

Competitiveness: From a Dangerous Obsession to a Welfare Creating Ability with Positive Externalities

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Abstract The attempt to define the term “competitiveness of nations” has reached the phase of decreasing returns. Fortunately, the literature seems to be converging slightly, a tendency, we hope to accelerate. We propose (1) defining competitiveness as “the ability of a country or location to create welfare.” We maintain (2) that a comprehensive evaluation contains an output evaluation and a process evaluation. We claim (3) that the output evaluation (competitiveness achieved) is closely related to a welfare assessment, with a specific slant and stepwise operationalisations. Furthermore, (4) process evaluation (investigating the ability) is related to the analysis of production and technology functions, adding qualitative elements like strategies, and the strengths and weaknesses of a country. This consensus is at variance with the concept of price competitiveness; it sidelines the importance of external balances, while the productivity approach to competitiveness is nested within. Dangerous obsessions and wrong policy conclusions can never be excluded, but are much less likely if we use this approach to competitiveness—as compared to concepts focusing on price competitiveness or on external balances. Specifically, the greater competitiveness of one country must not necessarily go hand in hand with lower competitiveness in other countries. In advanced countries specifically, policies promoting the ability to create welfare will create positive spillovers into other economies.

Keywords competitiveness · welfare evaluation · innovation · Lisbon strategy

JEL Classifications F10 · F15 · F43 · O31 · O40 · O57

1 An upcoming consensus and the outline of the paper

Competitiveness is a concept that has shifted from the analysis of firms to that of locations and countries. The vagueness of the term, the theories behind it or the lack

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of any theoretical background, as well as the policy recommendations made in reference to “competitiveness” have induced outstanding researchers to warn that the concept of “national competitiveness” is either elusive or meaningless, and its use as a basis for policy recommendations is misleading or even dangerous.¹

It is in this note that I venture the tentative hypothesis that the fog enveloping the term competitiveness is about to clear, at least to some extent. According to my interpretation, the consensus will soon be that competitiveness should be defined as the “ability to create welfare” and furthermore that any comprehensive application of this concept has to include an “outcome assessment” and a “process assessment.” The purpose of this paper is to accelerate the convergence to this consensus. The outcome or performance of an economy or region—which we can label “outcome competitiveness” for need of simplicity—can be measured by a set of objectives very close or identical to the elements usually included in a welfare function or in the assessment of the “living standard.”² The welfare of a nation is assumed to correlate primarily with its per capita income. The second most important component will probably be the employment/unemployment prospects. Broader assessments include distributional, social and ecological goals and some non economic objectives (security, stability, life expectation). Finally, competitive economies must meet several “sustainability” checks. The definition of outcome competitiveness as the welfare of a nation or as the living standard of its population still may lack precision, but at least this definition of competitiveness excludes or sidelines several alternative definitions, specifically those focusing on low costs and on trade balances. Furthermore, the competitiveness of one region—if defined as the ability to create welfare—must not necessarily be to the disadvantage of another region. This eliminates a key component of the “dangers” purported to be connected with the concept. Such a definition is more comprehensive than a technical productivity indicator relating an output indicator to one or several inputs (per worker productivity, per hour productivity, total factor productivity). Productivity is an important element of outcome competitiveness (as proposed by Porter, 1990; Krugman, 1994a; Kohler, 2006), but productivity is neither the sole source of process competitiveness nor the only indicator of outcome competitiveness.

Outcome competitiveness is produced or generated by a combination of hard and soft factors. Hard factors are similar to those used in a standard production function, like labour, capital, and technical progress. Soft factors may include capabilities, the quality of institutions, trust, the national innovation system, political stability, and the rule of law. And there may be cross effects, if technical progress itself is not exogenous, or if the quality of inputs can be increased by investment or by the soft factors; see the discussion about the first and the second “natures” of production factors or production factors inherited or produced (Ketels, 2006). Looking into the processes in which outcome competitiveness is generated is the core of studies analysing competitiveness as an ability or a capability.

¹ Krugman (1994a,b); Krugman’s arguments are summarised in Aiginger (2006) Footnote 1.

² There is also extensive new research on “happiness” which may not be too far from the concepts of living standard and welfare, perhaps placing somewhat more emphasis on subjective components. This research shows that happiness depends on per capita income, whereby the relation is, however, far from linear; specifically, low income countries can enjoy relatively high levels of happiness as compared to the difference in per capita income.

It could have been helpful for matters of clarity to reserve the term “competitiveness” for the output version and to speak about the underlying “drivers of competitiveness” when we refer to the processes and capabilities generating this outcome. Many current studies include strategies that foster competitiveness and indicators of the generation process in the competitiveness evaluation. Taking a look at the processes and abilities tells us about the strengths and weaknesses of an economy, gives hints as to the sources of success and failure and is helpful when it comes to drawing policy conclusions. We therefore propose using the term “process competitiveness” when taking a closer look at the underlying factors and the generation process.

A formal definition of the two elements of competitiveness (1)

Competitiveness $\equiv W(Y, S, E)$ Definition of “Outcome Competitiveness” (1A)

Y = Income per capita, S = set of social and distributional indicators, E = set of ecological indicators

Competitiveness = $F(K, L, TFP; C, I, T)$ Generation process (1B)

K = physical capital, L = labour, TFP = technical progress, C = capabilities, I = institutions, T = trust.

The paper is structured as follows: Section 2 argues that the ultimate goal of an economic system is to create welfare (or a high living standard). The term competitiveness may help us to make the concept marginally more precise, with a stronger focus on institutions, constraints and elements of the economic environment, and an emphasis on that part of welfare, which is generated in markets and influenced by economic policy. We propose a specific stepwise operationalisation, starting with simple concepts that are easy to measure. We then add more elements at the cost of creating additional problems arising from measurement and weighting, and which also increase the degree of ambiguity.

Section 3 focuses on the generation process of outcome competitiveness. Given the complexity of the goals, it is important to look into the processes involved, the competitive advantages given and the problems and weaknesses of individual firms, regions or nations. A specific outcome can be generated by different strategies, for example cost advantages, knowledge and innovation, institutions and economic policy.

Section 4 discusses the results in relation to other approaches and the popular critique regarding competitiveness research; Section 5 summarises.

2 Outcome competitiveness: a specific welfare assessment

Social systems, as well as individuals, have multiple goals. Income may be the overriding economic objective, but any sensible evaluation of welfare has to consider employment, equity, security, stability etc. Traditionally, economists attempt to unite these goals in the welfare function. The welfare of an individual person is derived from a combination of these goals; weighting the goals and incorporating the fact that goals can be substitutable or complementary is a problem. Furthermore, there has been an extended discussion as to whether a social

welfare function exists parallel to a function for each individual.³ This leads some researchers to use the term living standard instead of welfare. Although this term is more personalised and individual, its elements are the same as those of welfare. It is well understood that the maximum level of welfare an individual or a society can achieve depends on its constraints (amount of labour, hours reserved for leisure, capital, natural resources, state of technology). The quality of the resources is important and a certain amount of the resources can be reserved for increasing tomorrow's production potential.⁴

For the concept of outcome competitiveness to be useful, it has to be made operational. We start with operationalisations, which are easy and uncontested, but very narrow. Then we broaden the concept at the cost of adding measurement and weighting problems, as well as more subjective elements. We do this in four steps with increasing complexity (Figure 1 and Table 1).

2.1 Level one operationalisation: GDP per capita

There is a short cut to making the concept of outcome competitiveness operational. Welfare or living standard can be proxied by per capita income (GDP per capita). By definition, per capita income can then be disaggregated into productivity and employment. In this decomposition, productivity is output⁵ per employee; employment is defined as the share of workers in the population.⁶ We label this short cut "level one operationalisation" of outcome competitiveness. The welfare function implicitly has one term (with two components connected multiplicatively).

$$W = f(Y) \quad (2)$$

Y = per capita income.

2.2 Level two operationalisation: adding employment (and unemployment) variables

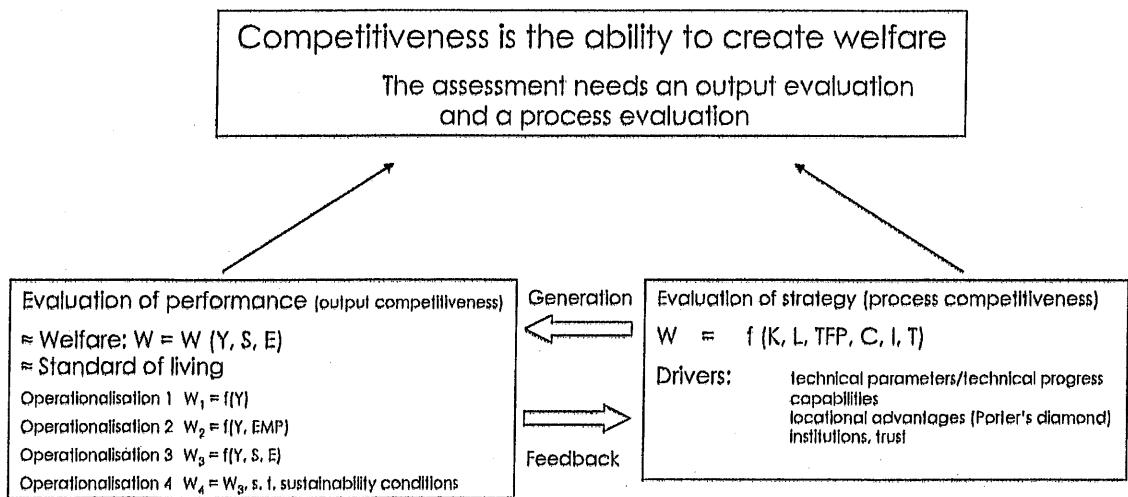
In the past evaluations of European competitiveness, the variable most often added was employment. This led to definitions along the lines of "competitiveness is the

³ The discussion is more about technicalities, like the derivation of the social function from the individual functions (the aggregation problem) and about the comparability of one unit of welfare of person A with one unit of welfare of person B, than about the necessity of a concept with which a society or nation can assess multiple goals. Anybody judging the performance of a firm, region or country without focussing on one simple goal alone is implicitly using a welfare approach. See D'Aspremont and Gevers (2002) for a survey of social welfare functions.

⁴ Grilo and Koopman (2006) equate competitiveness and welfare or living standard. This approach has many predecessors (e.g., Oughton and Whittam, 1997).

⁵ More precisely: value added at market prices.

⁶ Given the rising share of part time work, it might be preferable to define productivity as output per hour and employment in terms of hours worked in relation to some full employment potential in hours. Statistics based on hours are theoretically the best measure of technical productivity, but are notoriously inaccurate empirically. Hours used in productivity statistics are often different from those in employment statistics. And while the number of persons in the work force is not easy to define the number of hours are very difficult to define. In comparisons of change over time, it makes sense to define GDP in real terms; when making comparisons between nations, GDP at purchasing power parities usually is used.



Note: Y=income per capita, S=set of social and distributional indicators, E=set of ecological indicators, EMP=employment; K=physical capital, L=labour, TFP=technical progress, C=capabilities, I=institutions, T=trust

Figure 1 The upcoming consensus definition.

ability to increase per capita income and employment.”⁷ Since unemployment has been persistently high over the past 15 years in Europe, and the labour force has been increasing in most countries, providing high and rising employment has become a high priority. Studies investigating the persistently high income gap between Europe and the US have shown that the low labour force participation rate, as well as low working hours are “sources” of the gap in per capita income between the US and Europe.⁸ Such considerations led indirectly to three explicit employment goals in the Lisbon strategy, namely to increase the overall employment rate, that of women, and that of the elderly.

Including per capita income and employment separately in a welfare function is inter alia the consequence of the trade off between increasing productivity and spreading employment among more workers.⁹ To a certain extent, countries can choose different employment intensities, if they believe they are trapped in a path of slow output growth. Despite this trade off between increasing productivity and generating employment, we can say that competitiveness is unequivocally enhanced if output and employment increase.

$$W \equiv f(Y, EMP) \tag{3}$$

EMP = employment.

⁷ OECD (1995a,b), European Competitiveness Reports (2000 ff).

⁸ Grilo and Koopman (2006).

⁹ This brings us to the question of whether the lower labour hours in Europe are due to low labour demand, or whether the low working hours are the result of a European preference for leisure. See Gordon (2002) for his “rough estimate” that half of Europe’s shorter working hours follow from higher preferences for leisure as compared to the US and half to a shortage of labour demand.

Table 1 A small sample of available definitions of the competitiveness of a nation.

Source	Definition
Aiginger (1998)	"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."
Competitive Policy Council (USA, 1994)	"The ability to sell products on international markets, while incomes in the domestic markets increase in a sustainable way."
European Commission (1994)	"Competitiveness as the ability to "combine growth with balanced trade"
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."
European Commission (1998)	"An economy is competitive if its population can enjoy high standards of living and high rates of employment while monitoring a sustainable external position."
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."
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."
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."
Krugman (1996)	"It seems far too cynical to suggest that the debate over competitiveness is simply a matter of time-honoured fallacies about international trade being dressed up in new and pretentious rhetoric."
OECD (1995a)	"Competitive policy...(is) supporting the ability of companies, industries, regions and nations or supra-national regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels on a sustainable basis."
OECD (1995b)	"...the ability of companies, industries, regions, nations or supra-national regions to generate, while being and remaining opposed to international competition, relatively high factor income and factor employment levels."
OECD/TEP (1992)	"To produce goods and services that meet the test of foreign competition while simultaneously maintaining and expanding domestic real income."
Orlowski (1982)	"the ability to sell."
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."

Table 1 (continued).

Source	Definition
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.”
Porter (1990)	“The only meaningful concept of competitiveness at the national level is national productivity.”
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.”
The German Sachverständigenrat (1981)	“...ability to develop specialty products and technical solutions which generate income growth under full employment, despite the emerging competition of newly industrialised countries.”
Von Tunzelmann (1995)	“Historians have tended to equate competitiveness... with political, technical, commercial leadership.”
Uri (1971)	“...the ability to create the preconditions for high wages.”
World Economic Forum (2000)	“Competitiveness is the set of institutions and economic policies supportive of high rates of economic growth in the medium term.”

2.3 Level three operationalisation: adding additional social and environmental goals

While employment seems to be the first candidate, as far as broader goals are concerned, there are many other important indicators of performance and welfare. If we take the “Structural Indicators of the European Union” as a yardstick, the three employment goals (for total, female, elderly employment) are followed by three social indicators (poverty, regional employment differences and long term unemployment) and three ecological goals (greenhouse gas emissions, the energy intensity of output, and transport volume). We summarise this in Eq. 4, including a set of social goals (S) and a set of ecological goals (E).

$$W \equiv f(Y, S, E) \tag{4}$$

Y = income per capita, S = set of social and distributional indicators, E = set of ecological indicators.

2.4 Level four operationalisation: the sustainability of budgets and balances

Many outcome assessments of competitiveness include criteria of sustainability. Such an extension may also act as a bridge between the static and dynamic approaches, as well as between output evaluation and process evaluation.

Sustainability can—given that we already included ecological sustainability in operationalisation 3—relate to the fiscal position, to the external position or even to the political situation and cultural preferences (incl. leisure). Whether fiscal deficits foster or endanger the generation of income over the short or medium run, may depend on the cyclical situation or on the structure of government expenditures. In

the long run, high budget deficits are not sustainable since they will result in the problem of debt accumulation and lead to higher taxes or severe cuts in expenditures. The same is true for large deficits in the current account, if they are not covered by persistent massive capital inflows (as in the US).¹⁰ Deficits in democracy, the rule of law and political stability are also threats to continued prosperity.

We could finally add a “leisure constraint.” Welfare is a function of economic, social and environmental goals, given that the number of hours worked is roughly in line with preferences.¹¹ This argument is related to the inclusion of “unemployment” into the welfare assessment. We know that a certain part of the population is “inactive”, even during the period of life in which it is usual to work, and we know that working hours and vacations differ widely across countries. Leisure therefore constitutes part of the preferences and consequently is often a term in the welfare function. We could therefore have included it in the function even for operationalisation 1. The alternative we chose is to consider it a constraint. This is justified by the empirical facts that in the US, people do not find that longer working hours reduce welfare, while Europeans vote against working longer and most inactive Europeans and most who work part time report to be doing so voluntarily.¹² Therefore, as well as out of convenience (to avoid overloading operationalisation 1 with a very difficult variable), we categorise leisure under the “constraints.” If the constraint is grossly violated, we know we have to include it as a term in the welfare function.¹³

$$W \equiv f(Y, S, E); \text{ s.t.: FS, EBS, PS, LEIS} \quad (5)$$

s.t. = subject to, FS = financial sustainability (budget balances, debt), EBS = external balances sustainability (trade balance, current account, etc.), PS = political stability, LEIS = leisure.

Focussing on “outcome competitiveness” as compared to a more conventional form of maximising a standard welfare function (see D’Aspremont and Gevers, 2002) has some advantages. If we want a quick assessment, we can stick to operationalisation 1 or 2: data are accessible, concepts are relatively clear-cut, the trade off and weighting problem is manageable. Going for level three or four increases the depth of the analysis at the cost of complexity and subjectivity. The best choice may depend on the specific situation.

¹⁰ Trade balances and current account statements were the focus of many early studies. Negative external balances have roused the fear that the economy in question has lost its competitiveness and were the reason that competitiveness [and the critique by Krugman (1994b; see EU, 1994)] became a topic of discussion. Trade balances may provide a first assessment of the short-run performance of a country, but negative balances can be also the consequence of buyout demand or high growth.

¹¹ Specifically, if actual working hours are not higher than is preferred. If actual hours are lower, they are covered by the unemployed term in operationalisation 2. The number of hours worked are a variable which can become relevant in different sub-evaluations, they can be incorporated in an evaluation of a positive or a negative sign. The fact that an indicator can have a positive, as well as a negative sign is a problem leading to confusion and errors in indicator approaches to competitiveness.

¹² According to the Labour Force Survey, between 10 and 15% of people working part time do this because they could not find a full-time job. Of course, the choice whether to look for part-time or full-time job depends on the institutional settings (e.g., the availability of child care).

¹³ Constraints which are violated switch into the “extended welfare function” to be maximized, getting a “shadow value” depending on the importance of the violation.

3 The ability to compete: looking into processes and strategies

The production function of an economy (i.e., the function relating output to inputs) is often said to be a black box. This holds specifically for the “technological progress” term. Research on competitiveness carves out the strengths and weaknesses of regions and countries. It analyses the abundance and quality of inputs, and more generally the conditions, which are favourable for the creation of incomes and employment. An economy with sophisticated inputs, a good business environment, and favourable demand conditions is said to be competitive. Such evaluations look for “process competitiveness.”

Investigating process competitiveness is therefore something like defining and analysing the production function of an economy, while looking more deeply into the “black box” than in the traditional approach. It analyses qualitative factors and factors summarised as “total factor productivity” in a conventional production function, like organisation, the innovation system, or the efficiency of institutions. Perhaps the most prominent attempt to provide a structure for this investigation is the famous diamond by Michael Porter. Porter suggested investigating factor conditions, demand conditions, strategy and rivalry, and finally related and supporting industries (see Porter, 1990 and Ketels, 2006).

On the firm level, business economists and management scientists search for factors which create “competitive advantages” and then for capabilities and processes which help to “sustain” the advantages created. On the regional level, we look for supportive institutions, firm clusters, spillovers, and forward and backward linkages. On the national level, economists analyse the innovation system, the quality of education, life long learning, physical and intangible infrastructure, trust, etc. The research on competitiveness, with its focus on firms, regions and nations, carves out the factors and processes which increase incomes and provide employment over the long run.

Looking into the processes creating the competitive advantage of firms, regions and nations may be demanding, since the decisive factors can change over time and with rising income. In the early stage of economic development, natural resources and a growing population may be specifically important when it comes to increasing welfare. At an intermediate stage of development (perhaps for per capita incomes between 5,000 and 20,000 €), incomes are closely related to physical investment.¹⁴ For even higher incomes, the innovation system, knowledge creation and diffusion, life-long training, as well as intangible infrastructure will define the competitive edge.

Striving for “price competitiveness”—the ability to produce at low cost¹⁵—is important for low income economies. For richer countries, price competitiveness

¹⁴ See Aiginger and Landesmann (2002) for a “growth pyramid” showing how the determinants important to economic growth change with rising income.

¹⁵ Low costs can stem from cheap input prices or low costs in the foreign currency or low unit costs. Thus, low input prices in the local currency, as well as an undervalued currency (but also high productivity) will lead individually or together to “price competitiveness.” The calculations may cover one input price (wages), many input prices (energy, capital costs, taxes, etc.) or a full set of cost positions. The combined effect of these forces is summarized in the measure of “real effective exchange rates”—i.e., the exchange rates of foreign currencies weighted together according to export weights and corrected for productivity differences.

continues to be important, if the country supplies low value added, homogenous products. For these goods, a firm or a country can compete only if its price is equal to or less than that of the other producers. For sophisticated goods with a large potential for product differentiation, quality and innovation define the competitive edge (“quality competitiveness”, “technological competitiveness”). A low cost strategy is feasible for low income countries (see Siggel, 2006), high wage countries ultimately have no other choice than to compete in quality and technology (see Aiginger, 1996, 2000; Aiginger and Wolfmayr, 1996). The factors defining process competitiveness therefore differ for low and high wage countries.

Nevertheless, the information revealing whether a country is currently a good location for business is keenly demanded by multinational firms and financial analysts. Reports of wage and energy costs, taxation, and the cost of living are important for business decisions. Whether it is a useful guide for economic policy depends on the stage of development and on the alternative options.

4 Discussing the consequences

4.1 Relation to other concepts

The definition of competitiveness as the ability to create welfare (and the knowledge that this needs an output and a process evaluation) downgrades the focus on external balances and market shares, which had long been popular in the definition of competitiveness. Outcome competitiveness furthermore eclipses the concept of “price competitiveness”: neither low absolute wages, nor wages low relative to productivity nor devaluations of the own currency are helpful when it comes to increasing incomes and welfare. The devaluation of a currency and beggar my neighbour strategies cannot be recommended on the basis of outcome competitiveness. Operationalisation 4 provides a warning if current incomes are generated by means of high public debt, huge external deficits, and in a social or politically unstable environment.

The definition of competitiveness as productivity, is to some extent nested in the concept of “outcome competitiveness”: incomes will in general be higher if productivity is higher, but there are also exceptions. Productivity can be high at the price of unemployment, a low participation rate, social inequality, and ecological deprivation. And productivity can be intentionally lowered (1) to spread incomes, (2) to allow for leisure preferences, (3) to limit differences in incomes and (4) to promote social and environmental goals or leisure, health and cultural activities.¹⁶ In general, while productivity and increases in productivity are important to a wider assessment of outcome competitiveness, the concept of productivity seems to be too narrow for a knowledge-based society.

¹⁶ Productivity also differs widely as far as the denominator is concerned: the denominator can be population, employees, hours, etc. France ranks at the top as far as GDP/hour is measured. Its gap in relation to the US is 30% for GDP/capita, unemployment is high, youth unemployment is skyrocketing, social unrest is high, mobility and growth are low. Productivity is high in countries in which low wage activities are not covered by market activities (and in countries with a large amount of activity in the black market).

4.2 A meaningful concept on the national level after all?

It is often said that competitiveness is well defined on the firm level.¹⁷ This is not correct. It is clear that a firm persistently producing at a loss is not competitive. But what about a firm which has low profits where other firms in the same industry have persistently high profits? Are firms in a homogenous Bertrand market (with zero profit) less competitive than firms in a Cournot market with positive margins? Do they gain “competitiveness” if they collude? And how should we rate the competitiveness of firms working in a homogenous industry with other firms which have shifted into differentiated industries? It makes sense to assess firms at the high end of a market, maybe due to innovation and marketing “more” competitive. Thinking about this leads us to the same issues that are discussed in the definition of the competitiveness of nations: capabilities and competitive advantages based on innovation and on educated workforce determine the competitiveness of regions as well as of firms. And when it comes to sorting out firms enjoying a long-run competitive advantage, we look for firms producing persistently high value added, which are able to pay persistently higher wages and enjoy persistently higher profits (Mueller, 1977). Specifically successful firms are often also able to increase in size and employment by means of internal growth or mergers. All these indicators of the long-run success of firms are replicated in the definition of the competitiveness of a nation. Outcome competitiveness includes profits, value added, and employment; process competitiveness includes abilities and knowledge, i.e., all factors defining the competitive edge of firms. Competitiveness of firms is more than being above or below a “well defined bottom line” (Krugman, 1994a), and it makes sense to discuss the ability to create welfare (even if nations cannot get bankrupt).

4.3 Why not welfare alone?

Proposing to define outcome competitiveness according to methods and arguments closely related to standard welfare function raises the question, why not just call it welfare analysis and abandon competitiveness as a term to be used in comparing economies. The notion of competitiveness (instead of welfare or living standards) leads us to stress the economic aspects of welfare, those related to the market process, to international competition and to aspects which can be influenced by economic strategy and policies. Additionally, the term welfare is more static and more subjective. Welfare theory often looks for the maximisation of function, given a set of constraints. Which arguments are in the function is completely beyond the evaluation of economists; the arguments to be incorporated depend on preferences, and they may or may not be

¹⁷ “The bottom line for a corporation is literally its bottom line: if a corporation cannot afford to pay its workers, suppliers and bondholders it will go out of business. ...Countries... have no well-defined bottom line. As a result, the concept of national competitiveness is elusive.” Krugman (1994a,b). It is true and the term competitiveness has its origin in the theory of the firm. Firms which manage to survive are competitive; those whose costs are higher than revenues fail. The outcome is a binary variable, to exist or not to exist. In the world of perfect competition, all firms are small and have zero profits. In oligopolistic models, firms can coexist with different unit costs, which, in the static Cournot model of quantity setting results in different profit margins for different levels of efficiency. The same is the case for price Bertrand models with product differentiation, in which the less efficient firm defines the price, and the more efficient enjoys higher prices even when it doesn’t undercut. In all these cases, the less efficient firms survive, but the more efficient firm is “more efficient” insofar as it has higher profits.

measurable and comparable. Different starting positions, neighbours, and benchmarks play no role in the maximisation process. Changes in the (maximum attainable) value of welfare over time, and changes in the composition are neglected. The processes which can alter the maximum value are not considered (technology changes). Using the term competitiveness instead, emphasises the dynamic evolution over time, the processes needed for economic dynamics. If we are not able to measure all the potential arguments in the welfare function, most economists will agree that incomes, employment, and stability are important, so that a partial evaluation is possible. And the term competitiveness indicates that income and employment are generated in a process in which rivalry and relative performance play a role.

4.4 Stand alone or benchmark?

Many studies compare a specific country relative to another country (see IMD, 1994; Cantwell, 2004). They analyse whether competitiveness is high in relation to other countries and whether income and employment are increasing faster than in benchmark countries. The dynamic aspect can be covered in the welfare approach, insofar as welfare increases if the inputs increase or the technology improves. In the situation of sub optimality or disequilibria, welfare can also improve if the existing capacities are used more wisely and efficiently than in the past.

Comparing the level of welfare between countries requires welfare functions for each country, whereby all the problems of welfare comparisons between individuals known in the literature on “Social Welfare Functions” are magnified (objectives, weights, comparability). Hopefully, the “outcome competitiveness” approach will make these problems more evident than other, more diffuse concepts. Concentration to less ambitious concepts—such as to the arguments of Level 1 or 2 operationalisation—will often be necessary in the dynamic assessments.

The Lisbon goal that Europe becomes the most competitive economy is a good example of the use of the concept of competitiveness in a relative perspective; in this case, the benchmark is the economy leading in per capita income. Some of the sub-goals in the strategy refer to processes, others to the quantity and quality of inputs (employment goals, research expenditure targets, lifelong learning). The relaunch of the Lisbon strategy in 2005 (see Grilo and Koopman, 2006; Kohler, 2006) is on the one hand a shift to a more focused agenda, namely growth and jobs. It is on the other hand an acknowledgement that the elements of outcome competitiveness might be different across countries and that looking deeper into national weaknesses and strengths i.e., into processes generating competitiveness might be advisable.¹⁸

Defining competitiveness in a relative perspective has advantages and disadvantages. An advantage is that the comparison may help us to realise what is realistic and what is not. A disadvantage is that reaching the benchmark may neither be feasible nor necessary given the particular conditions and resources.¹⁹ Overstressing the comparative element may be dangerous, if the strategies to increase competitiveness are based on the cost side

¹⁸ This second point has been summarised under the term “re-nationalisation of ownership” of the Lisbon Strategy.

¹⁹ The goal of 3% research expenditure relative to GDP is neither conducive to reduction nor necessary for a low income country.

and thus emphasise devaluations or low wages.²⁰ If countries facing technological problems try to contain wages, a long downward spiral could be the consequence. Fostering price competitiveness usually puts also a certain amount of burden on other countries. Fortunately, there are also strategies to strengthen competitiveness, which can increase income and employment both in the domestic and the foreign economy. The Lisbon strategy goals of higher research expenditures, better education, and life long learning are clearly creating complementarities and positive spillovers.

4.5 Dangerous policy implications versus positive externalities

Competitiveness defined as the ability to create welfare does not exclude strategies to harm neighbouring countries. However, a policy that fosters the ability to create welfare is in any case less likely to be at the cost of other countries than a policy focusing on price competitiveness.

It is also less likely to reduce the welfare of other countries than a policy aimed at improving external balances. Increasing productivity may increase market shares for the domestic economy, but may also improve welfare in other economies via lower prices and improved terms of trade. Improving the social system, health, and the environment will also have a positive impact on other countries. And processes which foster this ability, namely innovation, education, and competitive rivalry, will all in general have positive local and international spillovers. The processes which foster the ability to create welfare in rich countries will therefore usually have positive externalities.

Summarising, the dangerous policy implications, like favouring some degree of protectionism or a race to the bottom in prices, quality, social and environmental norms are no longer part of the new consensus on competitiveness to which we believe economists to move. Outcome competitiveness includes social and environmental goals, while process competitiveness is fostered in a rich country by policies with positive externalities.

4.6 Indicator approaches

There is a rapidly increasing number of assessments available today, which use a multiplicity of indicators, partly hard data, and partly survey results, to assess the competitiveness of countries. The advantage of these “competitiveness rankings” is that they measure a broad spectrum of economic aspects. This downgrades measurement errors which often bias the results when only a few indicators are used and help to cope with the complexity of the problem—e.g., the differences in the starting position and in the socio-economic systems of countries. A disadvantage of “large indicator approaches” is that they often lack a clear concept. They usually combine indicators of outcome competitiveness with indicators of process competitiveness, indicators on price competitiveness and data on external balances. Furthermore, they mix “performance level” indicators with indicators of dynamics. Sometimes they implicitly favour the size of an economy. Often it is not clear whether an indicator

²⁰ The obsession with price competitiveness in a rich country may lead to wrong policy conclusions. In this respect Krugman (1994a) is correct.

with a high value contributes positively or negatively to competitiveness, e.g., high expenditures on social security and environment.²¹

5 Summary: how much of a consensus is possible and what remains open

This paper ventures the hypothesis that the misunderstandings and vagueness connected with the term competitiveness may be alleviated as the literature moves towards a new consensus. We hope that by defining competitiveness as the “ability to create welfare,” we will be able to accelerate the process. A comprehensive evaluation of this concept requires an assessment of “outcome competitiveness” (which measures the performance of a region or country and is closely related to a welfare assessment) and “process competitiveness” (which investigates the generation of outcome competitiveness and shares common elements with the extended production function approach and technology assessments).

“Outcome competitiveness” assesses the performance of a region or a country. It is related to the notion of welfare in traditional welfare analysis, with the slight difference that it emphasises the economic goals, the market sector of an economy and the measurable results of rivalry and competition. We try to make the concept operational, insofar as we define four levels of operationalisation, starting from a single indicator, and then broadening the indicators included in the assessment.

Research on competitiveness which focuses on the generation of outcome competitiveness or on the ability part of competitiveness investigates “process competitiveness.” Process competitiveness is related to the production function approach, but places more emphasis on qualitative terms, institutions, dynamics, the production and diffusion of innovation and on soft factors. The factors defining the competitive edge differ over time and with income level and can vary additionally across regions and locations. Prices will be important to low income countries producing undifferentiated products. Quality, technology and knowledge are decisive factors in countries at the technology frontier. Process competitiveness research focuses on abilities and processes and constitutes a link to dynamic evaluations.

The definition of competitiveness as the ability to create welfare not only contradicts any attempt to focus primarily on low costs (price competitiveness), but also sidelines definitions focusing on external balances and market share. The productivity approach is nested within this new and much broader definition. While productivity is traditionally measured as output per input(s), the new approach also includes quality components and assessments of the social and ecological system, as well as the long-run sustainability of the current outcomes.

The concept proposed will still not solve every problem: research can focus on the present, look more closely into the past or be directed towards the future. It can assess the competitiveness of a country either as an individual entity or relative to benchmark countries.²² The goals in the welfare function may be predefined for all countries or may differ according to individual or regional preferences. The factors

²¹ In the ranking provided by WEF the problems are mitigated, since the rankings have been substantially revised and streamlined by leading economists over the past decade (Porter, 2004). For a critical view of global rankings see Peneder (1999).

²² See Siggel (2006) for more choices in concepts on competitiveness.

in the production process and the strengths or weaknesses defining the business environment may differ from country to country and depend on starting conditions and locations; they are open to judgmental differences. But hopefully, the convergence towards the definition of competitiveness as the “ability to create welfare” plus the consensus that a comprehensive assessment will contain an output evaluation and a process evaluation will help to prevent some of the misunderstandings which have until now been abundant in competitiveness research.

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References

- Aiginger, K., “The use of unit values for discriminating between price and quality competition,” *Cambridge Journal of Economics*, 1996.
- Aiginger, K., “A framework for evaluating the dynamic competitiveness of countries,” *Structural Change and Economic Dynamics*, vol. 9(2), pp. 159–188, 1998.
- Aiginger, K., *Europe’s Position in Quality Competition*, Background Report for “The European Competitiveness Report 2000,” DG Enterprise, Brussels, 2000.
- Aiginger, K., “Revisiting an evasive concept: Introduction to the special issue on competitiveness,” *Journal of Industry, Competition and Trade*, vol. 6(2), 2006.
- Aiginger, K. and Landesmann, M., “Competitive economic performance: The European view,” *Conference on Transatlantic Perspectives on US-EU Economic Relations: Convergence, Conflict & Cooperation*, Harvard University, April 2002, WIFO Working Paper No. 179, June 2002.
- Aiginger, K. and Peneder, M., *Die qualitative Wettbewerbsfähigkeit der österreichischen Industrie*, Wien, 1994.
- Aiginger, K. and Wolfmayr, Y., *The qualitative competitiveness of transition countries*, OECD, April 1996.
- Beck, B., *Die internationale Wettbewerbsfähigkeit der schweizerischen Exportindustrie*, Paul Haupt Verlag, Bern, Stuttgart, 1990.
- Cantwell, J., “Innovation and Competitiveness,” in Fagerberg, J., Mowery, D.C., Nelson, R.R. (eds.), *Oxford Handbook of Innovation*, Oxford University Press, 2004.
- Competitiveness Policy Council: *Promoting long term productivity*. “Third report to the President and the Congress,” Government Printing Office, Washington, 1994.
- Cooper, R.N., “The Competitive Position of the United States,” in Seymour (ed.), *The Dollar in Crisis*, Burlingame, New York, 1961.
- D’Aspremont, C. and Gevers, L., “Social welfare functionals and international comparability,” in Arrow, K.J., Sen, A.K., Suzumura, K. (eds.), *Handbook of Social Choice and Welfare*, vol. 1, 2002.
- Europäische Wirtschaft, *Die Wettbewerbsposition Europas in der Triade*, *Jahreswirtschaftsbericht* 1994, Nr. 56, 1994.
- Europäische Wirtschaft, *Jahreswirtschaftsbericht* 1995, Nr. 59, 1995.
- European Commission, *European Competitiveness Reports*, 1998, Brussels.
- European Commission, *Die Wirtschaftsaussichten für die Gemeinschaft: 1994–96*, Beiheft A 11/12, 1994.
- European Commission, *Jahreswirtschaftsbericht* 1995, Nr. 59, 1995.
- European Commission, *Competitiveness of European Manufacturing*. DG Enterprise, Brussels, 2001.
- Fagerberg, J., “International Competitiveness,” *The Economic Journal*, vol. 98, pp. 355–374, 1988.
- Fagerberg, J., “Technology and international differences in growth rates,” *Journal of Economic Literature*, vol. 33(3), pp. 1147–1175, 1994.
- Fagerberg, J., Verspagen, B., and Von Tunzelmann, N., “The dynamics of technology, trade and growth,” Edward Elgar, 1994.
- Faust, K. and Schedl, H., “The International Competitiveness of German Industry,” IFO-Institut, München, 1984.

- Gordon, R.J., Two Centuries of Economic Growth: Europe Chasing the American Frontier, Paper prepared for the Economic History Workshop, Northwestern University, October 2002.
- Grilo, I. and Koopman, G.J., "Productivity and microeconomic reforms: Strengthening EU competitiveness," *Journal of Industry, Competition and Trade*, vol. 6(2), 2006.
- Grupp, H., "Science, high technology and the competitiveness of EU countries," *Cambridge Journal of Economics*, vol. 19, pp. 209–223, 1995.
- Gutmann, G., *Die Wettbewerbsfähigkeit der ostdeutschen Wirtschaft*, Schriften des Vereins für Socialpolitik, Band 239, 1994.
- Hatsopoulos, G.N., Krugman, P.R., and Summers, L.H., "U.S competitiveness: Beyond the trade deficit," *Science*, vol. 241, pp. 299–307, 1988.
- IMD, "The World Competitiveness Yearbook," 1994.
- Ketels, Ch.H.M., "Michael Porter's competitiveness framework—recent learnings and new research priorities," *Journal of Industry, Competition and Trade*, vol. 6(2), 2006.
- Kloth, H., Stehn, J., et al., *Standort Deutschland: Strukturelle Herausforderungen im neuen Europa*, Kieler Studien, 265, Tübingen, 1994.
- Kohler, W., "The "Lisbon Goal" of the EU: Rhetoric or substance?" *Journal of Industry, Competition and Trade*, vol. 6(2), 2006.
- Krugman, P., "Competitiveness: A dangerous obsession," *Foreign Affairs*, vol. 73(2), pp. 28–44, March–April, 1994a.
- Krugman, P., "The fight over competitiveness: A zero sum debate: Response: proving my point," *Foreign Affairs*, vol. 73(4), July–August 1994b.
- Krugman, P., "Making sense of the competitiveness debate," *Oxford Review of Economic Policy*, vol. 12(3), pp. 17–25, 1996.
- Krugman, P.R. and Hatsopoulos, G.N., "The problem of U.S. competitiveness in manufacturing," *New England Economic Review*, pp. 18–29, January/February 1987.
- Legler, H., "Zur Position der Bundesrepublik Deutschland im internationalen Wettbewerb," in *Forschungsberichte des Niedersächsischen Instituts für Wirtschaftsforschung*, vol. 3, 1982.
- Lippschitz, L. and McDonald, D., "Real exchange rates and competitiveness," *Empirica*, vol. 19, pp. 37–69, 1992.
- Löbbecke, K., "Innovationen, Investitionen und Wettbewerbsfähigkeit der deutschen Wirtschaft," *RWI Heft 16: Essen*, 1995.
- Marston, R.C., "Real and nominal exchange rate variability," *Empirica*, vol. 16, pp. 147–160, 1989.
- Mueller, D., "The persistence of profits above the norm," *Economica*, vol. 44(176), pp. 369–380, 1977, London School of Economics and Political Science.
- OECD, "Industry and Technology: Scoreboard of indicators," Paris, 1994.
- OECD, *Competitiveness policy: A new agenda DSTI/IND (95)14*, Paris, 1995a.
- OECD, *Competitiveness: an overview of reports issued in member countries DSTI/IND (95)15*, Paris, 1995b.
- OECD/TEP, *Technology and the economy. The key relationships, The technology/economy programme*, Paris, 1992.
- Orlowski, D., "Die internationale Wettbewerbsfähigkeit einer Volkswirtschaft," *Vandenhoeck & Ruprecht: Göttingen*, 1982.
- Oughton, C., "Competitiveness policy in the 1990s," *The Economic Journal*, vol. 107(444), 1997.
- Oughton, C. and Whittam, G., "Competition and cooperation in the small firm sector," *Scottish Journal of Political Economy*, vol. 44(1), 1997.
- Peneder, M., "Pattern of Industrial Competitiveness," *Wien*, 1994.
- Peneder, M., "Wettbewerbsfähigkeit und Standortqualität. Eine Kritik der Länder-Ranglisten," *Wirtschaftspolitische Blätter*, vol. 46(3), pp. 170–177, 1999.
- Porter, M.E., "The Competitive Advantage of Nations," *The Free Press: New York*, 1990.
- Porter, M.E., "Building the microeconomic foundations of prosperity: Findings from the business competitiveness index," in Porter, M.E. et al. (eds.), *Global Competitiveness Report 2003–2004 of the World Economic Forum*. Oxford University Press: Oxford, pp. 29–56, 2004.
- President's Commission on Industrial Competitiveness, "Global Competition," *Government Printing Office: Washington*, 1985.
- Rodrik, D. (ed.), "In Search of Prosperity: Analytic Narratives on Economic Growth," *Princeton University Press*, 2003.
- Rodrik, D., Subramanian, A., and Trebbi, F., "Institutions rule: The primacy of institutions over geography and integration in economic development," *Journal of Economic Growth*, vol. 9(2), June 2004.

- Schumacher, D., Belitz, H., Haid, A., Hornschild, K., Petersen, H.J., Straßberger, F. and Trabold, H., *Technologische Wettbewerbsfähigkeit der Bundesrepublik Deutschland*, DIW Beiträge zur Strukturforchung, Heft 155, 1995.
- Scott, B. and Lodge, G. (eds.), *US Competitiveness and the World Economy*. Harvard Business School Press: Boston, MA, 1985.
- Siggel, E., "International competitiveness and comparative advantage: A survey and a proposal for measurement," *Journal of Industry, Competition and Trade*, vol. 6(2), 2006.
- Silverberg, G. and Soete, L., "Economics of Growth and Technological Change," Edward Elgar, 1994.
- Sinn, H.W., *Schlingerkurs: Lohnpolitik und Investitionsförderung in den neuen Bundesländern*. in: Gutmann, G., *Die Wettbewerbsfähigkeit der ostdeutschen Wirtschaft*, Schriften des Vereins für Socialpolitik, Band 239, 1994.
- Soete, L., "The impact of technological innovation on international trade," *Research Policy*, vol. 16, pp. 101–130, 1987.
- Suntum, U., "Internationale Wettbewerbsfähigkeit einer Volkswirtschaft," *Zeitschrift für Wirtschafts- und Sozialwissenschaften*, vol. 106(5), 1986.
- The German Sachverständigenrat, "Investieren für mehr Beschäftigung," *Jahresgutachten zur wirtschaftlichen Entwicklung*, 1981.
- Uri, P., "Bericht über die Wettbewerbsfähigkeit der Europäischen Gemeinschaft," Luxembourg, 1971.
- Von Tunzelmann, G.N., "Government policy and the long run dynamics of competitiveness," *Structural change and economic Dynamics*, vol. 6, pp. 1–21, 1995.
- World Economic Forum, *The Global Competitiveness Report*, 2000.