access, and thus absolute spatial (dis)advantages. Regions at the core of Europe benefit from a dense network of interaction with their neighbours (Thissen et al., 2013) that accelerates the flow and recombination of knowledge. Thus, in the absence of regional trade data, indicators for international (distance to other regions) and national (distance to the national capital) remoteness can serve as proxies for the access to markets (OECD, 2009a) and the intensity of interactions with neighbouring regions. Moreover, the potential for high competitiveness is also influenced by inter-regional spillovers. As open spaces, the regions' own capabilities and outcomes may depend on the capabilities and performance of other economically and/or spatially close regions.[17]

Recent Indices to Measure Regional Outcome Competitiveness

Since the first European Competitiveness Index published by Huggins et al. (2004) several indices have been developed to measure the competitiveness of EU regions apart from traditional outcomes such as GDP. While such comparisons rely on benchmarks and rankings that face difficulties in incorporating the fit between capabilities and the economic structure as criticized by Boschma (2004) and Thissen et al. (2013), among others, recent indices such as the Regional Competitiveness Index (RCI) and the Europe 2020 Regional Index are useful attempts to quantify the many dimensions incorporated in Beyond GDP goals. However, while including Beyond GDP goals, these indices do not distinguish between outcomes and their drivers (capabilities),[18] nor do they consider the environmental dimension in evaluating the performance of European regions. The most recent RCI by Annoni and Dijkstra (2013) and Annoni and Dijkstra (Chapter 3 of this volume) defines regional competitiveness as 'the ability to offer an attractive and sustainable environment for firms and residents to live and work'. This definition seems to be quite close to our concept, but differences arise with respect to the application of the definition. While the RCI includes a large number of indicators on Beyond GDP goals such as institutional quality, health, labour market efficiency and social inclusion, it completely lacks ecological indicators.

The recent Europe 2020 regional indices by Athanasoglou and Dijkstra (2014) and Dijkstra and Athanasoglou (2015) rank regions according to their progress in achieving the EU 2020 objectives.[19] These objectives directly cover all three outcome pillars and include goals for important drivers of competitiveness: research and development (R&D), education and labour market participation. In the Europe 2020 Regional Index, however,

environmental ambitions and green goals are again omitted. The index gives higher weight to the social pillar than it does the income pillar. Athanasoglou and Dijkstra (2014) mainly focus on a region's distance to the respective individual national rather than to EU-wide objectives. Their main results are thus a relative measure of distance from national goals that were set more or less ambitiously, reflecting countries' starting positions. Given the large heterogeneity of regional performance within countries, most countries have regions that are very close to (or even above) the national targets, as well as regions that still have a long way to go. Dijkstra and Athanasoglou (2015) and part of the analysis in Athanasoglou and Dijkstra (2014) also present an index with respect to the EU-wide 2020 objectives. It is not surprising to find that most regions in Southern and Eastern European countries (with less ambitious targets) do worse under EU-wide targets, while regions in richer countries mostly do either slightly better or slightly worse than with respect to their countries' national targets.

7.4   OUTCOME COMPETITIVENESS UNDER NEW PERSPECTIVES IN EUROPEAN REGIONS

In this section, we introduce a composite index on regional outcome competitiveness and relate it to its drivers. With respect to the outcome dimensions, conceptual changes compared to the national approach of Aiginger et al. (2013a) are not necessary; only the set of available data forces some changes. For input competitiveness, we make changes out of both conceptual issues and data availability. We emphasize capabilities and indicators grasping elements relevant to regions and regional policy.

Transferring Outcome Competitiveness and its Inputs to the Regional Level

For cost competitiveness, we focus on wages and unit labour costs for the total economy and the manufacturing sector, as well as for the economic structure on specific sector shares in employment. With respect to capability dimensions we separately build on education and innovation, social and institutional quality, and environmental capabilities. According to the discussion in section 7.3 we add regional infrastructure and amenities to the Aiginger et al. (2013a) capabilities. In total, we build on a rich set of 54 variables that vary at the NUTS 2 level.[20]

Since many of the indicators used within the individual groups are potentially highly correlated, we compile composite indicators based on a principal components analysis (PCA) and factor analysis (FA) (see Table 7.1).[21] Our sample covers 229 NUTS 2 regions in 16 EU countries.[22] Data are used for the 2005 to 2011 period.[23] The collection of comprehensive and EU-wide regional data on ecological and social inputs and outcomes is still in its infancy. Important variables such as data on green-tech clusters or regional inequality are not available, even for the rather short and recent period analysed. Thus, the overall number of variables is restricted to the availability of data at the beginning and end of the period.

Methodologically, competitiveness in New Perspectives Outcomes (NPO) is compiled in a two-step procedure. First, individual outcome indicators (see Table 7A.1 in the Appendix) are composed to the three outcome pillars income, social and eco. In a second

Table 7.1   List of indicators

Variable	Description of composite indicator	No. of indicators
NPO	New Perspectives Outcomes based on Income, Social, Eco	12
INCOME	New Perspectives Outcomes – Income Pillar	*3*
SOCIAL	New Perspectives Outcomes – Social Pillar	*6*
ECO	New Perspectives Outcomes – Eco Pillar	*3*
COST	Cost competitiveness	4
STRUCTURE	Economic structure	6
CAPABILITIES	Capabilities to provide competitive outcomes	32
CAP_EDU_INNO	Capabilities – Education and Innovation	*12*
CAP_SOCIAL	Capabilities – Social System	*5*
CAP_INST	Capabilities – Institutions	*5*
CAP_INFRASTR	Capabilities – (Intangible) Infrastructure and Amenities	*5*
CAP_ECO	Capabilities – Ecological	*5*

Note: For a full list of individual indicators, sources and further notes, see Table 7A.1 in the Appendix.

step, these three pillars are summed up to NPO. While the weights of the individual variables in each pillar are chosen by PCA/FA, we follow Aiginger et al. (2013a) and choose equal weights of ⅓ for the three pillars to obtain NPO for two reasons. First, assigning the same weights to social inclusion and ecological sustainability as assigned to income is in line with the Europe 2020 objectives as well as with the Beyond GDP approach proposed in the WWWforEurope project. Second, the second-stage factor analysis indicates that the common factors of the three NPO pillars do not explain enough to extract meaningful weights from such factor analysis.[24]

The top left and right panels of Figure 7.2 show the geographical distribution of regional NPO scores for the years 2005 and 2011. Index scores are min-max normalized, with one being the highest regional score recorded in both periods (zero represents the lowest level). The darker the shade, the higher the scores. The bottom panel illustrates changes in the index scores between 2005 and 2011 (a dark shade indicates high positive changes). Table 7.2 illustrates the top and bottom ten regions in levels and changes in *NPO* scores.

The highest scores in NPO are found on average in Austria, Germany, Finland, France, the Netherlands, Sweden and the United Kingdom (UK), but there is substantial heterogeneity within some of these countries. The lowest scores are recorded for regions in Greece and the Central and Eastern European countries (CEEC). German and Polish regions show the largest improvements in the index between 2005 and 2011. In Germany, these improvements are not only concentrated on former East German regions. In all countries with the exception of Greece, Spain and the UK, regions improved their scores on average during the period observed.

Figure 7.3 plots the regions' NPO scores against their scores in the three NPO pillars and distinguishes between regions in Northern and Western Europe, Southern Europe (Greece, Italy, Portugal, Spain) and the four CEEC (Czech Republic, Hungary,

NPO (2005)

(0.84, 1)
(0.67, 0.84)
(0.5, 0.67)
(0.33, 0.5)
(0.17, 0.33)
(0.0, 0.17)
n.a.

NPO (2011)

(0.84, 1)
(0.67, 0.84)
(0.5, 0.67)
(0.33, 0.5)
(0.17, 0.33)
(0.0, 0.17)
n.a.

Changes in NPO, 2005/2011

(0.2, 0.4)
(0.15, 0.2)
(0.1, 0.15)
(0.05, 0.1)
(0.0, 0.05)
(−0.2, 0.0)
n.a.
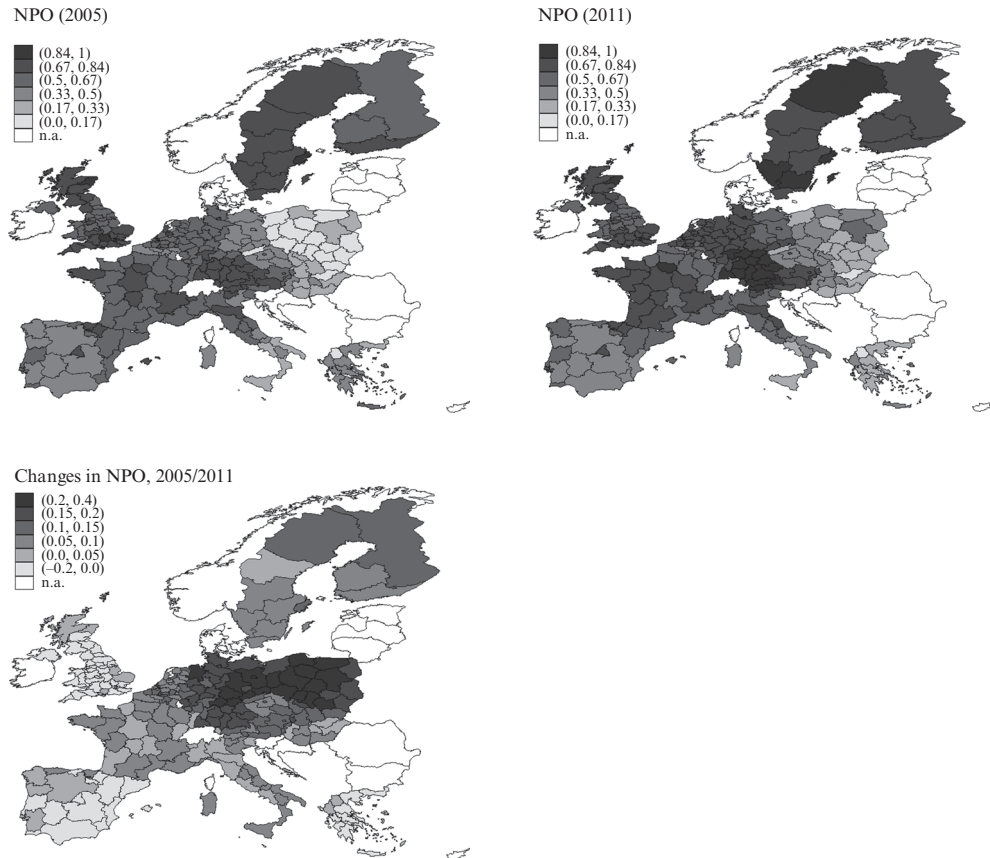
Note: Index scores between 0 and 1 based on Min-Max normalization.

Figure 7.2   NPO scores and changes between 2005 and 2011

Poland, Slovakia). As expected, regions in Northern and Western Europe show the highest overall NPO scores as well as the highest scores in each of the three pillars. Eastern European regions on average achieve the lowest scores in NPO and the income pillar.

The overall NPO scores show the highest correlation with the income pillar (top left panel of Figure 7.3) and with the social pillar (top right panel) indicating that income levels tend to coincide with social outcomes.[25] The picture is less clear when we turn to ecological outcomes. The high correlation between the ecological pillar and the overall NPO scores (middle left panel) mainly results from the fact that the eco pillar accounts for one third of NPO. However, the correlation is much lower between this pillar and the other two pillars (bottom two panels), which indicates only weakly positive links but not a trade-off.[26]

With respect to the different country groups, the analysis reveals that, at given income levels, regions in Southern Europe tend to score higher in the ecological pillar and lower in

Table 7.2   Top and bottom ten regions in New Perspectives Outcomes (NPO)

	Top 10	Bottom 10
NPO (2011)	**SE11, UKI1, DE21, AT33, UKM5, DE60, *ITH1*, DE14, DE27, AT32**.	*ITF3*, PL32, *EL11*, PL11, HU32, PL52, PL33, SK04, HU31, *EL13*.
Δ NPO (2005/11)	PL12, PL51, PL22, PL52, PL63, PL62, PL41, **DE50, DEG0**, PL11.	*EL23, EL12, ES23, EL14, ES52, EL11, ES53, EL30, ES62, EL43*.
INCOME Pillar (2011)	**UKI1, DE21, FR10, DE60, DE11, DE71, DE25, DE12**, *ITH1*, **DE14.**	PL52, PL33, PL62, PL34, PL31, HU23, HU33, PL32, HU32, HU31.
SOCIAL Pillar (2011)	**AT32, DE21, AT33, DE13, DE14, AT22, NL31, AT31, DE22, BE25**.	*EL24, ITF6, ES43, ITF4, EL11, EL12, ES61, EL13, ITG1, ITF3*.
ECO Pillar (2011)	**SE11, SE33, SE12, SE21, UKM5, UKI1, SE31, SE23, SE33, SE22**.	CZ08, *ITH3*, CZ02, PL33, HU31, PL22, CZ04, PL52, PL11, *EL13*.

Notes: **Bold . . . Western/Northern,** *Italics . . . Southern,* Regular font . . . Eastern European regions. For a full list of regions, NUTS codes and NPO (pillar) scores, see Table 7A.2 in the Appendix.

the social pillar, while the opposite is true for the Central and Eastern European regions. Thus, it seems that the peripheral regions of the 'old' member states (in the South) have adopted low-road social strategies, but enjoy the benefits of climatic conditions and – as far as impact on emissions is concerned – relatively low manufacturing shares, while the CEEC regions have chosen a high-road social strategy in combination with a low-road ecological strategy (and a higher share of heavy industries).

While no region except for Stockholm scores top ranks in all three pillars (see Table 7A.2 in the Appendix), we find a number of regions that score very highly in two pillars, while showing mediocre results in a third. Inner London (top ranking in the income and eco pillars), Upper Bavaria (Oberbayern) and Salzburg (top ranking in the income and social pillars), or Swedish Upper (Övre) Norrland (top ranking in the social and eco pillars) are examples of this. Among the most competitive NPO regions we also find regions that score highly in one pillar and have decent ranks in the remaining two, such as Hamburg (top result in the income pillar), Tyrol (top result in the social pillar), or Northeast Scotland (top result in the eco pillar). Among the regions characterized by modest but not top ranks in all three pillars are Swabia (Schwaben), Upper Palatinate (Oberpfalz) and Upper Franconia (Oberfranken), all located in the German state of Bavaria. The mean standard deviation in a region's pillar ranks is lower in the bottom quartile than in the top quartile, suggesting that regions with the lowest ranks in NPO are more likely to perform poorly in all three pillars than vice versa.

Relating Outcome Competitiveness to its Determinants

Regressing changes in NPO on its drivers provides evidence of the importance and significance of the individual determinants (equation 7.1):

$$\Delta NPO_{i_{2005/2011}} = \alpha + \beta_1 NPO_{i_{2005}} + \beta_2 COST_{i_{2005}} + \beta_3 STRUCTURE_{i_{2005}} +$$
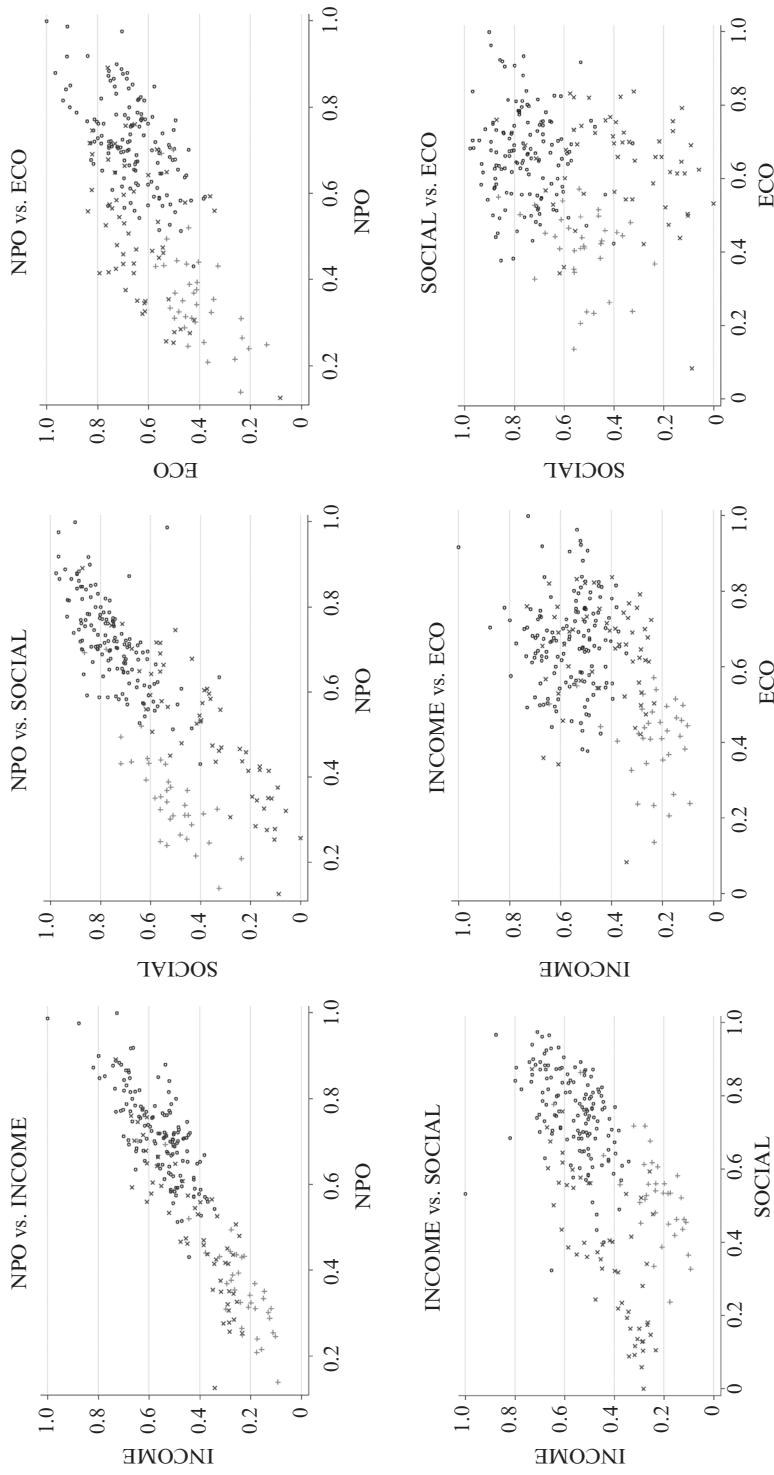
Notes:
Country groups: o = North/West, x = South, + = East.
Index scores between 0 and 1 based on Min-Max normalization.

Figure 7.3   Regional scores on New Perspective Outcomes (NPO) and its pillars, 2011

$$\beta_4 CAPABILITIES_{i_{2005}} + \mu_{i_{2005}}. \tag{7.1}$$

Given the restrictions in data availability (from 2005 to 2011), we opt for a cross-sectional growth model (Barro and Sala-i-Martin, 1991, 1992; Mankiw et al., 1992) using the 'initial' (2005) levels of the right side composite indicators to explain changes in *NPO* for region *i* during the 2005/2011 period ($\Delta NPO_{i_{2005/2011}}$). *COST*, *STRUCTURE* and *CAPABILITIES* each represent a number of indicators (see Table 7A.1 in the Appendix) approximating a region's capabilities to increase outcome competitiveness. The weights of individual indicators within each composite variable are again extracted based on PCA/FA.[27] The 2005 NPO level is added as an explanatory variable to account for potential β-convergence[28] in NPO between regions. α and β_1 to β_4 are the coefficients to be estimated and $\mu_{i_{2005}}$ is a region-specific error term.

The results for five specifications are shown in Table 7.3. Specification (1) uses an aggregated composite indicator for capabilities. In specification (2) the overall capability term is disaggregated into its five sub-components (again, composite indicators with weights extracted based on PCA/FA). Specification (3) adds dummies for Eastern and Southern Europe, while specification (4) also adds dummies for national capital city and Objective 1 regions.[29] Specification (5) accounts for spatial dependence and inter-regional spillovers, thus adding the spatially weighted changes in NPO of the ten nearest neighbour regions instead of dummies for Eastern and Southern Europe.

In all specifications we find a highly significant and robust convergence term, which is somewhat reduced in magnitude if we add the spatial lag. The coefficients for *COST* are insignificant in all specifications. Regions with higher wages and unit labour costs (*COST*) were not associated with significantly lower average growth in outcomes in any of the specifications. Also, *STRUCTURE* does not significantly predict changes in NPO. This is in line with our presumption that sophisticated structural characteristics do not necessarily result in higher competitiveness because they may not match the region-specific capabilities, result in competition with (too) many other regions and/or put pressure on social and ecological outcomes.

In addition to the convergence term, *CAPABILITIES* are the strongest predictor, whether taken as a composite term or as its five components, and the main results are robust against regional dummies and the inclusion of the spatially lagged NPO developments. Among the *CAPABILITIES* we find that education and innovation (*CAP_EDU_INNO*) and institutional quality (*CAP_INST*) are robust predictors for changes in NPO. Additionally, ecological capabilities (*CAP_ECO*) become significant once country group fixed effects or spatial interdependencies are included. Also, social capabilities (*CAP_SOCIAL*) are weakly significant when using country group fixed effects. Thus, within their country groups, regions with higher ecological and social capabilities observe higher improvements in their outcome competitiveness. Infrastructure and regional amenities (*CAP_INFRASTR*) are insignificant if we control for country group effects. Southern European regions perform significantly worse than Northern and Western European regions. The high significance and large coefficient of the spatial lag in specification (5) reveals a high degree of spatial autocorrelation in NPO changes. The dummies for national capital (*NAT_CAPITAL*) and Objective 1 regions fail to significantly predict differences in NPO developments.

Table 7.3   Predictors for recent changes in New Perspectives Outcomes (NPO)

$\Delta NPO_{2005/11}$	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) SAR
LEVEL2005	−0.274***	−0.384***	−0.267***	−0.261***	−0.115***
	(0.0512)	(0.0608)	(0.0579)	(0.0674)	(0.0245)
COST	0.0385	−0.107	−0.0626	−0.0599	0.0153
	(0.0733)	(0.0683)	(0.0803)	(0.0865)	(0.0263)
STRUCTURE	0.0337	0.0115	−0.108*	−0.103*	−0.0202
	(0.0640)	(0.0534)	(0.0549)	(0.0586)	(0.0230)
CAPABILITIES	0.138***				
	(0.0510)				
CAP_EDU_INNO		0.224***	0.167***	0.169***	0.0840***
		(0.0551)	(0.0540)	(0.0544)	(0.0302)
CAP_SOCIAL		0.0371	0.0654*	0.0659*	−0.00527
		(0.0383)	(0.0336)	(0.0336)	(0.0145)
CAP_ECO		0.0336	0.0678**	0.0679**	0.0289**
		(0.0361)	(0.0296)	(0.0297)	(0.0144)
CAP_INST		0.188***	0.154***	0.157***	0.0271**
		(0.0294)	(0.0305)	(0.0343)	(0.0128)
CAP_INFRASTR		−0.0632*	−0.0158	−0.0145	−0.0234*
		(0.0327)	(0.0288)	(0.0285)	(0.0137)
NAT_CAPITAL				−0.00476	
				(0.0157)	
OBJECTIVE_1				0.00569	
				(0.0213)	
EAST			0.0427	0.0451	
			(0.0416)	(0.0437)	
SOUTH			−0.0720***	−0.0702***	
			(0.0188)	(0.0193)	
Spatial lag of $\Delta NPO_{2005/11}$					0.844***
					(0.0347)
Constant	0.131***	0.102***	0.0834*	0.0720	0.0188**
	(0.0259)	(0.0288)	(0.0444)	(0.0633)	(0.00916)
N	229	229	229	229	229
R^2	0.213	0.481	0.590	0.591	
adj. R^2	0.199	0.462	0.572	0.568	

Notes:
***, **, * significant at the 1 per cent, 5 per cent, 10 per cent level. Standard errors in parentheses.
Specifications (1) to (4): ordinary least squares (OLS) with error terms clustered at the NUTS 1 level.
Specification (5): spatial autoregressive (SAR) reduced form maximum likelihood estimator (LeSage and Pace, 2009).
Spatial lag: inverse distance-weighted average changes in NPO of the ten nearest neighbour regions.

## 7.5   RELATING THE RESULTS TO OTHER CONCEPTS OF OUTCOME COMPETITIVENESS

NPO scores can also be related to the Regional Competitiveness Index (RCI 2013) and the Europe 2020 Regional Index. As briefly outlined in the 'Recent Indices to Measure Regional Outcome Competitiveness' sub-section in section 7.3, the RCI completely lacks ecological indicators whilst placing a high emphasis on labour market efficiency and social inclusion. This difference is likely to explain large parts of the ranking differences between NPO and the RCI as illustrated in Figure 7.4.[30] While regions in Western and Northern European countries are distributed equally on both sides of the 45° line (that implies equal results in both rankings), Eastern (Southern) European regions systematically perform better in the RCI index (in NPO). This corresponds well with the patterns found for the social and the eco pillar within NPO ('Transferring Outcome Competitiveness and Its Inputs to the Regional Level' sub-section in section 7.4). As the latter pillar does not have relevance in the RCI, it favours Eastern European regions while penalizing Southern European regions. Analysed by country, Austrian, French, Swedish and (because of relatively high scores in the eco pillar) Italian regions score substantially better in the NPO than in the RCI on average. In contrast, regions in Belgium (low scores in the eco pillar), the Czech Republic (low scores in the income and eco pillars), the Netherlands (many of which are among the top ranked in the RCI but only show medium scores in the eco pillar) and the UK (high eco scores but medium scores in the income and social pillars) score noticeably better in the RCI on average. Regions with the highest absolute differences between the two rankings are listed in Table 7.4.

A comparison of NPO and the EU 2020 Regional Index ranks with respect to EU-wide targets for the reference year 2011 (Figure 7.5) reveals the following national patterns: while several Northern and Western European countries (Belgium, Germany, France, Sweden, the UK) have both a number of regions performing better or worse in the NPO than in the EU 2020 ranking, in some countries (Austria, Greece, Italy, Portugal, Spain) all or most regions score better in the NPO ranking, while in some countries regions mostly score worse in terms of NPO ranks (Czech Republic, Finland, Hungary, the Netherlands, Poland, Slovakia). This suggests an uneven distribution in the distances to the EU 2020 goals, which is not reflected in the Beyond GDP goals considered in NPO. These patterns are likely to be driven by differences in national ecological performance that are included in NPO but not in the EU 2020 Regional Index. The ten regions with the highest absolute differences in EU 2020 and NPO ranks in each direction are again listed in Table 7.4.

7.6   SUMMARY AND CONCLUSIONS

Competitiveness at the National Level

The notion of competitiveness has been criticized due to conceptual problems, its operationalisation and the implied policy conclusions. Nevertheless, the term is persistently used by policymakers, analysts and the media. This holds at the national level as well as within regions, and even for global players like the EU or the US. We discuss the diversity and development of the term and how these problems have been addressed in a new concept
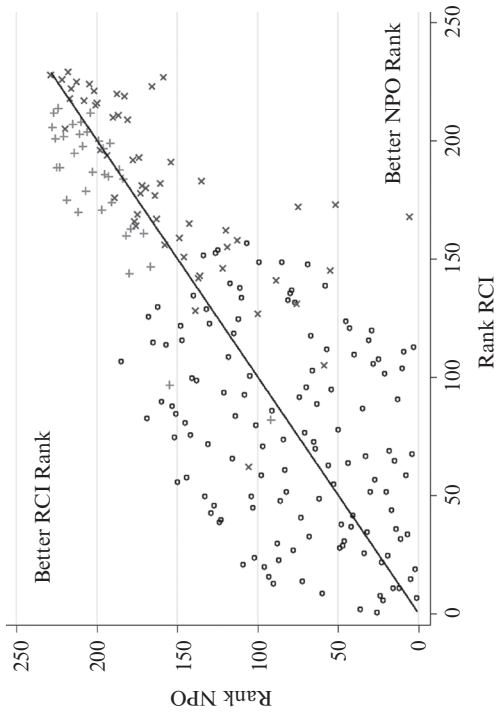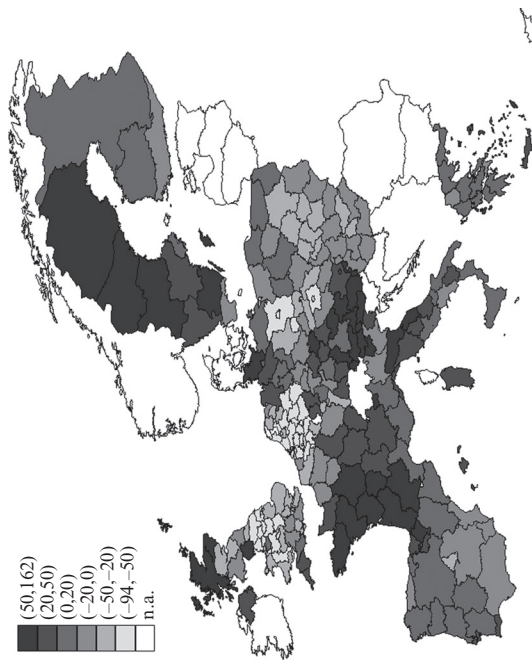
Notes:
Map: Dark (light) indicates better rank in NPO (RCI).
Scatter Plot country groups: o = North/West, x = South, + = East.
Solid line indicates equal results in both rankings.

Figure 7.4   Differences in sample rank between NPO and the RCI

Table 7.4   Top ten deviations in sample ranks compared to the NPO ranking

	RCI*	EU 2020 Regional Index
NPO rank better	ITH1 (162), ITC2 (121), AT33 (110), AT32 (102), ITI3 (97), SE33 (94), SE31 (91), ITH2 (90), SE32 (85), AT34 (83)	ITH1 (130), ITC2 (122), UKI1 (115), ITI3 (101), DEB1 (97), AT32 (86), AT34 (83), BE10 (80), DE27 (79), DE94 (74)
Reference rank better	UKF1 (94), NL42 (88), BE33 (86), UKF2 (86), UKE2 (86), BE22 (85), UKD3 (83), NL34 (83), DE30/40 (81), BE32 (78)	DED5 (114), CZ06 (94), DED2 (92), NL23 (91), CZ02 (82), CZ01 (80), DE30 (79), NL22 (75), UKF1 (75), PL11 (72)

Notes:
Rank differences in parentheses.
For a full list of regions, NUTS codes and index scores, see Table 7A.2 in the Appendix.
* Comparison with RCI ranks based on population-weighted average NPO score ranks in NUTS 2 regions combined to one functional region in the RCI (metropolitan areas of Amsterdam, Berlin, Brussels, London, Prague and Vienna).

developed by WWWforEurope. It defines competitiveness as the ability of a country or region to deliver Beyond GDP goals. This ability is assumed to be driven by costs, economic structures and capabilities. Costs have to be properly compared to productivity, since it is the unit cost of input that determines 'price competitiveness'. The structural component is measured by the share of sophisticated industries and the importance of product quality. Aiginger et al. (2013a) define five crucial capabilities at the national level (innovation, education, social investment, ecological ambition and institutions). Due to the new consensus that GDP is not a good welfare indicator, 'outcome competitiveness' is measured by the Beyond GDP goals. These are divided into three pillars: economic, social and ecological goals. We call this approach 'New Perspectives Outcomes' (NPO) competitiveness.

Regional Competitiveness

Transferring the concept of competitiveness to the regional level invokes critical points that have also been raised at the national level (for example, the lack of theoretical foundation or clear meaning of the term itself, and whether regions are in competition with each other). There is also a debate on the extent to which competitiveness is different from productivity, and whether costs or capabilities are more important. Perhaps, the most important difference to the national level is that absolute competitive advantages and capabilities are more important at the regional level, since differences cannot be adjusted (smoothed) via exchange rates or monetary policy. Furthermore, due to the extreme openness of this meso level (in contrast to the micro and macro levels), interrelations between firms, entrepreneurship, local institutions and spatial interconnectivity with other regions play an important role. Attractiveness of regions with respect to working and living conditions is also important. Spatial and economic embeddedness of economic activities and clusters, as well as institutional quality and tangible and intangible infrastructure are regional assets. Using and improving existing strengths
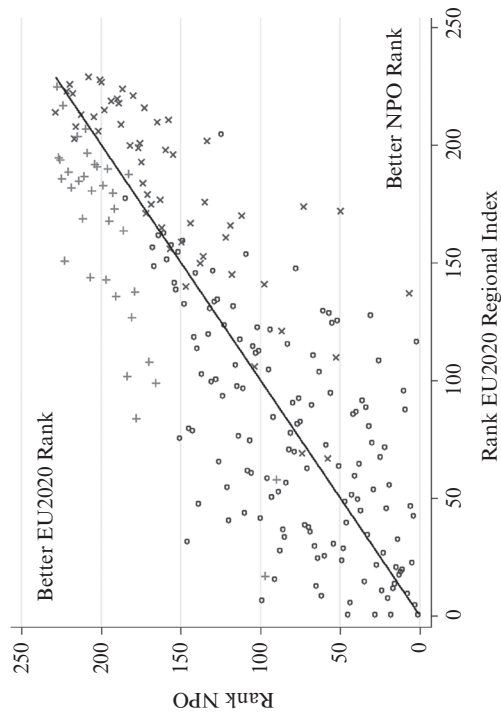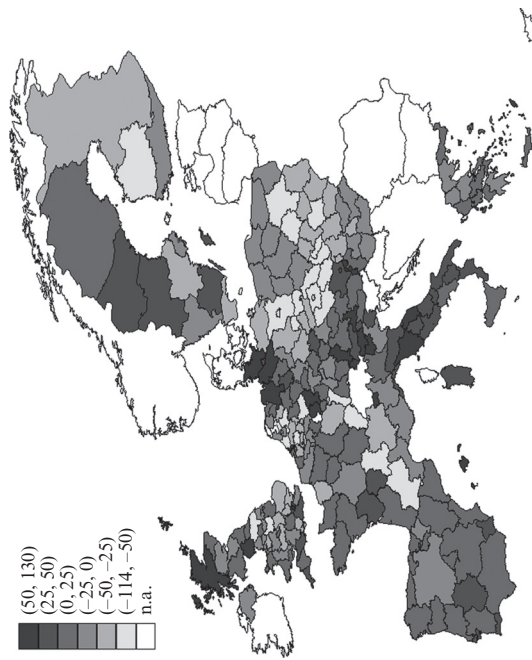
Notes:
Map: Dark (light) indicates better rank in NPO (EU 2020).
Scatter Plot country groups: o = North/West, x = South, + = East.
Solid line indicates equal results in both rankings.

Figure 7.5   Differences in sample rank between NPO and the EU 2020 Regional Index

(smart specialization) becomes important compared to unconditional specialization in high-tech industries.

Operationalisation of the Concept

The indicators used to quantify regional competitiveness differ from those used at the national level – aside from the conceptual issues named – also for statistical reasons (limited data availability at the regional level). For outcome competitiveness, conceptual considerations between the national and the regional level play no role once we decide to use the Beyond GDP approach. Because the outcomes consist of uncontroversial policy goals such as high income, low unemployment and environmental sustainability, the composition of a single index to measure regions' competitiveness in achieving these goals does not conflict with a place-based policy approach. For input competitiveness we add 'regional infrastructure and amenities' (including, for example, population density, amenity indicators such as landscape and recreational appeal) as an additional dimension of capabilities. We include an entropy index measuring the sectoral concentration of the economy, data on clusters and the distance to (national and international) markets. In total, we use 12 indicators on outcome and 42 on input competitiveness. We use principal components analysis and factor analysis and data for the NUTS 2 level to derive composite indicators. While the composite indicators for the different input dimensions (cost competitiveness, economic structure, capabilities) do not provide a measure for the fit between a region's actual economic structure and its capabilities, they do not force all input dimensions into a single composite index of inputs.

Top Regions

Among the 16 countries analysed, top NUTS 2 regions in NPO competitiveness are found in Austria, Germany, Finland, France, the Netherlands, Sweden and the UK, with Western and Northern European regions leading and Southern and Eastern regions lagging behind. The correlation between overall NPO scores and the income pillar is relatively high (also with respect to social outcomes), but is rather low between NPO and the ecological pillar. Interestingly, Southern European regions tend to rank poorly in the social pillar, while Eastern European countries rank poorly in the ecological pillar. The favourable results of Southern Europe in the ecological pillar may be aided by nature (less energy needed for heating), but are also influenced by low and decreasing shares in manufacturing. Eastern European regions score higher in social inclusion but lag behind in ecological performance; results that may reflect an inheritance from former socialist systems. With respect to changes in NPO, German and Polish regions show the largest improvements. In all countries but Greece, Spain and the UK, regions improved their scores on average between 2005 and 2011.

Comparing Results to Other Approaches

Comparing NPO to other recent indices on regional competitiveness yields some interesting differences, partly because the concepts differ and partly because the latter do not include the ecological pillar. The European Regional Competitiveness Index (RCI) places

high emphasis on labour market efficiency and social inclusion, but does not include ecological indicators. The Europe 2020 Regional Index includes all three pillars in its definition, but due to a lack of data also omits the ecological pillar in its operationalisation. Thus, in comparison to the NPO approach, these indices tend to favour Eastern European while penalizing Southern European regions.

Looking Empirically for Main Drivers

An econometric analysis of the 2005–11 period shows a catching-up of regions with lower NPO in 2005. Cost competitiveness, however, fails to significantly predict changes in NPO scores (regions with higher wages and unit labour costs are not associated with lower average growth in NPO). Capabilities are found to be a strong driver of change; specifically, education and innovation, and high institutional quality. The results also illustrate the importance of spatial interdependencies in explaining changes in regional outcome competitiveness. Additionally, regions with higher ecological ambition and social investment showed higher improvements in their NPO scores, at least within their geographical country groups. A higher actual outcome competitiveness – which measures the achievement of policy goals rather than inputs that may fit well in some but not all regions – than econometrically predicted by the individual input dimensions may serve as an indicator as to whether a region specialized or diversified in a 'smart' way.

High-Road Strategies are Feasible

An overarching policy conclusion is that outcome competitiveness as measured by Beyond GDP is difficult to achieve when adopting a 'low-road strategy' based on low costs and low social and ecological standards. On the other hand, ecological ambition and social investment seem to at least have no negative effect on competitive outcomes if combined with other growth- and performance-enhancing capabilities such as education or innovation. Strong institutions tend to improve outcome competitiveness under new perspectives. This generally supports the quest for regional and national high-road strategies. A careful design of regional policies to foster smart specialization and diversification as well as clusters based on regional strengths and in line with market growth improves national and regional competitiveness.

Further Research Needed

It is the main intention of this chapter to serve as a starting point for a discussion of regional competitiveness under the perspectives of social inclusion and environmental sustainability, and to point out fields for further research. Clearly, the present approach contains several limitations. The regional NPO index presented is a first attempt to analyse regional competitiveness under new perspectives and to illustrate its determinants. However, at this point it cannot provide a wide set of robustness checks as does the European RCI, for instance. While this NPO index intentionally ignores national factors because of a lack of information on how to break them down to the regional level, it may omit aspects of national competitiveness that also affect the regional level (see Porter, 1990). Finally, due to the high degree of spatial linkages between densely populated

nearby regions, future research should also focus on assessing outcome competitiveness in functional rather than administrative regions. This, however, requires a comprehensive database yet to be established.

If Well Defined, an Important Concept

The term 'competitiveness' is used persistently, as it is derived from notions of successful competition in markets with given costs and productivity levels (perfect competition model). At the meso and macro levels and as a basis for policy conclusions it should, however, be defined in relation to the ultimate goals of a region or nation and not motivated by the goal to outperform neighbours or far-off global competitors. It should not be focused only on costs (be it in the ordinary sense or in the enlightened version of looking at costs and productivity). In order to be able to define policy instruments for change based on strengths and weaknesses, an assessment of structure and capabilities is all important. The policy focus should be shifted from costs to capabilities – at least for medium- and high-income countries – as well as to structural aspects. At the regional level, clusters, smart specialization and diversification strategies have to be added. By implementing a definition of outcome competitiveness based on Beyond GDP goals and driven by capabilities, an old concept receives new meaning, and it becomes important for both analysis and policy, rather than producing 'dangerous' or 'misleading' statements.

NOTES

1. See Aiginger et al. (2013a) and Aiginger and Vogel (2015) for a review.
2. 'Welfare, Wealth and Work for Europe: Europe moving towards a new path of economic growth and social development'. See the project website, http://www.foreurope.eu.
3. See Peneder (2001, 2010) for a measure of structural change by 'taxonomies' of technology-driven or skill-intensive sectors.
4. The term 'capability' was introduced by Amartya Sen (1980, 1985, 1987, 1993) for a person's provided capacity to use life chances and create an own design of life. At the regional or national level capabilities point toward enablers of very different types and dimensions (Maskell and Malmberg, 1999), which – in certain combinations chosen by firms – may offer a good description of the available choices for creating and sustaining competitive advantages.
5. However, the empirical evidence on this hypothesis is mixed (Ambec et al., 2013).
6. Their inclusion also requires that we divide the so-called social and ecological indicators into one sub-set which defines drivers of competitiveness, such as the share of green innovations in patenting activities, and another sub-set which measures the outcome of competitiveness (that is, the extent to which welfare goals are attained as indicated by low poverty or emission levels in an economy).
7. In an early paper Fagerberg (1988) had put the current account goal in perspective in proposing to define competitiveness as the ability of a nation to realize important (economic) policy goals without coming into balance-of-payments difficulties. Later, the importance of external balances with respect to competitiveness declined, as fast-growing countries tended to have trade deficits; at the same time, the current accounts of member countries were seen as meaningless in a currency union. The total negligence of current accounts proved a mistake, as revealed during the financial crisis, since differences in the depth of the crisis in individual countries were found to correlate with their current account positions in the upcom-

ing period (see Aiginger, 2010; Aiginger and Guger, 2014).

8. A typical definition of outcome competitiveness is offered by the European Commission (2001, p. 15): 'the ability of an economy to provide its population with high and rising standards of living and high rates of employment on a sustainable basis'.

9. See Stiglitz et al. (2009) for the theoretical background of Beyond GDP goals, as well as the Better Life indicators by the OECD (2011, 2013a, 2014) for an operationalization.

10. A legitimate question that arises is why we do not simply speak of 'welfare analysis' and abandon the term 'competitiveness' when comparing economies. The answer has different dimensions (see Aiginger et al., 2013a). First, the notion of competitiveness (instead of welfare or living standards) engenders a focus on market processes. Second, competitiveness emphasizes the bottom-up character of welfare creation. Third, using the term 'competitiveness' to assess the contribution of firms and industries to the ultimate aims of society could help to reduce the misuse of the term in describing only cost factors (such as a call for cheap gas, even if its extraction is linked to environmental problems).

11. The same logic applies to countries within the European Monetary Union. Thus, in analysing competitiveness these countries should be regarded as regions rather than nations. See Aiginger et al. (2012), Aiginger (2013), Aiginger et al. (2013b) and Firgo and Huber (2014) for further details on this issue.

12. See Martin (2011) for a review of different concepts.

13. See David et al. (2009) and McCann and Ortega-Argilés (2013), among others.

14. For a set of potential indicators and data sources to measure regional competitiveness in outcomes and inputs, see Table 7A.1 in the Appendix.

15. As provided by the European Cluster Observatory.

16. See Barca (2009), OECD (2009a, 2009b) and Barca et al. (2012) for reports and papers on 'placed-based' policy approaches, and Hildreth and Bailey (2013) for a summary of contrasts to 'space-neutral' approaches.

17. At least for spatial distance inter-regional spillovers can be accounted for by using the spatial lags of capabilities and/or outcomes of neighbouring regions using standard spatial econometric techniques. See LeSage and Pace (2009) for details and Gibbons and Overman (2012) for a critical review.

18. See Perrons (2012) for a purely capabilities based regional development indicator for UK regions.

19. The EU 2020 objectives for the EU as a whole are an employment rate of 75 per cent (20–64-year-olds), 3 per cent of the EU's GDP to be invested in R&D, greenhouse gas emissions at 20 per cent (or even 30 per cent) below the 1990s levels, 20 per cent of total energy production from renewable energy, a 20 per cent increase in energy efficiency compared to 2005, an early school leaving rate below 10 per cent, at least 40 per cent of the population between 30 and 34 having competed third-level education, and at least 20 million people beyond risk of poverty and social inclusion.

20. The data are compiled from several different data sources, as summarized in Table 7A.1 in the Appendix. This table contains all variables grouped by the different outcome and input categories presented in Table 7.1. Table 7.A1 also indicates whether the same (or very similar) variables were used in Aiginger et al. (2013a) at the national level.

21. To determine the weights for the individual indicators in index composition, we follow the procedure proposed by the OECD (2008), which is also applied in Aiginger et al. (2013a), and use the factor loadings for each indicator resulting from the PCA factor analysis. This approach substantially reduces the complexity and dimensionality in investigating the relation between outcomes and inputs of competitiveness and allows us to identify variables that do not fit well into their assigned groups. See the working paper version of this chapter (Aiginger and Firgo, 2015) for details on this exercise.

22. As we focus on the sub-national level we exclude EU countries that consist of one NUTS 2 region only (Cyprus, Estonia, Latvia, Luxembourg, Malta). Additionally, some countries are dropped due to a lack of sufficient data on a number of variables (Bulgaria, Croatia, Cyprus, Denmark, Ireland, Romania, Slovenia). In some countries a small number of individual regions (mostly overseas regions or islands) are excluded due to insufficient data.

23. While this period may seem rather short at first glance, for many variables 2011 represents the latest year available. The year 2005 was chosen as a starting point, because it was the earliest year with sufficient data to justify the analysis at hand. A list of regions, their NUTS codes and New Perspectives Outcomes (pillar) ranks are provided in Table 7A.2 in the Appendix.

24. Equal weights across pillars and countries, however, imply that all regions and countries attach the same (equal) weight to each pillar. This may be contradicting individual regions' or countries' political preferences. The RCI 2013, for instance, addresses this issue by varying pillar group weights across country groups according to their priorities (the innovation pillar group weight increases while the 'basic' pillar group weight decrease with the level of development). Even though following an economically feasible logic, the choice of weights for different country groups still remains arbitrary. Also, the fact that national or regional political preferences may contradict some of the Beyond GDP outcomes inherent in our definition of competitiveness provides an argument for equal pillar weights for all regions. Still, the NPO approach is

flexible as the weights given to the three pillars could in general differ across countries according to their preferences or starting positions. Also, the individual pillars can be analysed and related to potential drivers of competitiveness separately, as we can calculate scores and rankings for each of the pillars.

25. The high correlation of the income pillar and total NPO scores might be interpreted in a sense that raising GDP levels is a sufficient target to reach NPO goals. However, GDP only reflects one of three indicators within the NPO income pillar. Additionally, in the working paper version of this chapter we illustrate the substantial deviations between GDP and NPO ranks throughout the sample (Aiginger and Firgo, 2015).

26. See also Ketels (2015), who notes that a general trade-off between GDP and Beyond GDP performance is not very likely, but admits that trade-offs between the three outcome pillars cannot be ruled out.

27. See the working paper version of this chapter for details (Aiginger and Firgo, 2015).

28. See, Abreu et al. (2005) for a meta-analysis and Durlauf et al. (2005) for a comprehensive survey on growth and convergence.

29. A number of empirical studies found positive effects in regional development associated with the status of being a national capital city (Crespo Cuaresma et al., 2014; Firgo and Huber, 2014) or an Objective 1 region (Cappelen et al., 2003; Esposti and Bussoletti, 2008; Becker et al., 2010, 2012).

30. In contrast to NPO, the RCI contains regional indicators as well as a number of national indicators, which may also drive some of the differences in the rankings. Further differences may also arise from the fact that the RCI does not consistently rely on NUTS 2 regions, but combines several NUTS 2 regions into 'functional economic regions' in the metropolitan regions of Amsterdam, Berlin, Brussels, London, Prague and Vienna (for this reason we assign the same RCI ranks to all NUTS 2 regions within such functional regions).

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APPENDIX

Table 7A.1   List of indicators

		Units	Source
NEW PERSPECTIVES OUTCOMES INDICATORS, INCOME PILLAR			
1	GDP per capita[1]	2005 PPP	ES
2	**Net primary household income per capita**	**2005 PPP**	**ES**
3	Net disposable household income per capita	2005 PPP	ES
NEW PERSPECTIVES OUTCOMES INDICATORS, SOCIAL PILLAR			
4	Employment gender gap (difference male–female employment rate 25–64)[2)]	Percentage points	ES
5	Youth unemployment rate (aged 15–24)*	%	ES
6	Long-term unemployment as share of total unemployment*	%	ES; ESPON
7	People at risk of poverty or social exclusion*[2]	%	ESPON
8	Employment rate in the population 25–64	%	ES
9	Unemployment rate*[1)]	%	ES
NEW PERSPECTIVES OUTCOMES INDICATORS, ECO PILLAR			
10	CO_2 intensity: CO_2 emissions from fuel combustion per € GDP (PPS)*[1]	kg/GDP PPP	ES; ESPON
11	**Population exposed to air pollution (PM2.5)***	**%**	**OECD**
12	**Composite index of environmental and natural assets (green performance) and emission of air pollutants (NOx)**	**Index (0 to 100)**	**ESPON**
COST-COMPETITIVENESS			
13	Compensation per person employed, total economy[2]	2005 euros	CE
14	Compensation per person employed, manufacturing[2]	2005 euros	CE
15	Unit labour costs (wage share), real, total economy	% of total GVA	CE
16	Unit labour costs (wage share), real, manufacturing	% of sectoral GVA	CE
ECONOMIC STRUCTURE			
17	**Share of employment in high technology sectors (high-tech manufacturing and high-tech knowledge-intensive services services)**	**% of total employment**	**ES**
18	**Share of employment in knowledge-intensive services**	**% of total employment**	**ES**
19	**Financial and business services share in employment**	**% of total employment**	**CE**
20	**Entropy of sectoral employment (Shannon Index on sectoral variety based on 6 sectors)***	**Index (0 to 1.79)**	**CE**
21	*Manufacturing share in employment*	*% of total employment*	*CE*
22	*Share of employment in high- and medium-high-technology manufacturing[2]*	*% of total employment*	*ES*
CAPABILITIES: INNOVATION AND EDUCATION			
23	**Share of active population in science and technology**	**% of age group**	**ES**
24	Share of population 25–64 with tertiary education (ISCED 5–6)	% of age group	ES

Table 7A.1   (continued)

		Units	Source
25	Participation rate in education and training (last 4 weeks; pop. age 25–64)[1]	% of age group	ES
26	**Share of young people (15–24-year-olds) neither in employment nor in education or training***[1]	**% of age group**	**ES**
27	Share of women among students in ISCED 5–6	%	ES
28	**Share of creative workforce in active population**	**% of age group**	**ESPON**
29	R&D expenditures (private and public) share in GDP[1]	%	ES
30	**Share of employment in creative industries clusters**[1]	**% of total employment**	**ECO**
31	**Share of employment in knowledge-intensive business clusters**[1]	**% of total employment**	**ECO**
32	Patent applications to the European Patent Office[2]	No./GDP PPP	ES
33	*Share of early leavers from education and training among 18–24-year-olds**[1]	*% of age group*	*ES*
34	*Share of employment in life science clusters*[2]	*% of total employment*	*ECO*
	CAPABILITIES: SOCIAL SYSTEM		
35	**Age dependency ratio (population >75 to population 15–64)***	**%**	**ES**
36	**Infant mortality rate***[1]	**%**	**ES**
37	**Physician and doctors**[1]	**No./100 000 inh.**	**ESPON**
38	*Female labour force participation rate (age group 25–64)*[3]	*% of age group*	*ES*
39	*Life expectancy at birth*	*Years*	*ES*
	Capabilities: Regional Institutions		
40	**Share of voters in general elections**	**%**	**OECD**
41	**Regional Quality of Government Index**	**Index (−3 to +3)**	**Charron et al. (2013, 2014, 2015)**
42	**Distance to markets (average distance to other regions in the sample)***[1]	**Euclidean distance (km)**	**ES; OC**
43	*Distance to capital city region**	*Euclidean distance (km)*	*ES; OC*
44	*Objective 1 region (2000–2006 and/or 2007–13 period)*	*0/1 Dummy*	*European Commission*
	CAPABILITIES: REGIONAL INFRASTRUCTURE AND AMENITIES		
45	**Population density**[1]	**1000 inh./km²**	**ES**
46	**Ability of landscapes to provide shelter and safe transportation**	**Index (100 to 550)**	**Kienast et al. (2009)**
47	**Benefits related to non-recreational appeal of landscape**	**Index (100 to 550)**	**Kienast et al. (2009)**
48	**Landscape services from landscapes with touristic or recreational value**	**Index (100 to 550)**	**Kienast et al. (2009)**
49	*Capital city region*	*0/1 Dummy*	*OC*

Table 7A.1   (continued)

	Units	Source
CAPABILITIES: ECOLOGICAL		
50 Share of employment in industries with high energy purchases in total industrial employment*[1]	**%**	**ESPON**
51 Number of green patents[2]	**Applications/inh.**	**ESPON**
52 Influence of land cover and biologically mediated processes (e.g., GHS production) on climate	**Index (100 to 550)**	**Kienast et al. (2009)**
53 Suitable living space and reproduction habitat for wild plants and animals to maintain biological and genetic diversity	**Index (100 to 550)**	**Kienast et al. (2009)**
54 Role of ecosystems in bio-geochemical cycles (e.g., CO_2/O_2 balance, N and P balance, etc.)	*Index (100 to 550)*	*Kienast et al. (2009)*

Notes:
Indicators in bold indicate that (similar) indicators were not used at the national level in Aiginger et al. (2013a).
Indicators in italics are dropped following principal components analysis and factor analysis.
CE = Cambridge Econometrics (2015 release), ECO = European Cluster Observatory, ES = Eurostat, GHS = Globally Harmonized System of Classification and Labelling of Chemicals, OC = Own calculations.
CO_2 = carbon dioxide, O_2 = oxygen; N = nitrogen, P = phosphorus.
All variables normalized to zero mean and unit variance.
* Sign of indicator reversed so less negative value indicates better performance.
Variable transformed to: [1] logs, [2] square roots, [3] squares before normalization to ensure skewness <1.

Table 7A.2   Regions, NUTS codes and sample ranks

Code	NUTS 2 region	NPO	INCOME	SOCIAL	ECO	RCI 2013	EU 2020
AT11	Burgenland	55	66	30	121	112	125
AT12	Niederösterreich	56	33	17	178	78	95
AT13	Wien	40	14	85	133	78	87
AT21	Kärnten	43	57	19	124	124	52
AT22	Steiermark	37	50	6	141	110	45
AT31	Oberösterreich	29	29	8	129	106	54
AT32	Salzburg	10	15	1	86	111	96
AT33	Tirol	4	35	3	11	113	43
AT34	Vorarlberg	26	18	26	119	108	109
BE10	Région de Bruxelles-Capitale	125	39	205	76	16	205
BE21	Prov. Antwerpen	100	41	100	170	24	42
BE22	Prov. Limburg (BE)	124	79	59	194	39	94
BE23	Prov. Oost-Vlaanderen	86	46	22	201	30	37
BE24	Prov. Vlaams-Brabant	44	11	31	185	16	6
BE25	Prov. West-Vlaanderen	59	62	10	161	49	73
BE31	Prov. Brabant Wallon	96	25	128	154	16	59
BE32	Prov. Hainaut	185	151	191	206	107	178
BE33	Prov. Liège	168	128	172	191	83	157
BE34	Prov. Luxembourg (BE)	149	123	129	174	122	160
BE35	Prov. Namur	159	112	147	184	90	152
CZ01	Praha	97	88	29	157	97	17
CZ02	Strední Cechy	184	181	92	222	97	102
CZ03	Jihozápad	170	197	93	166	161	108
CZ04	Severozápad	219	209	176	226	175	182
CZ05	Severovýchod	181	204	116	197	160	127
CZ06	Jihovýchod	178	195	135	186	163	84
CZ07	Strední Morava	191	206	133	212	174	136
CZ08	Moravskoslezsko	197	202	158	220	171	143
DE11	Stuttgart	20	5	20	143	25	8
DE12	Karlsruhe	24	8	38	122	22	11
DE13	Freiburg	15	20	4	84	36	21
DE14	Tübingen	8	10	5	67	34	10
DE21	Oberbayern	3	2	2	68	19	5
DE22	Niederbayern	14	24	9	50	91	33
DE23	Oberpfalz	16	26	16	44	65	14
DE24	Oberfranken	19	27	23	52	69	56
DE25	Mittelfranken	12	7	14	71	32	19
DE26	Unterfranken	21	19	12	90	52	46
DE27	Schwaben	9	13	15	42	59	88
DE30	Berlin	120	81	99	156	46	41
DE40	Brandenburg	143	105	52	215	46	79
DE50	Bremen	38	16	79	126	42	65
DE60	Hamburg	6	4	37	59	15	47
DE71	Darmstadt	17	6	44	100	11	12
DE72	Gießen	39	49	53	88	37	50

Table 7A.2　(continued)

Code	NUTS 2 region	NPO	INCOME	SOCIAL	ECO	RCI 2013	EU 2020
DE73	Kassel	82	60	40	173	74	71
DE80	Mecklenburg-Vorpommern	114	139	90	105	119	77
DE91	Braunschweig	54	47	83	97	63	31
DE92	Hannover	51	44	80	99	55	64
DE93	Lüneburg	61	63	51	128	89	130
DE94	Weser-Ems	52	68	41	101	95	126
DEA1	Düsseldorf	76	17	102	169	27	93
DEA2	Köln	85	23	89	180	23	34
DEA3	Münster	101	52	76	183	45	113
DEA4	Detmold	42	28	66	123	64	86
DEA5	Arnsberg	102	40	106	175	50	123
DEB1	Koblenz	31	34	46	92	52	128
DEB2	Trier	34	37	34	125	67	89
DEB3	Rheinhessen-Pfalz	33	22	60	115	35	35
DEC0	Saarland	113	55	96	187	84	118
DED2	Dresden	99	120	58	113	80	7
DED4	Chemnitz	106	125	70	116	93	61
DED5	Leipzig	146	119	107	189	81	32
DEE0	Sachsen-Anhalt	137	135	97	167	99	103
DEF0	Schleswig-Holstein	36	48	55	81	87	92
DEG0	Thüringen	89	130	50	91	86	53
EL11	Anatoliki Makedonia, Thraki	222	211	224	176	226	223
EL12	Kentriki Makedonia	217	193	225	181	218	203
EL13	Dytiki Makedonia	229	178	227	229	228	214
EL14	Thessalia	216	201	215	190	222	208
EL21	Ipeiros	202	200	216	130	221	206
EL22	Ionia Nisia	165	180	188	32	223	210
EL23	Dytiki Ellada	205	205	219	131	224	212
EL24	Sterea Ellada	218	184	220	203	229	222
EL25	Peloponnisos	213	191	208	208	225	213
EL30	Attiki	174	133	209	139	169	184
EL41	Voreio Aigaio	188	185	218	38	220	209
EL42	Notio Aigaio	158	162	206	12	227	211
EL43	Kriti	182	199	201	73	219	200
ES11	Galicia	163	160	190	77	177	177
ES12	Principado de Asturias	175	146	203	162	164	193
ES13	Cantabria	150	147	193	43	159	159
ES21	País Vasco	58	42	174	18	105	67
ES22	Comunidad Foral de Navarra	74	51	153	53	131	69
ES23	La Rioja	144	108	199	58	165	167
ES24	Aragón	162	96	192	148	167	165
ES30	Comunidad de Madrid	104	56	186	35	62	106
ES41	Castilla y León	172	142	200	160	178	171
ES42	Castilla-La Mancha	198	175	214	168	196	215

Table 7A.2   (continued)

Code	NUTS 2 region	NPO	INCOME	SOCIAL	ECO	RCI 2013	EU 2020
ES43	Extremadura	190	190	222	26	210	220
ES51	Cataluña	136	80	197	74	142	153
ES52	Comunidad Valenciana	176	167	212	72	166	201
ES53	Illes Balears	134	138	196	16	183	202
ES61	Andalucía	194	182	226	83	194	219
ES62	Región de Murcia	189	176	213	103	176	218
FI18	Etelä-Suomi	35	70	36	56	26	15
FI19	Länsi-Suomi	62	131	63	29	70	9
FI1D	Pohjois- ja Itä-Suomi	72	150	61	28	92	39
FR10	Ile de France	13	3	111	37	11	18
FR21	Champagne-Ardenne	127	104	151	110	153	135
FR22	Picardie	129	116	146	117	123	134
FR23	Haute-Normandie	131	85	141	147	129	100
FR24	Centre	79	83	113	62	133	70
FR25	Basse-Normandie	95	115	119	36	149	105
FR26	Bourgogne	105	92	123	79	157	115
FR30	Nord-Pas-de-Calais	167	136	185	153	126	149
FR41	Lorraine	140	127	140	142	135	114
FR42	Alsace	121	77	110	158	94	55
FR43	Franche-Comté	110	106	104	108	138	44
FR51	Pays de la Loire	75	91	112	46	132	83
FR52	Bretagne	41	98	57	22	121	60
FR53	Poitou-Charentes	83	111	109	39	149	116
FR61	Aquitaine	77	86	121	40	137	82
FR62	Midi-Pyrénées	65	87	105	45	118	13
FR63	Limousin	67	118	82	41	148	111
FR71	Rhône-Alpes	64	65	115	70	103	25
FR72	Auvergne	126	97	122	138	154	66
FR81	Languedoc-Roussillon	133	137	178	49	152	120
FR82	Provence-Alpes-Côte d'Azur	111	73	149	93	125	97
HU10	Közép-Magyarország	179	170	159	213	144	138
HU21	Közép-Dunántúl	203	215	163	211	187	191
HU22	Nyugat-Dunántúl	183	213	139	163	184	188
HU23	Dél-Dunántúl	215	225	184	193	207	204
HU31	Eszak-Magyarország	228	229	204	224	206	225
HU32	Eszak-Alföld	224	228	198	199	214	217
HU33	Dél-Alföld	210	226	180	179	208	207
ITC1	Piemonte	147	64	160	195	151	140
ITC2	Valle d'Aosta/Vallée d'Aoste	50	30	95	106	173	172
ITC3	Liguria	122	72	143	135	146	161
ITC4	Lombardia	138	32	142	218	128	150
ITF1	Abruzzo	160	158	189	64	182	198
ITF2	Molise	173	166	207	111	193	216
ITF3	Campania	220	194	229	164	205	226

Table 7A.2 (continued)

Code	NUTS 2 region	NPO	INCOME	SOCIAL	ECO	RCI 2013	EU 2020
ITF4	Puglia	201	183	223	132	215	228
ITF5	Basilicata	187	179	217	55	211	224
ITF6	Calabria	200	192	221	114	216	227
ITG1	Sicilia	208	189	228	127	217	229
ITG2	Sardegna	180	172	211	102	209	221
ITH1	Provincia Autonoma di Bolzano/Bozen	7	9	24	33	168	137
ITH2	Provincia Autonoma di Trento	53	59	77	82	145	110
ITH3	Veneto	157	61	134	221	156	156
ITH4	Friuli-Venezia Giulia	118	58	124	165	155	145
ITH5	Emilia-Romagna	87	36	117	146	141	121
ITI1	Toscana	112	74	161	80	158	170
ITI2	Umbria	119	121	156	51	162	166
ITI3	Marche	73	89	150	13	172	174
ITI4	Lazio	135	67	195	104	143	176
NL11	Groningen	47	93	67	25	38	49
NL12	Friesland (NL)	81	140	45	65	61	78
NL13	Drenthe	80	141	48	61	52	91
NL21	Overijssel	66	129	25	94	33	30
NL22	Gelderland	91	102	27	140	20	16
NL23	Flevoland	139	122	33	216	9	48
NL31	Utrecht	27	38	7	118	1	22
NL32	Noord-Holland	48	53	21	136	9	29
NL33	Zuid-Holland	88	69	47	150	13	28
NL34	Zeeland	123	100	28	198	40	124
NL41	Noord-Brabant	70	78	18	144	14	38
NL42	Limburg (NL)	108	110	42	149	21	62
PL11	Lódzkie	223	212	155	228	189	151
PL12	Mazowieckie	166	149	127	200	147	99
PL21	Malopolskie	207	216	157	219	179	144
PL22	Slaskie	212	186	173	225	170	169
PL31	Lubelskie	214	224	170	209	195	185
PL32	Podkarpackie	221	227	181	214	202	189
PL33	Swietokrzyskie	226	221	187	223	201	194
PL34	Podlaskie	199	223	148	192	200	183
PL41	Wielkopolskie	192	198	168	202	199	173
PL42	Zachodniopomorskie	209	214	194	196	198	197
PL43	Lubuskie	196	217	165	182	197	190
PL51	Dolnoslaskie	193	196	171	210	185	180
PL52	Opolskie	225	220	164	227	189	186
PL61	Kujawsko-Pomorskie	211	218	183	205	203	187
PL62	Warminsko-Mazurskie	204	222	179	172	212	192
PL63	Pomorskie	186	210	162	145	188	164
PT11	Norte	171	207	177	60	181	179
PT15	Algarve	155	174	167	48	191	196

Table 7A.2   (continued)

Code	NUTS 2 region	NPO	INCOME	SOCIAL	ECO	RCI 2013	EU 2020
PT16	Centro (PT)	169	203	144	89	180	175
PT17	Lisboa	98	113	154	17	127	141
PT18	Alentejo	177	188	169	151	192	199
SE11	Stockholm	1	12	11	1	7	1
SE12	Ostra Mellansverige	28	95	74	3	57	1
SE21	Småland med öarna	22	99	32	4	102	72
SE22	Sydsverige	45	101	78	10	31	1
SE23	Västsverige	18	76	39	8	44	1
SE31	Norra Mellansverige	30	124	56	7	120	74
SE32	Mellersta Norrland	32	107	73	9	116	81
SE33	Ovre Norrland	11	90	13	2	104	20
SK01	Bratislavský kraj	90	43	65	177	82	58
SK02	Západné Slovensko	195	187	182	207	186	168
SK03	Stredné Slovensko	206	208	202	188	204	181
SK04	Východné Slovensko	227	219	210	217	212	195
UKC1	Tees Valley and Durham	156	173	138	107	114	158
UKC2	Northumberland and Tyne and Wear	117	159	98	54	109	132
UKD1	Cumbria	78	143	54	47	136	148
UKD3	Greater Manchester	132	155	120	95	50	131
UKD4	Lancashire	142	164	68	155	76	119
UKD6	Cheshire	69	75	88	87	77	36
UKD7	Merseyside	148	161	145	98	116	133
UKE1	East Yorkshire and Northern Lincolnshire	164	165	125	171	115	162
UKE2	North Yorkshire	145	103	91	204	58	80
UKE3	South Yorkshire	154	171	152	78	88	142
UKE4	West Yorkshire	130	153	131	69	72	147
UKF1	Derbyshire and Nottinghamshire	151	156	130	137	56	76
UKF2	Leicestershire, Rutland and Northamptonshire	128	134	114	134	43	101
UKF3	Lincolnshire	141	157	86	152	100	146
UKG1	Herefordshire, Worcestershire and Warwickshire	84	114	87	63	48	57
UKG2	Shropshire and Staffordshire	153	154	108	159	75	139
UKG3	West Midlands	152	169	175	34	85	155
UKH1	East Anglia	93	126	71	75	59	51
UKH2	Bedfordshire and Hertfordshire	60	54	94	96	2	26
UKH3	Essex	107	94	103	112	2	75
UKI1	Inner London	2	1	166	6	2	117
UKI2	Outer London	94	71	137	66	2	122

Table 7A.2   (continued)

Code	NUTS 2 region	NPO	INCOME	SOCIAL	ECO	RCI 2013	EU 2020
UKJ1	Berkshire, Buckinghamshire and Oxfordshire	23	21	49	57	6	27
UKJ2	Surrey, East and West Sussex	25	45	62	27	8	68
UKJ3	Hampshire and Isle of Wight	49	84	64	31	28	24
UKJ4	Kent	71	117	126	14	41	63
UKK1	Gloucestershire, Wiltshire and Bristol/Bath area	46	82	81	23	29	40
UKK2	Dorset and Somerset	63	132	84	24	73	104
UKK3	Cornwall and Isles of Scilly	109	168	101	19	134	154
UKK4	Devon	68	152	69	21	96	90
UKL1	West Wales and The Valleys	161	177	132	120	130	163
UKL2	East Wales	115	148	72	109	66	98
UKM2	Eastern Scotland	92	109	75	85	71	85
UKM3	South Western Scotland	103	145	136	15	101	112
UKM5	North Eastern Scotland	5	31	35	5	68	23
UKM6	Highlands and Islands	57	144	43	20	139	129
UKN0	Northern Ireland	116	163	118	30	140	107

Notes: EU 2020 and RCI ranks correspond to the present sample of 229 regions and thus deviate from the original rankings. EU 2020 sample ranks with respect to EU-wide targets for the reference year 2011 based on data provided by Lewis Dijkstra in July 2015.