Competitiveness Review

Competitiveness: from a misleading concept to a strategy supporting Beyond GDP goals

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Competitiveness: from a misleading concept to a strategy supporting Beyond GDP goals

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Abstract

Purpose – This paper aims to show how the term competitiveness has been applied and adapted since Michael Porter made it respectable in economics, strategic management and consulting. This paper connects the concept with new developments in the theory of the firm, theories of growth and, finally, with Beyond GDP literature.

Design/methodology/approach – This paper distinguishes between input and output competitiveness, developing a set of indictors for both. Countries are ranked according to costs, structure and capabilities (drivers of competitiveness) as well as according to economic, social and ecological performance (performance pillars). Finally, outcome competitiveness is explained by the individual drivers, using econometrics and principal component analyses.

Practical implications – Defining competitiveness as the ability of a country or nation to deliver Beyond GDP goals changes the policy conclusions drawn from the quest for competitiveness. Policies to reduce costs prove inferior relative to "high-road strategies" built on skills, innovation and supporting institutions. Ecological ambition and social investment are not costs, but enablers of competitiveness for high-income countries.

Originality/value – Connecting the well-known term competitiveness with Beyond GDP goals is a new approach. It is very different from the old concept of cost competitiveness criticized heavily by Paul Krugman. Supplying a set of indicators to measure "low-road" and "high-road" competitiveness leads to important new policy conclusions.

Keywords Capabilities, Beyond GDP goals, Competitiveness of nations, Regions, Firms, Country rankings

Paper type Research paper

1. Objective and outline

The competitiveness of nations or regions is an amorphous and evasive concept. The term is usually not well-defined, neither derived from nor often even related to economic theory[1]. However, it is used persistently by politicians, economists, business people and the media.

This article has three purposes. The first is to show how the term has been applied and adapted, specifically after Michael Porter made it respectable in economics,

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strategic management and consulting. It became a cornerstone of economic analyses, as well as political advice, and it has survived the harsh critique by Paul Krugman (1994a, 1994b) as dangerous, obsessive, elusive and meaningless. We will show how it developed from an input-oriented concept to a comprehensive evaluation of outcomes. Second, we try to improve the value of the concept:

- For input competitiveness, we connect the drivers of competitiveness with developments in the theory of the firm, strategic management, economic growth theory emphasizing innovation, skills and imperfect markets and the role of institutions. We distinguish three drivers of input competitiveness (costs, structure and capabilities). And it is now well understood in theoretical models that, for firms, regions and nations, there may be multiple optimal strategies (and equilibria), some of which reflect a "low-road path", others a "high-road path" to competitiveness. Low-road strategies are closely connected with costs, high-road strategies with capabilities.
- For the outcome evaluation, we anchor the concept to Beyond GDP goals (including the distribution of incomes and ecological sustainability). Given the shift from GDP to Beyond GDP as a benchmark for national performance, we call this a "new perspective outcome", in contrast to the traditional outcome evaluation referring only to narrow economic indicators such as GDP growth, employment and current accounts.
- These two innovations lead to policy conclusions very different from those declared "dangerous" by Krugman (1994a) and as not "having much meaning for economic prosperity" by Porter (1990). It encompasses the "Porter hypothesis" for the environment, which states that sophisticated consumers and ecological ambitions may create first mover advantages and thus be advantageous, even from the purely economic or business perspective.

Third, we bridge the gap from theoretical reasoning to empirical analysis by developing a data set to measure both the drivers of competitiveness and outcomes (from the old and new perspectives). We compare European countries according to their positions in the two outcome perspectives and add a short application of the concept to EU vs USA competitiveness.

In the final analytical part, we provide a short overview of existing econometric work. We relate outcomes to drivers in a panel analysis for our data set to quantitatively pin down the role of specific drivers of competitiveness in a literature often dominated by qualitative analysis. We then conclude.

2. Competitiveness, from the past to the future

2.1 From price to quality competitiveness

2.1.1 Price competitiveness in the narrow sense. Historically, the term competitiveness has been primarily used to draw attention to the cost position of firms or countries. It is still often used today when an economy (or a firm or industry) is challenged by new low-cost competitors. It is this narrow focus on costs that has been criticised by many authors. It implies that cost reduction is the only effective policy response. Krugman is correct insofar as complaints about losing competitiveness suggest wage cuts as the "logical" response (a reaction later extended to high energy prices and taxes). To some degree, this preoccupation with costs comes from the origin of the concept of

competitiveness at the level of the firm. The model of perfect competition assumes homogeneous firms and zero economic profits. Therefore, any firm which has higher average costs than its competitors has to exit. However, the theory of the firm and management theory both emphasise that success at the firm level in oligopolistic markets depends on product differentiation, "competitive advantage" and capabilities generated by innovation (Aiginger, 2006). Firm strategies, human resource management, clusters and a favourable business environment can help "sustain" specific advantages not based on low costs for a long time.

2.1.2 Enlightened version and productivity focus. Absolute cost levels determine neither the survival of firms nor the performance of an economy; instead, costs have to be set in relation to productivity. The profitability of firms and the ability of an industry to sell internationally are not limited by costs if productivity is also high (and/or high prices can be charged). Profit margins are positive if the productivity lead of a firm or region is larger than the cost disadvantage. These "relative costs" are summarised in the concept of unit labour costs. On the practical side, it is sometimes not easy to find data for the *absolute* level of productivity (per capita or per hour) and the wage level in a consistent way[2]. Monitoring *changes* in unit labour costs is much more common and easy, although it also involves a number of statistical issues[3].

The role of productivity is sometimes emphasised to the extent that authors consider productivity as the only meaningful concept of competitiveness (Porter, 1990; Kohler, 2006). The minor shortcoming of this perspective is that it may de-emphasise costs too much; the major problem is that it distracts from quality components and from the ultimate drivers of competitiveness.

Furthermore, concepts of cost competitiveness in the narrow sense (costs only) or in the more balanced approach (looking at costs and productivity simultaneously) are complicated when all cost components (labour, capital, energy and taxes) or all productivity components (labour productivity, capital productivity, resource productivity and government efficiency) are addressed. These extensions are usually implemented in cost benchmark studies, which look at individual cost components sequentially, or in studies on total factor productivity (TFP), which use a production function approach[4].

A consensus has been emerging that competitiveness is more than just an accounting result, which compares costs and revenues at a point in time. A broader interpretation of the term evaluates the sources of competitiveness of firms and countries as well as their future prospects. This involves examining the markets on which firms compete, processes that lead to a favourable cost or productivity position and the opportunities to sustain it. In this sense, competitiveness is about structure, processes and abilities[5]. In the literature, terms like "quality competitiveness" or "technological competitiveness" are used to describe this broader interpretation (Fagerberg, 1988; Aiginger, 1987, 1997, 2000; Oughton, 1997).

2.2 Quality competitiveness: from structure to capabilities

2.2.1 Quality competitiveness mark 1: structure. The structural composition of the manufacturing sector can be analysed by breaking down value-added or exports:

- by the main input used in an industry (differentiating, for example, between labour-intensive and technology-intensive industries);
- by the sophistication of inputs (e.g. low-skilled or high-skilled labour);

- by the extent and characteristics of services used/provided (transport services vs knowledge input); and
- according to whether competition mainly takes place along the price or the quality dimension (Aiginger, 1997, 2000).

Other papers analyse the share of production and exports in: innovation-intensive or education-intensive sectors. To relate the analyses to broader goals, including ecological sustainability, the large European Research Programme WWWforEurope[6] measures the share of ecological and renewables' industries as an indicator on a sophisticated structure of economy[7].

2.2.2 Quality competitiveness mark 2: technology, sophisticated markets and products. The contribution of technology to competitiveness started indirectly with its impact on productivity, but then became a separate issue in the competitiveness literature under the term "technological competitiveness" (Fagerberg, 1994; Grupp, 1995). It has been investigated and reported whether countries have a strong technological base and supportive universities or whether they have a high-tech focus. In the case of the absence of internationally comparable indicators, proxies have been used, such as the share of exports to countries with a high per capita GDP. Technology has been measured by inputs (research intensity) or outputs. "Unit values"[8] of production have been calculated or, if these were not available, unit values of exports have been analysed. Relative unit values (of exports vs. imports) as well as indicators on revealed comparative advantage (RCA values)[9] complemented the analysis of quality competitiveness. Aiginger (1997) developed a method to calculate whether countries were specialized in the upper segment of a market and whether an industry was dominated by price competition (if countries with low prices had an export surplus) or by quality competitions (if higher unit values in exports relative to imports led to an export surplus).

2.2.3 Quality competitiveness mark 3: capabilities (including new perspectives). Aiginger *et al.* (2013) in their study for the large European research program WWWforEurope, look for drivers of growth on the firm as well as the aggregate level ("capabilities"). Growth theory asserts that education, innovation and supportive institutions (Acemoglu, 2003; Rodrik *et al.*, 2004; Bouis *et al.*, 2011) are decisive for the economic growth of countries. Oligopoly theory and Strategic Management states that skills, innovative firms, competitive advantages, unique selling propositions and, finally, internal "innovation machines" which continuously create new innovations are important to sustaining a competitive advantage. Since WWWforEurope is interested in competitiveness along a new growth path (placing high priority on social and ecological outcomes) this project searches for indicators that make performance in these directions more likely. Social investment and ecological ambition, both at the firm and the national level, are drivers of success for social and ecological outcomes.

2.2.4 Dividing indicators into enablers and outcomes. Allocating indicators on the social and ecological systems to either drivers of competitiveness or outcomes is difficult and an innovative feature of our approach. In early competitiveness rankings, social expenditures and environmental standards were regarded as costs that diminished the price competitiveness of countries and locations. In the meantime, the literature has developed the distinction that some policies in the social system are "productive forces" or a "social investment", while others are costs. Porter (1990) and Porter and van der

Linde (1995) argue that sophisticated consumers can create first-mover advantages. This finally leads to green jobs and opens export potential.

We should therefore distinguish between "enablers" and results. Some social policies like education and training, lifelong learning and childcare institutions will increase capabilities and productivity. These measures are summarised under the headings of activating social policy or "social investment" (Hemerijck, 2012a, 2012b; Leoni, 2015). On the other hand, social expenditures like unemployment benefits and pensions change the *ex post* distribution of incomes aimed at reducing poverty and income spreads. Their purpose is not to increase an economy's productive capacity[10].

Similarly, some indicators on ecological sustainability may be seen as representing a productive force. Examples include incentives for renewable energies fostering innovation and technical progress or consumers' preferences for recycling or organic food: see also Porter's analysis in which "sophisticated" consumers enhance competitiveness (Porter, 1990; Porter and van der Linde, 1995). Other environmental expenditures could be counted on the cost side, such as expenditures on the noise insulation of motorways, pollution removal and reconstruction after environmental disasters. These are corrective measures that restore environmental quality, thus improving welfare, albeit at a rather high cost, and reducing production.

To summarise, it makes sense to include an activating social policy and an ambitious ecological strategy as drivers of outcome competitiveness under the perspective of an inclusive and sustainable growth path. Together with the more traditional drivers like innovation, training and institutions (Aiginger *et al.*, 2013), there are five capabilities plus a business environment characterised by clusters[11] which drive outcome competitiveness in the long run (Figure 1).

2.3 From inputs to results: traditional outcome competitiveness

Competitiveness should not be assessed by looking at proper inputs (costs and productivity) or inputs in a broader sense (structure and capabilities). Rather, the evaluation should be complemented by assessing outcomes ("the proof of the pudding is

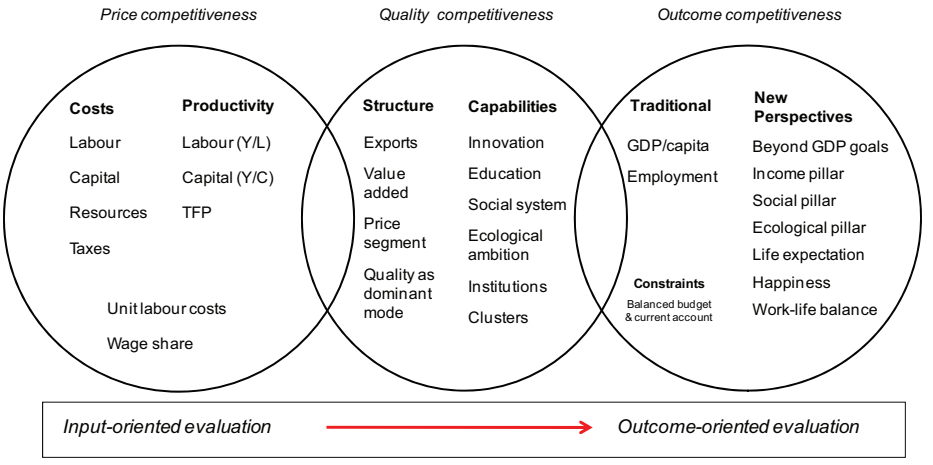

Figure 1.
Towards a concept of competitiveness under new perspectives

in the eating"). In the first step, we primarily consider economic goals to assess outcome competitiveness.

Among these, in the literature, trade or current account balances previously dominated, with deficit countries judged as having "lost competitiveness". The importance of the external-balance benchmark has subsequently been downgraded: on the one hand, fast-growing countries tend to have trade deficits; on the other hand, the current accounts of member countries are seen as meaningless in the European Currency Union, where no currency reserves are necessary to compensate deficits and there is no national currency that can be devalued[12].

The next step was to measure output competitiveness with per capita GDP and its growth; employment and unemployment indicators were then added to the analysis. Aiginger (1998, 2006) defines evaluations of per capita GDP as "operationalisation one" of output competitiveness, and evaluating GDP and employment jointly as "operationalisation two". Going further on this path, most assessments of competitiveness of countries by international agencies and think-tanks connected competitiveness to the concept of welfare and then used a set of two or more mainly economic indicators to make it operational (European Commission, 1998, 2001; OECD, 1995).

2.4 From economic indicators to the perspective of a new growth path

Given the critique of GDP as an all-important indicator for welfare and the evidence of the declining marginal utility of incomes with rising per capita income, it makes sense to complement narrow economic indicators with indicators on non-economic goals. In the context of a transition to a more socially inclusive and environmentally sustainable path, indicators on social inclusion and sustainability are particularly important. This is done using the Beyond GDP approach, as operationalised in the Better Life indicators of the OECD[13]. An additional advantage of these indicators is that they are based on a comprehensive analysis provided by Stiglitz *et al.* (2009).

3. Competitiveness as ability to deliver Beyond GDP goals

Using this new consensus, competitiveness can be defined as the "ability of a country (region, location) to deliver the Beyond GDP goals for its citizens today and tomorrow" (Aiginger *et al.*, 2013).

The definition input side involves important choices. Defining competitiveness as an ability to create welfare in general and deliver the Beyond GDP goals in particular shifts the focus away from the emphasis on costs as a main driver of competitiveness and from external balances as a main indicator of success. A low-cost position derived from currency devaluations, cost-cutting and beggar-thy-neighbour policies are, in this view, ineffective tools for raising the long-run competitiveness of an industrialised country. Problems may arise when costs are too high relative to productivity, while, when they are broadly in line – and the current account is balanced – further cost-cutting is indeed a misleading strategy for rich countries. Reducing social expenditures and environmental ambitions, together with other elements of a "low road" to competitiveness, is counter-productive in general and specifically for the transition of countries to a new growth path.

Productivity is an important element of competitiveness, but higher labour productivity loses its singular relevance if the growth path becomes more inclusive and

sustainable. Higher resource productivity may be more important to welfare if sustainability is among the goals; higher labour productivity is less advantageous if unemployment is high and higher output growth is connected with higher emissions (in other words, if there is no "absolute decoupling" of output from material and energy input).

Economic structure is crucial to assessing competitiveness, as it offers an outlook on future prospects. These are better if an economy has a high share of sectors with higher "income" elasticity. A country's capabilities (innovation and education system etc.) determine its welfare position today, but even more so in future. Emphasising structure and capabilities changes the nature of competitiveness from an *ex post* evaluation to an *ex ante* concept and a shift towards determinants specifically important for the growth of industrialised countries (and if social investment and ecological ambition is included in the set of capabilities, also for sustainability[14].

3.1 Relation to theory

The drivers of competitiveness used along with the outcome benchmarks proposal are founded in or at least related to theory.

Costs and productivity are all-important in perfect competition. Market structure, horizontal and vertical product differentiation and quality are necessary to explain international trade. Unique Selling Propositions define the competitive advantage in strategic management, while business environments and institutions help to sustain it. Innovation, skills and institutions explain the dynamics of industrialized countries in growth theory, while social activation and environmental ambition are features of a high-road strategy (Aiginger, 2012) and the transition to a new growth path, which tries to turn possible trade-offs into synergies by designing a consistent long-run strategy.

Connecting firm performance to Beyond GDP goals is related to the idea of shared value (Porter and Kramer, 2006) which states that the competitiveness of a company and the health of the communities around it are mutually dependent. Recognising and capitalising on these connections between societal and economic progress according to this concept may unleash a new wave of global growth and redefine capitalism.

Turning to the outcome side, consumer theory asserts that consumption depends on disposable income (the indicator substituting GDP in the Beyond GDP world). Welfare depends on a bundle of material and intangible goods, where employment, fairness of distribution, health, and justice are important. The questions of which goals to include in the welfare function, which weights to give these goals and whether to emphasise static or dynamic aspects are left open. The operationalisation of the welfare concept using "Beyond GDP" indicators circumvents the clumsy attempts to construct a new set of "competitiveness indicators", as done in several competitiveness rankings. Emphasising that there are three pillars: an economic, a social and an ecological one – and giving them approximately equal weights – stands in line with the WWWforEurope project, the Europe 2020 Strategy and the NAEC approach of the OECD[15], which all stress these three pillars.

3.2 Why not substitute competitiveness with welfare to begin with?

Defining competitiveness as the ability to deliver on Beyond GDP goals is certainly unusual from the point of view of the firm or industry, and it also departs from popular usage in policy discussions. With the definition proposed by WWWforEurope, the term

competitiveness arrives at the country level. A legitimate question that may arise is why we do not simply talk of "welfare analysis" (D'Aspremont and Gevers, 2002) and abandon the term competitiveness altogether when comparing economies.

The answer to this question has various dimensions:

- First, the notion of competitiveness (instead of welfare or living standards) engenders a focus on market processes, which is particularly relevant for open economies exposed to international competition. Welfare, on the other hand, tends to be regarded as a policy goal to be delivered by the public sector, and it is intrinsically associated with public support and redistribution.
- Second, competitiveness emphasises the bottom-up character of the welfare creation. Ultimately, outcomes stem from firms and industries that compete successfully in a specific business environment and generate jobs and income.
- Third, using the term competitiveness to assess the contribution of firms and industries to the ultimate aims of society could help reduce the misuse of the term to describe only cost factors. A case in point are claims that Europe loses competitiveness if taxes on energy or emissions are implemented, without taking into account that standards and ambitions enhance long-term welfare by fostering innovation and mitigating climate change.

3.3 Relation to competitiveness rankings

A large and rapidly expanding number of competitiveness rankings are available today[16]. They use a multitude of indicators – partly hard data, partly survey results – to assess the competitiveness of countries. This has the advantage of measuring a wide range of economic aspects, which potentially reduces measurement error and makes it easier to cope with the complexity of the problem, such as differences in countries' starting positions and socio-economic systems. A disadvantage of "large indicator approaches" is that they sometimes lack a clear concept[17]. Rankings usually combine indicators of outcome competitiveness with those of input or process competitiveness and indicators on price competitiveness with data on external balances. In addition, they mix indicators on performance levels with indicators on changes in performance (dynamics). Sometimes they even implicitly favour the size of an economy.

3.4 Advantage relative to single indicators

To measure outcome competitiveness by the broad set of Beyond GDP indicators instead of single indicators allows accepting that societies have different goals or at least prioritise goals differently over time, due to cultural differences or to their starting situations. Life expectancy is a single indicator which is influenced by many determinants in the economic and social field but also different across regions and maybe also due to climate differences or eating habits. Life satisfaction also depends on cultural values and attitudes. Genuine progress indicators focus on long-run consumption possibilities. These are calculated by detracting and adding items to GDP, and this approach had been incorporated into the work of Stiglitz *et al.* (2009). Beyond GDP Goals, on the one hand, are reasonably founded on theoretical considerations and, on the other hand, open to preferences and choices, which are made explicit in the operationalisation of the concept (Fleurbaey, 2008, 2009).

3.5 Relation to Delgado et al. (2012)

The approach taken in WWWforEurope resembles that of Delgado *et al.* (2012; henceforth also DKPS). They define outcome competitiveness using a modified concept of labour productivity: it is measured by per capita GDP, where the denominator is the working-age population as a proxy for the potential instead of the actual labour force. Outcome is thus – in contrast to our approach – not a set of indicators containing social and ecological goals. The only outcome goal indirectly included in DKPS is, apart from productivity, maximum labour force utilisation[18].

Furthermore, DKPS derive a "competitiveness index" by first regressing this modified measure of labour productivity on its determinants and then using the estimated coefficients to compute a competitiveness score for each country. This inspires the approach we take in Section 6, regressing a set of Beyond GDP indicators on the determinants outlined above.

As determinants of "modified labour productivity", DKPS use composite indicators of macroeconomic performance (MACRO), microeconomic performance (MICRO) and social and political institutions (SIPI). The composite indicators for MICRO and SIPI are constructed using principal component factor analysis. MACRO essentially consists of fiscal and monetary policy as well as output volatility. MICRO is a broad set of indicators from corporate strategy to the business environment, and both MICRO and SIPI are captured by our capability indicators.

Thus, a common ground exists between DKPS and the WWWforEurope approach, with DKPS focusing more on productivity than the outcome goal, while Aiginger *et al.* (2013) is motivated by a focus on the transition of the current economic system to a more inclusive and sustainable one (measured by Beyond GDP indicators). DKPS consider macroeconomic performance, microeconomic performance and institutions as drivers of competitiveness, Aiginger *et al.* (2013) costs, economic structure and capabilities.

4. Towards a "high-road industrial renaissance"

Changing the definition of competitiveness changes the policy perspectives.

If competitiveness is the destiny of firms to survive under perfect competition, a firm can never have higher costs than its competitors. And if a nation fights back after a period in which costs increased faster than productivity, it has to keep wages, ecological standards and social standards low. In the enlightened version of cost competitiveness, it can increase productivity, usually implicitly understood as labour productivity. Analysis and policy statements calling for cost competitiveness in the narrow sense usually assume productivity as a given and do not call for policies to raise it.

If competitiveness is driven by capabilities and supported by a sophisticated industry structure, structural changes are important to improving the five capabilities (innovation, skills, institutions, social activation and ecological ambitions). This leads to policies fostering restructuring, investment in human, physical, social and nature capital, improvements in institutions and business environments and clusters. We summarise these policies under the heading of a high-road path. If a firm or country follows this strategy, the results in performance will take some time, but will be lasting and sustainable.

If outcomes are measured by GDP or GDP plus employment, then policy conclusions come from traditional economic recipes: physical investment and secondary education for medium-income countries, innovation, skills and tertiary education for high-income

countries. If we also measure success by ecological and social indicators, it becomes more important to design a high-road strategy for the society, emphasising innovations and investment in the social field, shifting technical progress towards resource and energy saving, reducing subsidies for fossil energy and encouraging renewables.

The distinction between the high and low roads becomes very clear if the entire picture from input competitiveness to output competitiveness is analysed. High-road policy implies productivity increase, not cost reduction (for the cost component of competitiveness). For drivers of competitiveness, it means structured change, a quality strategy for firms and investment in the five capabilities. Output is evaluated by a broader set of goals where GDP and economic goals are part of the set, but not dominant.

Analysing the current strategies for an industrial renaissance in the USA, our concept reveals many elements of a low-road strategy. The USA enjoys the reduction in China's cost advantage (partly through rising wages in China, partly through a stagnant median wage in the USA). It also hails the possibility of decreasing energy costs through new resources and new technologies (fracking, pipelines) and the opportunity to close its trade deficit by cutting imports of oil and gas and exporting coal and energy-intensive products. Boosting the skills of industrial workers and increasing research is not very high on the agenda, even if excellent industry–university cooperation, innovation start-ups and competitiveness councils are working in this direction and the USA could extend its lead in many cutting-edge technologies. Attempts to keep the "innovation phase" of new products in the country and foster industrial cooperation against the tendency to "stay alone at home" (Berger, 2013) are part of the strategy. Improving health coverage and pricing carbon emissions indicates progress, but these measures are usually fought under the premise of lowering "US competitiveness". Thus, the leading nation in technology is pursuing an agenda with many elements of a low-road strategy (Table I).

5. Applications for country evaluations

In this chapter, we use the definition of competitiveness as the "ability to provide Beyond GDP goals" to analyse the competitiveness of European countries and compare the results of "competitiveness under new perspectives" to a traditional performance evaluation based on purely economic goals.

	Low-road strategy	High-road strategy
Competitive advantage	Low costs (wages, energy, taxes)	Quality, sophisticated products, productivity
Growth drivers	Subsidies, dual labour market, inward FDI	Innovation, education, universities, cluster
Ambitions	Cost advantage, flexible labour	Social empowerment, ecological excellence, trust
Instruments	Import taxes, protectionism, devaluation (external, internal)	Business environment, entrepreneurship, dialogue
Objectives	Catching up in GDP per capita, employment	Beyond GDP goals, three pillars

Table I.
Low-road vs high-road strategies

5.1 Costs

Wages vary widely across Europe. They are four times higher in the top-ranking countries compared to the new member countries. However, the wage differences are, for the most part, paralleled by differences in *productivity*, so that *unit labour costs* do not vary as widely. In Ireland, Sweden and Finland, the productivity lead is larger than the margin (towards European average) in wages. For most new member countries, the lag in productivity is much smaller than that in wages, yielding an excellent overall position in terms of unit labour costs. The Southern European countries still lag behind in terms of productivity; however, their wage restraint since the crisis has resulted in a more favourable position in terms of unit labour costs in 2011 (Table II).

5.2 Structure

Five countries have very advantageous *production structures*: Sweden, Germany, Ireland, the UK and France. Greece is the country with the largest structural problems; the share of innovation-intensive sectors is particularly low. For Lithuania, Romania, Bulgaria and Poland, as well as Portugal and Spain, most taxonomies indicate structural problems[19].

5.3 Capabilities

The three Scandinavian countries Denmark, Sweden and Finland clearly stand out as the star performers, followed by smaller countries like Austria and The Netherlands. Germany and France achieve top-five positions for innovation and social activities but less favourable ones for education, ecological ambition and institutions. Romania, Bulgaria and Greece consistently underperform across all indicators[20].

5.4 Outcome, new perspectives

For disposable household income, several Scandinavian countries drop considerably compared to GDP, but France, Germany and Austria gain[21].

For the social pillar, the Scandinavian countries do particularly well, as do The Netherlands and Austria. It is striking that the new member countries from Central and Eastern Europe dramatically outperform the Southern European countries in social outcomes like poverty risk and inequality, despite the fact that Southern Europe has a significant lead over the new member countries in the income indicators.

Ecological outcomes in the new member countries are the least favourable, while some Southern, Scandinavian and smaller countries successfully exploit renewable energy sources (with the notable exception of Greece) or pursue ambitious environmental policies.

In an *overall ranking* for outcome competitiveness under new perspectives, in which each of the three pillars gets a weight of one-third, there is a top group consisting of Austria, Sweden and The Netherlands, followed by Germany France and Denmark. In general, countries belonging to the Scandinavian type of socio-economic model do best. Central and Eastern European countries are competitive according to cost indicators, but fare worst according the new perspective concept. The greatest improvement under the new perspective can be found in Spain, France, Slovakia and Ireland, while ranks are lost by Slovenia, Rumania and Bulgaria. The best performers show that social outcomes, ecological outcomes and economic outcomes can be high at the same time, and fears about trade-offs cannot be substantiated. The data on drivers of

Country	Innovation	Education	Social investment ranks	Ecological ambition	Institutions	Super rank[a]
Belgium	9	3	8	14	9	7
Bulgaria	25	26	24	25	24	26
The Czech Republic	14	11	23	7	15	14
Denmark	2	1	1	1	1	1
Germany	5	12	4	11	10	6
Estonia	12	8	14	5	12	11
Ireland	6	21	9	13	5	12
Greece	24	27	18	12	27	24
Spain	13	10	14	20	16	15
France	4	9	5	19	11	9
Italy	18	13	21	5	25	16
Cyprus	21	17	18	17	14	18
Latvia	23	15	18	15	23	20
Lithuania	16	16	17	20	20	19
Luxembourg	14	21	11	7	7	13
Hungary	21	19	16	26	17	21
Malta	27	18	27	16	13	22
The Netherlands	10	6	5	3	3	3
Austria	8	4	7	4	8	4
Poland	19	21	25	22	19	23
Portugal	17	19	12	18	18	17
Romania	26	25	26	27	26	27
Slovenia	10	5	12	2	21	10
Slovakia	20	24	22	23	22	25
Finland	1	7	2	24	4	5
Sweden	3	2	3	7	2	2
UK	6	14	10	10	6	8

Table II.
Capabilities for high-road competitiveness: ranks within Europe, 2011

Note: [a] Average over the five ranks of the capabilities ranked again
Sources: Aiginger *et al.* (2013); Eurobarometer; Frazer Institute; World Bank; WIFO calculations

competitiveness show that low costs do not lead to good outcomes, neither when measured by narrow economic indicators nor measured by broader Beyond GDP indicators.

Using this concept to compare the USA with Europe, we see the USA leading in costs as well as productivity, with a very similar position in unit labour costs. Europe enjoys a good trade position in sophisticated (technological and skill based) sectors, while the USA has a deficit; Europe also leads in eco-industries and ecological ambitions. Europe invests more in early childhood education and vocational training, but definitely trails the USA in R&D and higher education. As far as output competitiveness is concerned, the USA leads in per capita income (to a lesser degree in income per hour), employment is higher and unemployment is lower. But the USA trails Europe in equity and poverty prevention, so that results on the social pillar are mixed. Europe definitely leads in the ecological pillar (higher energy efficiency, lower per output emission) (Table III).

Country	Ranks for three pillars			New perspectives	Old perspectives[b]	New perspectives minus old perspectives
	Income per head[a]	Social cohesion	Ecological sustainability	Super rank[c]	Super rank[c]	Improvement[d]
Belgium	5	14	21	13	9	−4
Bulgaria	26	23	23	27	18	−9
The Czech Republic	18	6	25	18	14	−4
Denmark	11	5	11	6	5	−1
Germany	3	11	9	4	4	0
Estonia	23	16	27	26	16	−10
Ireland	7	15	7	7	12	5
Greece	14	26	15	21	22	1
Spain	14	27	5	16	26	10
France	9	10	6	5	13	8
Italy	11	25	1	11	15	4
Cyprus	13	13	24	19	11	−8
Latvia	25	24	12	23	21	−2
Lithuania	22	20	16	22	27	5
Luxembourg	1	9	20	8	3	−5
Hungary	24	7	16	17	22	5
Malta	18	17	2	11	17	6
The Netherlands	6	1	13	3	1	−2
Austria	2	4	7	1	2	1
Poland	21	18	26	25	22	−3
Portugal	17	21	3	14	18	4
Romania	26	21	14	23	18	−5
Slovenia	16	8	18	15	10	−5
Slovakia	20	12	22	20	25	5
Finland	10	3	19	10	7	−3
Sweden	8	2	4	2	5	3
United Kingdom	3	18	10	9	8	−1

Notes: [a] Average over four indicators (GDP, net national income, household income and household consumption); [b] GDP per capita, employment rate, unemployment rate and current account balance; [c] average over the three ranks of the components ranked again; [d] rank of new perspectives minus rang old perspectives, inverted, so that a plus is an improvement
Sources: Aiginger *et al.* (2013); Eurostat (Comext); UNO (Comtrade); WIFO calculations

Table III.
Outcome competitiveness: traditional vs new perspectives: ranks within Europe 2010

6. Explaining competitiveness using econometrics

In this section, we first briefly discuss some recent empirical studies on competitiveness. Then we summarise the analysis in Aiginger *et al.* (2013), which uses panel data regression methods to relate outcome measures of competitiveness to inputs or drivers. Building on the conceptual evolution of competitiveness outlined in this article, we consider measures of price and quality competitiveness as drivers, where the latter includes economic structure and country capabilities.

6.1 Related literature

The empirical literature on competitiveness is as wide-ranging as the conceptual approaches that have been taken towards the term. We focus on recent econometric studies that relate outcomes to drivers and take a cross-country perspective. DKPS (2012) regress a measure of outcome competitiveness (GDP per working-age population) on its hypothesised determinants (composite indicators of macro- and microeconomic performance as well as institutions) for 130 countries between 2001 and 2008. They find that each of their determinants has a significant positive effect on outcomes. However, they do not separately investigate price competitiveness as a driver, as we do below. Fagerberg *et al.* (2007) use GDP growth as their outcome indicator, analysing technology (in the sense of innovation potential), absorptive capacity, demand and price competitiveness (manufacturing unit labour costs) as drivers for 90 countries between 1980 and 2002. Similar to DKPS and Aiginger *et al.* (2013), they construct composite indicators for each group of explanatory variables. Their findings suggest that price competitiveness (lower unit labour costs) is positively related to GDP growth but is quantitatively much less important than technology, absorptive capacity and demand competitiveness, which are all associated with higher GDP growth. In comparison to these studies, Aiginger *et al.* (2013) use a comprehensive measure of outcome competitiveness that includes not only income but also social and ecological performance.

Below the aggregate macroeconomic level, there is a large literature that uses data on sectors, firms or products and proxy outcome competitiveness with export market shares. For example, Benkovskis and Wörz (2014) use product-level data to decompose changes in individual countries' export market shares into price and non-price components, such as quality and tastes, in addition to the number of competitors and market demand. The authors find that the contribution of changes in quality and taste to changes in overall market share dominates that of price changes for several European, G7 and BRICS countries. Dosi *et al.* (2014) also measure competitiveness using export market shares and examine their relationship with labour costs (wages), productivity and technology (granted patents) at the industry level for 15 OECD countries. They find a significant positive association of export market shares with patents in all sectors, but a significant negative one with wages in only two. Similar results emerge when they investigate firm-level data for Italy. Hence, a common result of the studies discussed in this section is that price or cost factors matter less for national competitiveness than technology and other non-price factors. We account for the latter with our measures of economic structure and country capabilities.

6.2 Own empirical strategy

Aiginger *et al.* (2013) econometrically relate outcome competitiveness under new perspectives to the following drivers:

- *Price competitiveness*: Covering wages, labour productivity and unit labour costs.
- *Economic structure*: Encompassing, for example, the shares of technology-driven, high-skill-intensive and knowledge-based services inputs-using industries in manufacturing value-added and exports.
- *Capabilities*: Including measures of education, activating social policy, institutions and ecological ambition of consumers and producers.

Outcome competitiveness under new perspectives consists of three pillars – income, social and ecological. The first comprises disposable household income and household final consumption expenditure; the second includes at-risk-of-poverty rates, the Gini index and the youth unemployment rate; and the third contains resource productivity, energy intensity and greenhouse gas emission intensity.

Overall, we collected data on 68 indicators covering the period from 2000 to 2010 for the EU-27. The indicators are normalised and their orientation adjusted so that more positive scores indicate higher competitiveness. Because the indicators within each group are potentially highly correlated with each other, a factor analysis was carried out to reduce the dimensionality of the data. The factor loadings allow to construct composite indicators on each dimension of competitiveness following the guidelines in OECD (2008) and Annoni and Kozovska (2010). These composite indicators are then used as dependent and independent variables in the econometric analysis. The common factors of the three pillars of new perspectives outcomes are aggregated into a single composite variable using equal weights of one third. We estimate the following panel data model for country i and year t:

$$NPO_{it} = \beta_1 Price_{i,t-1} + \beta_2 Structure_{i,t-1} + \beta_3 Capabilities_{i,t-1} + \eta_t + u_{it} \quad (1)$$

where *NPO* stands for new perspectives outcomes and *Price* for price competitiveness. u_{it} is a mean-zero error term and η_t represents period-specific fixed effects capturing, for example, macroeconomic shocks affecting all countries. They are accounted for by year dummies in the estimation. Equation (1) is estimated using ordinary least squares (OLS), with all explanatory variables lagged by one year to mitigate endogeneity concerns. Because both *NPO* and *Price* contain measures of labour productivity and per capita income (wages), $Price_{i,t-1}$ is essentially a lagged dependent variable, which can lead to estimation problems[22]. Results without *Price* are therefore also shown. Luxembourg is dropped from the sample, as it represents an outlier in many of the indicators entering the analysis.

6.3 Results

Column (i) in Table IV shows the estimated coefficients for equation (1). While price competitiveness is insignificant, economic structure and capabilities matter for new perspectives outcomes, which also holds for all remaining specifications estimated.

One component of price competitiveness that is found to matter is the composite indicator on wages alone, shown in columns (ii) and (iii). Its negative sign results from our definition of higher wages signalling lower price competitiveness. It is only weakly

Table IV.
New perspectives outcomes vs price competitiveness, structure and capabilities

Dependent variable: NPO_{it}	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
$Price_{i,t-1}$	0.623 (0.666)								
$Wages_{i,t-1}$		−0.235* (0.131)	−0.216* (0.115)						
$Structure_{i,t-1}$	0.239** (0.112)	0.222* (0.119)	0.272*** (0.095)	0.312*** (0.092)	0.366*** (0.103)	0.339*** (0.093)	0.416*** (0.087)	0.217* (0.108)	0.536*** (0.078)
$Capabilities_{i,t-1}$	0.490*** (0.130)	0.305** (0.143)		0.539*** (0.100)					
$InnoEdu_{i,t-1}$			−0.205 (0.208)		−0.179 (0.219)	0.417*** (0.095)			
$Social_{i,t-1}$			0.217 (0.179)		0.301 (0.244)		0.426*** (0.088)		
$Institutions_{i,t-1}$			0.176 (0.145)		0.232* (0.141)			0.489*** (0.092)	
$Ecological_{t-1}$			0.152* (0.089)		0.201** (0.075)				0.368*** (0.074)
R^2	0.787	0.805	0.824	0.775	0.798	0.712	0.754	0.720	0.802

Notes: Estimation method is OLS; standard errors in all columns are robust to heteroscedasticity and serial correlation (Huber–White sandwich estimator of variance, with standard errors clustered on countries); ***, ** and * indicate significance at the 1, 5 and 10% levels, respectively; all equations are estimated for 26 countries and include time dummies; the number of observations is 260 in all columns
Source: Aiginger *et al.* (2013)

related with outcomes, and it is quantitatively dominated by the coefficients on capabilities or structure. Because of endogeneity concerns due to its status as a lagged dependent variable, the wage measure is dropped from column (iv) onwards.

Economic structure is robustly positively related to outcomes. Capabilities are significant both when included on aggregate as in columns (ii) and (iv) and when the individual subcomponents are added individually [columns (vi) to (ix)]. When all subgroups are included together as in columns (iii) and (v), institutions and ecological ambition are positively related to outcome competitiveness under new perspectives, while the measures of innovation/education and social policy are insignificant. This is likely due to multicollinearity, as the correlation between the two composite indicators is high (0.88).

Overall, the results in Table IV indicate that economic structure and capabilities matter more for outcome competitiveness under new perspectives than price competitiveness, which is similar to the findings of the empirical literature discussed in Section 6.1.

Based on the estimates in column (ii), we compute predicted levels of *NPO* for each country ($\widehat{NPO}_i$, "competitiveness scores" in *DKPS*) and compare them to the actual values. This allows us to identify countries that achieve outcomes below or above their potential as predicted by our model given their price competitiveness, economic structure and capabilities. Countries whose actual values of *NPO* lie below the predicted values are highlighted in bold in Table V. The gap is largest for Estonia, followed by Bulgaria, Latvia and Romania. Apart from these eastern European countries, which experienced substantial crises in the past years, the UK, Ireland and Finland are also in this group.

For Spain, Germany and Denmark, actual and predicted values are very close, suggesting that they have come close to achieving their potential.

The Netherlands, Portugal and Sweden perform somewhat above their potential. The latter registers the highest level of new perspectives outcomes, both actual and predicted, of all EU-27 countries. Malta has the largest positive gap, followed by Slovakia and The Czech Republic – all of which profited from inward FDI, but should invest in their capabilities to make their recent catching-up processes sustainable. Austria has the second-best new perspective outcome but is far from the top in the areas of education and innovation. These countries should critically examine their current combinations of costs, structure and capabilities to maintain their performance in the future.

7. Summary

Competitiveness has been defined very differently over the past decades, starting with the narrow definition of cost competitiveness, focussing on "inputs" only. The concept then developed to a more balanced evaluation of costs, structure and capabilities as drivers of competitiveness. It was then complimented by an evaluation of the attainment of a few economic goals (GDP, employment) as "outcomes". We go two steps further, specifically including social investment, ecological ambitions and the share of eco-industries as drivers, and measuring outcomes by the broader Beyond GDP goals (which we subdivide in an economic, a social and an ecological pillar).

This changes the policy conclusions derived from analysing the competitiveness of regions and nations. Rich countries have to go for a "high-road strategy", defined in this

Country	NPO_i	$\widehat{NPO_i}$	Rank ($\widehat{NPO_i}$)
Sweden	0.948	0.854 (0.104)	1
Austria	0.852	0.618 (0.098)	10
The Netherlands	0.835	0.808 (0.068)	2
Denmark	0.799	0.794 (0.104)	3
France	0.783	0.657 (0.094)	8
Germany	0.688	0.685 (0.071)	7
Finland	**0.502**	**0.725** (0.089)	**6**
UK	**0.490**	**0.791** (0.115)	**4**
Belgium	**0.475**	**0.654** (0.104)	**9**
Ireland	**0.426**	**0.725** (0.183)	**5**
Malta	0.389	−0.158 (0.209)	15
Italy	0.244	0.136 (0.101)	11
Slovenia	0.236	−0.047 (0.100)	13
Cyprus	0.110	−0.070 (0.147)	14
Spain	**0.064**	**0.069** (0.061)	**12**
The Czech Republic	0.048	−0.260 (0.127)	17
Hungary	0.026	−0.186 (0.157)	16
Greece	−0.134	−0.295 (0.078)	20
Slovakia	−0.176	−0.524 (0.100)	21
Portugal	−0.226	−0.271 (0.089)	19
Lithuania	−0.633	**−0.553** (0.101)	22
Poland	**−0.657**	**−0.591** (0.088)	**24**
Latvia	**−0.824**	**−0.558** (0.113)	**23**
Estonia	**−1.010**	**−0.267** (0.154)	**18**
Romania	**−1.103**	**−0.882** (0.103)	**26**
Bulgaria	**−1.155**	**−0.855** (0.098)	**25**

Table V.
Actual vs predicted levels of new perspectives outcome (NPO)

Notes: Time averages 2001-2010. Standard errors in parentheses; countries where actual *NPO* lies below predicted values are highlighted in bold; countries ordered to actual NPO

paper as built on quality, sophisticated products and productivity as competitive advantages and on capabilities as drivers of competitiveness. For capabilities, we rely partly on those known in theories of economic growth (education, innovation and institutions) but add social investment (activating labour market policy and retraining) and ecological ambitions (high standards and emission taxing). In contrast to the perception in the media, some economic policy and lobbying statements we claim that social investment and ecological ambitions – if pursued by strategy and implemented intelligently – can increase the performance of firms and countries and should not be condemned as rising costs. The objective of a "high-road strategy" is that a country or firm delivers high incomes, ecological excellence and social goals (employment, limited income differences). A low-road strategy (built on subsidies, tax exemptions, protection and devaluation of currency) is not feasible for high-road countries, as low- and middle-income countries can always retaliate.

As far as European countries are concerned, Denmark, Sweden and Finland excel in capabilities, closely followed by Austria and The Netherlands. Germany and France get a top position in innovation and social investment, but a less favourable one in education and institutions. Cost positions do not really determine performance. The results for

Greece, Italy, Romania and Bulgaria show that outcomes could considerably improve if trust in governance and institutions increased.

Explaining outcome competitiveness econometrically we use principal component analyses to derive indicators for the three potential drivers: costs, structure and capabilities, and as well as for the outcome pillars. The econometric results confirm that structure and capabilities are more powerful for "explaining" outcomes under new perspectives than costs. The partial correlation between innovation and education capabilities is close, so that their relative importance is not easy to carve out, but taken alone, each of the five capabilities explains outcome competitiveness together with the structure of the economy. The panel analysis also indicates that the Baltic countries, Bulgaria and Romania, as well as UK, Ireland and Finland, underperform relative to the drivers of competitiveness. On the other hand, Malta, The Czech Republic and Slovakia have had better-than-predicted outcomes over the past decade. This could indicate that these countries (partly relying on inward FDI or on tourism) have to upgrade their structure and capabilities in order to remain competitive in the long run.

Using the definition of competitiveness as the ability of a region or country to deliver Beyond GDP goals should be able to stop the critique that the term competitiveness is a dangerous and misleading concept, as well as the critique that this is a concept only applicable at the firm level. It is now closely linked to the economic performance of a region or country and allows analysing how rich countries can successfully pursue a high-road strategy.

The empirical results show that countries going for a high road like the northern European countries (but also Switzerland) can compete successfully by means of sophisticated capabilities rather than low costs, and that success can be measured by broader goals than narrowly economic ones.

Notes

1. The adjective "amorphous" was used by Porter (1990) in his seminal book on the Competitive Advantage of Nations, the term "evasive" by Aiginger (2006) in a special issue of the Journal of Industry, Competition on Trade, giving an overview on the development of the discussion prior to the Great Recession. We could also call competitiveness a "weasel word", a phrase used by Friedrich Machlup (1958) in reference to the terms "structure" and "structural change" by everybody with a different meaning. For other broad papers on competitiveness see Aiginger (1997, 1998, 2000); Fagerberg (1994); Hölzl and Reinstaller (2011); Grilo and Koopman (2006); Grupp (1995); Krugman (1996); Krugman and Hatsopoulos (1987); Orlowski (1982); Oughton (1997); Peneder (1999, 2003).
2. In unit labour cost calculations, productivity is usually measured in real terms, while wages are measured in nominal terms. If both were measured in nominal terms, the relationship between the level of value-added per employee and the wage level per employee degenerates into an inverse "wage ratio" (Y/W), which is traditionally interpreted as a result of industrial relations, market structure and capital intensity rather than as an indicator of price competitiveness.
3. These begin with the question of whether to account for changes in currency values or not. Further, price indices used to deflate value added or production, on the one hand, and wages, on the other hand, can also differ.

4. Information on TFP is more commonly provided for changes over time (e.g. in the EU KLEMS database) than for absolute comparisons, and practically never in a way that allows comparing TFP with a comprehensive cost evaluation ("total costs").
5. This is reflected in the German expression for competitiveness, "Wettbewerbsfähigkeit" – literally, "the ability to compete".
6. WWWforEurope, a European research program commissioned by DG enterprise, in which 33 European research teams are cooperating under the lead of WIFO in order to develop a more dynamic, more inclusive and more sustainable path of growth for Europe. Available at: www.foreurope.eu/
7. To assess economic structure, we mainly rely on taxonomies that refer to manufacturing. The taxonomies on innovation and education intensity also include services. The champion of this approach is Michael Peneder, providing these taxonomies, deriving them from sound theory, and together with his WIFO team using them for more than a decade for the background studies for the European Commission in the competitiveness of manufacturing (Peneder 2001, 2002 2010; European Commission, 1995, 1998, 2001)
8. Sales per unit (e.g. tons), see Aiginger (1987, 1997, 1998).
9. RCA denotes the relative export position for a specific good relative to all goods.
10. Most recent literature shows that great income differences (specifically a large segment of very low incomes) are detrimental to growth due to a reduced investment in human capital.
11. The importance of clusters (cooperation between firms in "related industries") for competitiveness has been analysed by Porter (1990, 2004); Ketels (2006), and Ketels and Protsiv (2013).
12. The total neglect of rising current-account deficits has also been a mistake. Aiginger (2010) showed that the difference in the depth of the Great Recession in individual countries correlated with their current-account position (and its change) in the upcoming phase of the Great Recession.
13. The OECD's Better Life Index contains the following categories: housing, health, work and life balance, education and skills, social connections, civic engagement and governance, environmental quality, personal security and subjective well-being.
14. When trying to separate the components of competitiveness into costs, structure, capabilities and outcomes, we acknowledge that they are to an extent related. Productivity is partly determined by structure and capabilities and labour productivity can be seen as a component nested in traditional outcomes as well as outcomes defined by new perspectives.
15. Available at: www.oecd.org/naec/
16. Examples include those of the International Institute for Management Development (IMD, a business school) and the World Economic Forum.
17. This was the case, especially in the beginning; recently, some rankings have also provided theoretical background.
18. If the maximum is not used (underemployment) the outcome competitiveness is nevertheless lower than GDP per (used) employment.
19. Country rankings for export structure mostly resemble those for production. Ireland achieves the top position for several taxonomies, while Finland's export structure is much less favourable than its production structure. With respect to exports by eco- and renewables'

industries, the Scandinavian countries take the lead, while France and the United Kingdom lag behind.

20. Finland scores highly across all innovation indicators. Together with Sweden and Denmark, it spends a larger share of GDP on R&D than the USA, followed by Germany and Austria, which exhibit some weaknesses in tertiary education. Education indicators highlight the dominance of Scandinavian countries in education expenditures and lifelong learning, of Central European countries in vocational education in upper secondary school, and of France, The Netherlands and Spain in early childhood education participation. For Greece, Romania, Italy and Bulgaria, competitiveness could be improved if trust in and quality of governance were higher and regulations less stringent.

21. Ranking countries by household consumption expenditures, the largest improvement can be seen in Greece – a transitory boost which was largely debt-financed, as is now known. This raises doubt as to whether household consumption indeed brings us closer to welfare than GDP, as the Beyond GDP literature argues.

22. In particular, unobserved country-specific fixed effects render the OLS estimator biased and inconsistent in this case. All regressions were therefore also run using the fixed-effects estimator, which is, however, also not without problems when short time periods are considered (Nickell bias). The results were mostly similar (see Aiginger *et al.* (2013) for details). We therefore focus on the OLS results, with and without *Price*.

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Appendix. Definitions of competitiveness: proposition and related previous definitions

WWWforEurope Definition: "The ability of a country (region, location) to deliver the Beyond-GDP goals for its citizens, today and tomorrow" (Aiginger *et al.*, 2013)

Previous definitions:

- Uri (1971): "[…] the ability to create the preconditions for high wages".
- The German Sachverständigenrat (1981): "[…] ability to develop specialty products and technical solutions which generate income growth under full employment".
- Scott and Lodge (1985): "[…] a nation state's ability to produce, distribute and service goods in the international economy […]., and to do so in a way that earns a rising standard of living".
- Aiginger (1987): Competitiveness of a nation is the ability to (i) sell enough products and services (to fulfil an external constraint); (ii) at factor incomes in line with the (current and changing) aspiration level of the country; and (iii) at macro-conditions of the economic, environmental, social system seen as satisfactory by the people.
- Fagerberg (1988): "the ability of a country to realise central economic policy goals, especially growth in income and employment, without running into balance of payment difficulties".
- Hatsopoulos *et al.* (1988): The proper test of competitiveness, then, is not simply the ability of a country to balance its trade, but its ability to do so while achieving an acceptable rate of improvement in its standard of living.
- Porter (1990): "The only meaningful concept of competitiveness at the national level is national productivity".
- Competitiveness Policy Council (1994): "The ability to sell products on international markets, while incomes in the domestic markets increase in a sustainable way."
- IMD (1994): "World competitiveness is the ability of a country or a company to, proportionally, generate more wealth than its competitors in the world markets".
- European Commission (1995): "[…] ability to increase or to maintain the living standard relative to comparable economies (e. g. developed industrialised countries), without long run deterioration of external balance".
- OECD (1995): […] the ability of companies, industries, regions, nations or supra-national regions to generate, while being and remaining opened to international competition, relatively high factor income and factor employment levels.
- Von Tunzelmann (199)5: "Historians have tended to equate competitiveness […] with political, technical, commercial leadership".
- Oughton and Whittam (1997): "long run growth in productivity and hence rising living standards, consistent with increasing employment or the maintenance of near full employment".
- World Economic Forum (2000): "Competitiveness is the set of institutions and economic policies supportive of high rates of economic growth in the medium term."
- European Commission (2001): "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."
- Porter (2004): True competitiveness, then is measured by productivity […]. Here, we define competitiveness concretely, show its relationship to a nation's living standard […]. The micro-economic foundations of productivity rest on […] the sophistication of competition in the country […] and the quality of micro-economic business environment in which they operate.

- European Commission (2011): "Ultimately, competitiveness is about stepping up productivity, as this is the only way to achieve sustained growth in per capita income – which in turn raises living standards".
- Janger *et al.* (2011): "[…] define competitiveness as the ability to raise standards of living and employment, while maintaining a sustainable environment and sustainable external balances".
- Delgado *et al.* (2012): "Foundational competitiveness" is "the expected level of output per working-age individual that is supported by the overall quality of a country as a place to do business" and "Competitiveness is what underpins wealth creations and economic performance".
- Peneder (2001): ability […] to create high factor incomes along a sustainable path, taking into consideration a society's social, ecological and economic constraints with respect to long-term development.

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