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Titolo completo del paper
Ranking quality of life in the European Union

Nota-asterisco:
The paper is a joint effort of both authors. Nonetheless, Marco Grasso wrote section 2 and 3, while section 1 was written by Stefano Pareglio.

Abstract
This article provides a multi-dimensional index for evaluating well-being in the EU. It begins with an overview of an analytical approach that goes beyond utilitarianism: Dasgupta's quality of life framework, which is defined according to the goals of EU policies and based on a set of indicators that are both constituents and determinants of well-being. This framework is then used to draw up an index, based on a Borda ranking, of the EU member countries in terms of their economic and social well-being. This is followed by discussion of the correlation between the ranking and the indicators selected.

JEL
D63, I31

Keywords
Borda ranking, European Union, quality of life, well-being.

Versione abbreviata del titolo (da utilizzare come testatina nelle pagine dispari)
Ranking quality of life in the European Union

Introduction

The view that the traditional utilitarian notion of welfare can provide only a partial picture of well-being is now largely accepted by social scientists. This conception, proper of economic analyses, relies only on the welfarist criteria of utility (in theory) and income (in application). The consequent measurements of welfare are generally derived through observation of the preferences revealed by actual choices, and interpreted in terms of the numerical representation of those choices.[1] This notion of welfare therefore reflects only the class of differences captured by the money metric, under the assumption of the economic rationality of self-interested utility maximization. Moreover, the income approach to welfare does not take account of the diversity among human beings and of the heterogeneities of contingent circumstances.[2] Thus income may be regarded as a means to achieve an acceptable standard of living, rather than as an end in itself, because there are other important dimensions of well-being which income does not account for: health, education, social bonds,

[1] In the traditional utilitarian framework (from Bentham, to Edgeworth, Marshall, Pigou), the concept of utility is simply a matter of pleasure, happiness, or desire fulfilment. The main limitation of this view is that it sees utility in terms of a mental metric, which is highly subjective and hence may be misleading.

[2] A complete critique of the shortcomings of the utilitarian approach would be beyond the scope of this paper.

longevity, employment, environmental conditions, housing conditions. Furthermore, even if the focus were solely on the materialistic aspects of well-being, income would only coincide with economic welfare in a situation of perfect competition where all individuals had the same preferences (Atkinson and Bourguignon, 2000).

Income, the usual measure of which is GDP, is not a correct proxy for economic and social well-being, for three main reasons. First, it arbitrarily includes and excludes certain items. The second reason is that the units of account are often unable to render the underlying values. Thirdly, and most importantly in this context, income cannot grasp the well-being of individuals and societies in their complex ramifications.

In short, this article seeks to rank well-being in the EU countries objectively according to a common standard based on resources and living conditions which enable individuals to pursue their life projects, and to analyze the main implications of such a ranking also when compared to a traditional one based on the sole income dimension. Our ultimate aim is to provide decision-makers with a methodological and operational framework enabling more educated decisions."

The article begins (Section 1) with an outline of Partha Dasgupta's quality-of-life framework. This forms the basis for definition of an operational measure of well-being (Section 2.1) which is subsequently specified according to the shared goals of European Union (EU) policies (Section 2.2). Then briefly highlighted are the aggregative issues that the measure raises (Section 2.3), with particular regard to the EU situation. Section 3.1 carries out a ranking of

economic and social well-being, while Section 3.2 highlights the correlations between this ranking and the entire set of indicators of economic and social well-being. Finally outlined are the most important findings of the analysis.

1 The economic and social well being indicators approach

The approach used here to define a multidimensional notion of well-being, and which we call the 'economic and social well-being indicators approach'[3] (in brief, the indicators approach), has been developed over the years by Partha Dasgupta:

> "Measures of quality of life can take one of two forms: they can reflect the constituents of well being, or alternatively, they can be measures of the access people have to determinants of well being. Indices of health, welfare, freedom of choice, and more broadly, basic liberties, are instances of the first; those indices which reflect the availability of food, clothing, shelter, potable water, legal aid, education facilities, health care, resources devoted to national security, and income in general, are examples of the latter" (Dasgupta and Weale, 1992, p. 120).

Dasgupta's framework enables definition of a very broad notion of economic and social well-being which encompasses its different ramifications and provides useful support for decision-making. According to Dasgupta, in fact, a

[3] Dasgupta terms it the "quality of life" approach. In his view, the terms "quality of life", "well being", "welfare" and "standard of living" are interchangeable for the purposes of measurement (Dasgupta, 1999).

quality-of-life index based on a set of indicators[4] makes it possible to choose among different options. This is because the valuation process refers to the preferences and expectations of heterogeneous individuals and therefore can synthesize conflicting interests.

Measuring this broad notion of well-being requires quantification of an experiential state. It is commonly held that happiness (in all the possible meanings of the term) is a crucial component of well-being. Why ignore it, therefore? The answer depends on the overall goals of the analysis. In our perspective, economic and social well-being indicators support (and evaluate) public decision-making and inform and orient public actions. According to contractual theories of the state, the government should not enter the sphere of happiness, but instead restrict its role to the specification of basic liberties and rights. Society is a cooperative system created by individuals for their mutual benefit. The primary role of the state is not the maximization of well-being; rather, it is to establish a framework of rules within which individuals may pursue their ends. On this view, individuals are not simply the recipients of utility and satisfaction; they have the capacity to do things, to decide their projects, and to achieve their goals. The focus is therefore on freedom and rights not on happiness, where individuals are represented only by the extent to which their desires are satisfied. The social contract, therefore, cannot cover the happiness of individuals. Even if happiness in itself is a good thing, it is not within the

[4] Indicators (of economic and social well- being) are data, or time series of data, which can be used to analyse social systems, identify their dynamics, and suggest possible solutions. An index is an aggregation of indicators defined according to the analyst's explanatory purposes.

government remit because it does not have the information that individuals possess about their possibilities of living a happy life. The government must provide citizens with access to the goods and services necessary for them to enjoy freedom to pursue their particular interests. Consequently, the government must not concern itself with the use that citizens make of freedom and rights in order to pursue their happiness. When the behaviour of governments is evaluated, the attention should therefore focus on the availability of goods and services that allow the exercise of freedom and basic rights: that is, primary economic aspects (indicative of wealth), specific resources (food, clothing, shelter, drinking water, health, education, environmental and social services), political and civil freedoms, and elements of distributive justice.

Starting from this conception of the state's role, the indicators approach focuses on the situations and conditions that may give individuals a certain level of economic and social well-being. There are two methods with which to measure economic and social well-being. The first deals with its components (broadly speaking, utility and freedom). The other considers the goods and services that give rise to well-being (that is, goods and services necessary for the achievement of well-being: food, shelter, clothing, and up to the non-necessary goods). The first method quantifies the constituents of well-being – that is, the outputs – for instance by using indicators of health and of civil and political freedoms. The second method considers the determinants of well-being – that is, the inputs: income, health expenditure, the resources devoted to promoting and protecting civil and political freedoms. If properly undertaken, the

two methods obtain the expected result: that variation in a carefully aggregate index of both constituents and determinants measures the variation in a society's quality of life. Any alternative on its own cannot fully grasp the notion of economic and social well-being. If only determinants are used, it is necessary to rely on a excessively large number of accounting prices. Similarly, if constituents are used, disposable income encompasses aspects of well-being and freedom (for example the freedom to choose a bundle of goods) that are very difficult to measure directly. Therefore, as Dasgupta does, it is a useful and common practice to employ both methods, relying on a heterogeneous collection of socio-economic indicators. It should also be pointed out that the indicators approach concentrates on evaluation of individual economic and social well-being. Consequently, the aggregate well-being of a given group of individuals corresponds to the average well-being of the group.[5] This is also the level at which the usual economic measurements are applied (for example, per capita national income, or the Human Development Index of the United Nations Development Programme).

It is now necessary to specify the reasons for choosing Dasgupta's quality-of-life framework. They do not consist in a belief that it is theoretically or empirically superior: in fact, from a theoretical perspective, other approaches - for instance, Amartya Sen's capability approach (Sen, 1992) - are richer and yield a more composite account of well-being. Dasgupta's indicators are

[5] The reason for this is provided by Harsanyi (1988), who pointed out that the standard of living of a society is given by the expected standard of living of the individual that has equi-probability of finding him/herself in the place of each member of the society.

basically ‘quality of life measures’ that imply a static notion of well-being grounded in reality as it is perceived. Dasgupta (1999: 3) states: “I use the terms ‘well being’, ‘welfare’, the ‘standard of living’ and the ‘quality of life’ interchangeably”. Hence, where Sen’s functionings and capabilities convey a dynamic notion of well-being as the freedom to fulfil a specific life-project, Dasgupta assumes a static perspective which, according to the contractual theory of the state on which his framework is implicitly based, we believe, conceives well-being as a situation that produces a given ‘standard of living’, or a given amount of ‘welfare’ or ‘quality of life’, for individuals. Similarly, Dasgupta’s framework is no more utilizable in a practical perspective than others. For instance, a great deal of effort has been made, with some success, to operationalize Sen’s approach (as reported in Grasso and Pareglio, 2006). Rather, the strength of Dasgupta’s approach – which in any case goes beyond the traditional utilitarian view that income coincides with well-being – is that is more directly useful for public decision-making – as Dasgupta himself points out (1999: 8): “the…reason we seek a quality-of-life index is that we need ways to evaluate alternative economic policies.”. In fact, although this paper does not explore any causality relationship with policy-making, the information obtained could form the basis for more informed public decision-making.

2 Ranking economic and social well-being using the indicators approach

2.1 Building a measure of economic and social well-being

Crucial for the fruitful application of the approach proposed is the proper identification of indicators covering the relevant dimensions of current economic

and social well-being and coherent with the social, political and economic context under scrutiny: that is, the 25[6] member countries of the EU.

Some specifications are necessary, however, because selection of the indicators is problematic. It is so for two reasons: its intrinsic arbitrariness, and the different ethical views that condition the choice. First, according to Dasgupta, the set of indicators should be the least, balancing completeness and heaviness. Any overlapping should be avoided: when indicators are closely correlated (for example income and consumption) one of them should be excluded, in that the one causes the other.

It is useful to consider the more recent European debate on the social indicators of national performance, since this represents the most authoritative views currently influencing EU policy-making. We refer to the "Indicators for Social Inclusion in the European Union" report (Atkinson et al., 2002). Prepared for the Belgian Government EU presidency, this report develops a platform of social indicators with which to examine and evaluate the situations of member countries and their responses to EU social policies. It highlights the areas on which social indicators should focus, clarifies the principles that should determine their selection, and suggests a list of indicators. It maintains that the main fields covered by indicators of social exclusion should be the following: the economic dimension (income, its distribution, and poverty), (un)employment, regional disparities, education, housing, health and social participation. The report also lays down six principles that should inform the selection of indicators

[6] Our analysis does not include Bulgaria and Romania, who became members of the EU on 1 January 2007.

(ability to capture the essence of the problem and to receive an agreed normative interpretation, statistical validity and robustness, responsiveness to policy interventions, comparability across member countries and with international standards, appropriateness and possibility of revision, undemanding measurement processes) and three principles that apply to the set selected[7] (it should be balanced across different dimensions; its elements - the indicators - should be mutually consistent and have proportionate weights; it should be transparent and accessible).

When indicators are being selected, attention should also be paid to the circumstance that the more goals are shared, the greater are their acceptability and likelihood. Hence, from a broader perspective, it is essential that goals be acknowledged at institutional level. For this reason, we maintain that the political and conceptual referents for the choice of indicators should be the goals and objectives of the EU as set out by the Treaty of Rome establishing the European Community (1957), the Treaty on the European Union (Maastricht, 1992), and the amendments to the Treaty of Amsterdam (1997).[8] Broadly speaking, the first objective is economic and social progress, the second is the strengthening of economic and social cohesion, and the third is the sustainability of development. As said, the indicators selected measure only

[7] The report also specifies the properties of indicators that are, obviously, different from ours, for different are the respective ultimate goals.

[8] There are, obviously, many other official documents of the European Commission - White Papers, Communications, Action Programmes - that outline the specific and general objectives of European policies.

the current magnitude of well-being, not its sustainability. In fact, by ‘sustainability’ we mean the capacity to provide a level of well-being which does not diminish over time. Consequently, an indicator of current well-being includes elements which are not relevant for sustainability, and vice versa. For instance, a strengthening of social cohesion, however measured, increases current well-being but does not influence future well-being. Therefore, when defining our indicators of economic and social well-being, we do not consider the third objective - sustainability - of European policies.

2.2 Goals and indicators

We now briefly describe the indicators selected, and the index resulting from their aggregation, according to the above specifications. We consider indicators of economic and social well-being to be collections of data assembled to explore social systems, identify their dynamics, and suggest possible implications. They are, as Mancur Olson (1969) suggests, statistics of direct normative interest which favour a complete and balanced judgement about the condition of major aspects of a society. In this sense, they are direct measures of well-being, and when they move in the right direction while all other elements in the context remain steady, they indicate an improvement for all citizens.[9]

Goal 1: economic and social progress, improvement of the quality of life

This goal comprises the following: improved economic conditions, higher employment and lower unemployment, greater educational provision, and improved health, security and environmental quality.

Economic condition

The economic condition is usually approximated by disposable personal income, which represents the degree of command exerted by an individual over the market goods and services that determine her/his material standard of living. The information that this dimension yields is nonetheless incomplete.

[9] This notion is coherent with the instances of policy making, for it considers the improvement of indicators to be the purpose of public policies (programmes, projects). This implies that (a) the society agrees that improvement is necessary; (b) it is possible unambiguously to define improvement; (c) it makes sense to aggregate indicators at the level where the public intervention is defined.

When relative prices are constant, an increase in real income expands freedom of choice on markets and, if preferences do not change, increases utility and ultimately well-being. Under these conditions the *per capita* GDP indicator can be considered therefore a proper measure of the economic condition. According to Dasgupta's distinction between the constituents and determinants of well-being, it is a determinant (an input) because it identifies the availability of primary resources. That is, it is one of the goods and services which must be considered inputs in the production of well being (Dasgupta, 1993).

Employment creation and the struggle against unemployment

This goal is a priority of EU economic policies.[10] Its achievement is measured by the employment rate among individuals aged 15 to 64, which at the EU level is the key variable in analysis of labour–market dynamics. The indicator is in principle closely correlated with income and therefore from a purely statistical perspective should be excluded. However, besides reducing disposable income, unemployment affects well-being in other ways. Sen (1997), for instance, lists the following:

- loss of freedom, social exclusion and familial instability,
- loss of skills and cognitive abilities,
- psychological harm, reduction of motivation and of civil and political participation.

[10] This is pointed out in every European Treaty and in the White Papers "Growth, Competitiveness, Employment: The Challenges and Ways Forward into the 21st Century" and "European Social Policy - A Way Forward for the Union".

From this broader perspective, it seems appropriate to include the employment rate among the indicators of economic and social well-being. Although employment indicators are usually considered to be constituents - outputs - of well-being, as Dasgupta suggests, some indicators can be either constituents or determinants according to the angle of analysis. In this circumstance the employment indicator, owing to the pregnancy of its non-income repercussions, should be considered more a determinant than a constituent of well-being.

Education

Education is essential to increase occupation and improve the competitiveness of the EU, as well as to augment people's self-esteem and their sense of command over their life-circumstances. The variable selected is an indicator of the educational attainments of young people aged 20 to 24, given that this age group is the most significant in perspective. This indicator is a constituent of well-being – that is, an expression of the degree of utility and freedom (Dasgupta, 1993) – insofar as it can be taken to be the achievable level of education (output) related to a specific level of well-being.

Improved health and security

Improved health is also among the priorities of social progress on the EU's political agenda, as explicitly stated by all its programmatic documents. Dasgupta suggests that the most important indicator is life expectancy at birth.[11]

[11] "(Life expectancy at birth) It is a major constituent of utility. Indeed, it is difficult to think of a more important one, given that the desire for survival itself has had survival value over the long haul of time" (Dasgupta, 1993, p. 96)

However, this indicator has limited variability as far as the European situation is concerned. For this reason, we prefer to use per capita health expenditure, which is crucial for public health and its improvement. According to Dasgupta's distinction, this indicator is a determinant of well-being.

Moreover, if a broader notion of public health is assumed, it is necessary to include an indicator of housing as providing suitable 'shelter': as underlined by Sen (1992) when he points out the need to be well-sheltered. Housing is a determinant of well-being because it can be intended as a basic condition for its disclosure.

Turning to public security, of particular significance is the pervasiveness of crime as a factor closely influencing the objective and subjective dimensions of well-being. Specifically, non-violent crime produces a general sense of insecurity that jeopardizes the perception of well-being. The indicator selected is therefore the rate of reported non-violent crime (fraud, drug offences, car theft), which is a constituent of well-being in that the latter is influenced by the former.

Reduction of pollution and improved environmental protection

Improving the quality of the environment is one of the main challenges faced by Europe. The EU has acknowledged that development should not be centred on the depletion of natural resources and the deterioration of the environment. Rather, it must enhance the quality of life through the protection of natural resources, promote efficiency in their use, and introduce measures to address global challenges such as climate change and biodiversity reduction. We use CO2 emissions as an indicator, since these are produced mainly by fossil fuel

combustion and therefore crucially relate to economic activity, and they have increased greatly in recent years.

Goal 2: economic and social cohesion

This goal centres on the reduction of regional disparities and the strengthening of social bonds.

Reduction of regional disparities

Testifying to the importance of this issue is that it is the goal itself of the Structural Funds: namely, reducing the distances among different areas of the EU member countries. The most direct indicator would be income inequality. However, from a broader and dynamic perspective, we prefer to use expenditure on research and development, because this is the essential condition for growth and progress. It determines any process of economic and social development and is essential if regional disparities are to be reduced. Expenditure on research and development is one of the conditions that favour well-being and is therefore one of its determinants.

Strengthening of social bonds

This objective has two dimensions – civil and political participation – both of which are taken from Kaufman et al. (2003). Civil participation is approximated by the 'rule of law', this being a composite indicator that measures the success of a society in developing an appropriate environment for the economic and social interactions that eventually strengthen interpersonal bonds. Political participation is measured by the indicator 'voice and accountability', which quantifies the extent to which the citizens of a country participate in selection of

its government. Both indicators are constituents of well being: that is, they depend on the level of the latter.

The items selected seem to cover with sufficient accuracy the economic and social realities that, according to the 'Indicators for Social Inclusion in the European Union' report,[12] a balanced set of indicators should include if it is to furnish a complete account of well-being. Only the distributive aspects of the economic dimensions are (partially) neglected. In this case, it has been decided not to give excessive weight to the traditional utilitarian aspects of well-being, but rather to privilege other, non-income, dimensions. Moreover, the principles that according the above-cited report should inform the selection of indicators - ability to capture the essence of the problem and receive an agreed normative interpretation, statistical validity and robustness, responsiveness to policy interventions, comparability across member countries and with international standards, appropriateness and possibility of revision, undemanding measurement - seem to be respected. Indeed, those which concern the quality of data are guaranteed by the authoritativeness of the sources (Eurostat, the United Nations Statistics Division, the UNDP, the World Bank). Verification of the significance of indicators vis-à-vis their representativeness and sharable meaning, and their responsiveness to policies, is, in our opinion, a separate task and is therefore beyond the scope of the present article.

[12] Whose highlighted areas are, as said, the economic dimension (income, its distribution and poverty), (un)employment, regional disparities, education, housing, health and social participation.

Verification should instead be made of the congruity of the entire set of indicators with the principles put forward in the above-cited report. The principle of balance among different dimensions is, we believe, respected. Although no set of indicators can be exhaustive, the ones selected cover all the most important aspects of economic and social well-being. The second principle, that of reciprocal coherency and proportional weight, seems to be respected: the extent to which the indicators are relevant is sufficiently similar. The third principle states that the portfolio of indicators must be transparent and accessible: since the individual indicators possess these characteristics, the set itself can be considered transparent and accessible.

2.3 Aggregation of indicators

Given the multidimensionality of the approach chosen, the problem of organizing the indicators arises. This has a very important bearing on achievement of a correct representation of the reality, in light of the methodological and ethical implications of the approach. It is possible to synthesize indicators into an aggregate measure of well-being, or, conversely, not to reduce complexity at all and consider indicators separately. The advantage of the first option is the friendliness of the index obtained, whereas its most evident disadvantages are the loss of information that the synthesis implies and the consequent possible distortions. On the other hand, the advantages of non-aggregation are its simplicity and objectivity, while its costs relate to the difficulty of obtaining a general overview. All the indicators selected can be measured cardinally, so that, besides an ordinal aggregative strategy (a ranking), it is possible to choose a cardinal aggregation method producing a

synthetic cardinal index of well-being. This latter option implies that any indicator must be weighted, usually with an equal weight for all attributes. This is, for instance, the option taken up by the UNDP's Human Development Index: the simple mean of longevity, education and income.

In our framework, the set of indicators is heterogeneous and sufficiently large for every indicator to have the same importance (that is, equal weight to anyone) or relative importance (that is, specific weight to anyone). But there are a number of reasons for preferring an aggregative method, despite the multidimensionality of well-being and of its measurements. First, the aggregative process does not claim to take the place of the multidimensional approach: it is simply one additional point of view. This advantage inevitably introduces a certain degree of subjectivity into the choice of the aggregation methodology, although this does not imply that aggregation cannot be part of a scientific approach to factual reality. Specifically, even though the analysis proposed does not go so far as to establish any specific link with policy-making, the index obtained aspires to be of some use for public decision-making. As Dasgupta (1999, p. 1) puts it: "In short to be able to evaluate public policies we need measures of the quality of life".

Public decision-makers obviously cannot rely solely on an index, or on analysis of its possible trends. But this is not the point: the index is a signal, and, for example, its decrease may suggest that something is not working properly. When the index is transparent, it is easy to identify the pulling indicator, and hence to concentrate actions upon it. Fundamentally, the prime benefit of aggregation is that it enables identification of an univocal reference. In

other words, it is possible to focus on the notion of economic and social well-being in its entirety, with awareness that the aggregation method reflects the analyst's values (which should be made explicit).

Used in this article is an ordinal aggregation approach that reduces the subjectivity implied by the attribution of specific weights to individual indicators: the Borda ranking. This method makes it possible to aggregate indicators with different units of measurement and which refer to different periods. It consists of a rule for ranking a number of alternatives through attribution to any alternative (to any member country) of a score equal to its position in the classification criterion (an indicator). In general, the Borda ranking holds that in the case of *n* alternatives, the one ranking first scores *n* points, the second *n-1*, and so on to the *n* place scoring *1* point.

The classification criteria are indicators. The Borda ranking thus gives a score to any member country (alternative) equal to its position (ranking) within the set of indicators (criteria). The scores obtained by any member country in any criteria are then summed in order to obtain the aggregate scores which determine the alternatives' (countries') overall ranking. Suppose that a member country has positions a, b, c, d, e (or 4, 3, 1, 2, 5) in five criteria. Its Borda ranking will therefore be a + b + c + d + e (or 15).

This rule therefore allows definition of a complete ranking of alternatives which can be regarded as a social welfare function, given that the criteria (indicators) are votes that take explicit account of the relative intensities of preferences among the various alternatives (member countries) analysed. Though attractive in its simplicity and transparency, the Borda ranking also has

some evident limitations. It does not resolve the issue of weighting; in our analysis, for instance, two points are given to the strengthening of social bonds (civil and political participation) and only one to income. Moreover, any cardinal information on trade-offs is lost: for instance, Luxembourg and Ireland are respectively first and second in terms of income, with a difference in per capita GDP of 68 per cent, while Finland and the United Kingdom are respectively tenth and eleventh with almost the same GDP (Table 1).

There is, anyway, a deep understanding of the strengths and weaknesses of the Borda ranking that suggests its use for cross-country evaluation of the current level of economic and social well-being.

3 An application to the EU member countries

3.1 Indicators and organization of indicators

We focused on the following data for the EU member countries:

1. *per capita* GDP in purchasing power parities (Y),
2. total employment rate, persons aged 15-64 (Em),
3. youth education attainment level (Ed),
4. health expenditures (He),
5. dwelling facilities (Ho),
6. non-violent crimes (C),
7. environmental quality (En),
8. gross domestic expenditure on research and development (RD),
9. civil participation (Cp),
10. political participation (Pp).

The ultimate aim of the article is to grasp the interactions among different components of economic and social well-being in order to provide public decision-makers with normative, policy-oriented, information. The intention is to provide a ‘snapshot’ based on the most up-to-date data available. Table 1 summarizes the database; Table 2 gives the descriptive statistics of the indicators.

Table 1 - Indicators of economic and social well-being

Countries	Y	Em	Ed	He	Ho	C	En	RD	Cp	Pp
Austria	29,220	69.2	83.8	2,259	98.92	211.67	7.59	2.07	1.91	1.32
Belgium	27,570	59.6	81.3	2,481	97.33	200.72	9.97	2.17	1.45	1.44
Cyprus	18,150	69.2	82.2	941	93.96	76.00	8.48	0.27	0.83	0.94
Czech Republic	15,780	64.7	92.0	1,129	97.52	169.56	11.56	1.22	0.74	0.90
Denmark	30,940	75.1	74.4	2,503	95.76	334.52	8.35	2.40	1.97	1.72
Estonia	12,260	62.9	81.4	562	74.96	138.15	11.68	0.73	0.80	1.05
Finland	26,190	67.7	85.2	1,845	94.18	212.86	10.33	3.41	1.99	1.70
France	26,920	63.2	80.9	2,567	99.20	431.23	6.15	2.23	1.33	1.29
Germany	27,100	65.0	72.5	2,820	97.33	496.23	9.55	2.51	1.73	1.51
Greece	18,720	57.8	81.7	1,522	94.97	81.69	8.49	0.64	0.79	1.05
Hungary	13,400	57.0	85.0	914	80.08	138.75	5.40	0.95	0.90	1.17
Ireland	36,360	65.4	85.7	1,935	94.64	26.18	11.08	1.15	1.72	1.40
Italy	26,430	56.1	69.9	2,204	97.93	236.87	7.42	1.11	0.82	1.11
Latvia	9,210	61.8	74.0	509	75.98	136.97	2.53	0.41	0.46	0.91
Lithuania	10,320	61.1	82.1	478	72.81	55.24	3.39	0.68	0.48	0.89
Luxembourg	61,190	62.7	69.8	2,905	100.00	203.00	19.37	1.70	2.00	1.41
Malta	17,640	54.2	43.0	813	94.97	152.09	7.22	0.64	1.08	1.29
Netherlands	29,100	73.5	73.3	2,612	96.10	133.40	8.72	1.89	1.83	1.63
Poland	10,560	51.2	88.8	629	85.93	205.60	7.80	0.64	0.65	1.11
Portugal	18,280	67.2	47.7	1,618	86.07	20.97	5.91	0.85	1.30	1.31
Slovakia	12,840	57.7	94.1	681	79.31	61.60	6.57	0.64	0.40	0.92
Slovenia	18,540	62.6	90.7	1,545	92.18	131.20	7.34	1.56	1.09	1.10
Spain	21,460	59.7	63.4	1,607	97.33	207.29	6.99	0.95	1.15	1.24
Sweden	26,050	72.9	85.6	2,270	100.00	532.63	5.29	4.27	1.92	1.65
United Kingdom	26,150	71.8	78.2	1,989	97.33	431.59	9.64	1.89	1.81	1.47

Sources:

Y = per capita GDP US$ in PPP. Source UNDP-HDRO. Year 2002

Em = total employment rate of persons aged 15 to 64. Source Eurostat. Year 2003

Ed = Youth education attainment level, defined as the percentage of young people aged 20-24 years having achieved at least upper secondary education level. Source Eurostat. Year 2003.

He = per capita health expenditure US$ in PPP. Source UNDP-HDRO. Year 2001.

Ho = Dwelling facilities , percentage of dwellings equipped with piped water, fixed shower or bath, flush toilet, central heating. Source UNECE and UN Habitat. Various years.

C = non violent crimes (fraud, drug offences, car theft) recorded by the police. Arithmetic mean of rates per 100,000 population. Source UNECE. Year 2000.

En = CO2 emissions in metric tonnes per capita. Source World Bank-WDI. Year 2000.

RD = Gross domestic expenditure on R&D as a percentage of GDP. Source Eurostat. Year 2001.

Cp = ‘rule of law’ as the ability to develop a proper environment for economic and social interactions. Source World Bank-Kaufmann. Year 2003.
Pp = ‘voice and accountability’ a measure of the participation of citizens in the selection of governments. Source World Bank-Kaufmann. Year 2003
Y, Em, He, Ho, RD determinants of well being and Ed, C En, Cp, Pp constituents of well being.
Note that some data on Ho - dwelling facilities (Belgium, Germany, Greece, Malta, Slovakia and the UK) are missing. They were consequently estimated according other housing indicators (persons per room, number of rooms, household size and square meters – Source UN Habitat. Nor do these data series cover all the 25 EU member countries; fortunately we was able to obtain the requisite data). Countries with missing data are included in their relevant third, defined according to the ranking in the above-mentioned UN Habitat housing indicators (Belgium, Germany, and the UK belong to the top third, Greece and Malta to the medium third, Slovakia to the lowest third). The estimated values are then calculated as the average of the relevant third.
As far as gross domestic expenditure on R&D is concerned, the figures for Luxembourg are taken from Swiss Statistics (year 2001). The data for Malta are estimated according to the UNDP-HDRO indicator ‘number of scientists and engineers in R&D per million people’ (year 2001). Since Malta has a very low figure for this indicator, near the bottom of the scale, it is assumed that it consequently has very low expenditures on R&D. Consequently used is the lowest value (0.64) in R&D expenditure figures.

Table 2 - Descriptive statistics of the indicators

	min	max	mean	std dev	coeff var
Y	9,210.00	29,220.00	10,902.90	22,815.20	0.48
Em	51.20	71.80	6.25	63.57	0.10
Ed	43.00	83.80	12.30	77.87	0.16
He	478.00	2,259.00	798.74	1,653.52	0.48
Ho	72.81	98.92	8.56	91.79	0.09
C	20.97	431.59	141.57	201.04	0.70
En	2.53	9.64	3.27	8.27	0.40
RD	0.27	2.07	0.98	1.48	0.66
Cp	0.40	1.91	0.55	1.25	0.44
Pp	0.89	1.47	0.26	1.26	0.21

Source: calculations on data from Table 1

Table 3 depicts the Borda ranking of the EU member countries based on their scores for the ten indicators selected. For each indicator, the score varies between 25 (for the country with the best situation in the specific indicator) and one (for the country with the lowest position). Countries are then listed

according to their ranking, from the best (25 for Sweden) to the least advantaged (one for Latvia). The ranking thus becomes an index of the economic and social well-being of the EU member countries.

Table 3 - Borda ranking of the EU member countries

Countries	Borda	Y_R	Em_R	Ed_R	He_R	Ho_R	C_R	En_R	RD_R	Cp_R	Pp_R
Sweden	**25**	14	23	20	19	25	1	23	25	22	23
Denmark	**24**	23	25	9	21	14	5	12	22	23	25
Austria	**23**	22	21	17	18	22	8	14	19	21	16
Netherlands	**22**	21	24	7	23	15	18	9	18	20	22
Ireland	**21**	24	17	21	15	11	24	4	13	17	17
Finland	**20**	16	19	19	14	10	7	5	24	24	24
France	**20**	18	14	11	22	23	4	20	21	15	14
Luxembourg	**20**	25	12	4	25	25	11	1	16	25	18
Germany	**17**	19	16	6	24	18	2	8	23	18	21
Belgium	**16**	20	7	12	20	18	12	6	20	16	19
UK	**15**	15	22	10	16	18	3	7	17	19	20
Portugal	**14**	10	18	2	13	7	25	21	9	14	15
Slovenia	**14**	11	11	23	11	8	19	16	15	12	8
Spain	**12**	13	8	3	12	19	9	18	10	13	12
Italy	**11**	17	3	5	17	21	6	15	12	8	10
Czech Rep	**10**	7	15	24	9	20	13	3	14	5	2
Cyprus	**9**	9	20	16	8	9	21	11	1	9	5
Hungary	**9**	6	4	18	7	5	15	22	11	10	11
Greece	**7**	12	6	14	10	13	20	10	6	6	6
Slovakia	**6**	5	5	25	5	4	22	19	3	1	4
Malta	**5**	8	2	1	6	13	14	17	5	11	13
Lithuania	**4**	2	9	15	1	1	23	24	7	3	1
Poland	**3**	3	1	22	4	6	10	13	4	4	9
Estonia	**2**	4	13	13	3	2	16	2	8	7	7
Latvia	**1**	1	10	8	2	3	17	25	2	2	3

Source: calculations on data from Table 1

Borda = Borda ranking
Y_R= per capita GDP ranking
Em_R = total employment rate 15-64 ranking
Ed_R = Youth education attainment level ranking
He_R = per capita health expenditure ranking
Ho_R = dwelling facilities ranking
C_R = non-violent crimes ranking
En_R = per capita CO2 emission ranking
RD_R = gross domestic expenditure on R&D as a percentage of GDP ranking
Cp_R = civil participation ranking
Pp_R = political participation ranking

3.2 Correlations among the economic and social well-being indicators

The Spearman correlation matrix[13] of Table 4 shows the Spearman rank correlation coefficients for each couple of the eleven rankings of the EU member countries in Table 3.

Table 4 - Spearman correlation matrix for the indicators of economic and social well-being

	Borda	**Y_R**	**Em_R**	**Ed_R**	**He_R**	**Ho_R**	**C_R**	**En_R**	**RD_R**	**Cp_R**
Y_R	0,879[a]									
Em_R	0,707[a]	0,490 [b]								
Ed_R	-0,048	-0,256	0,002							
He_R	0,880[a]	0,922[a]	0,512[b]	-0,325						
Ho_R	0,680[a]	0,710[a]	0,299	-0,249	0,791[a]					
C_R	-0,454[b]	-0,398	-0,222	0,175	-0,548[b]	-0,672[a]				
En_R	-0,233	-0,457[b]	-0,244	-0,058	-0,338	-0,246	0,107			
RD_R	0,863[a]	0,725[a]	0,573[a]	-0,020	0,814[a]	0,642[a]	-0,675[a]	-0,273		
Cp_R	0,901[a]	0,842[a]	0,663[a]	-0,251	0,834[a]	0,606[a]	-0,512[b]	-0,350	0,824[a]	
Pp_R	0,834[a]	0,772[a]	0,568[a]	-0,285	0,798[a]	0,508[b]	-0,566[a]	-0,282	0,807[a]	0,925[a]

Source: elaboration of data from Table 3

Borda = Borda ranking
Y_R= per capita GDP ranking
Em_R = total employment rate 15-64 ranking
Ed_R = Youth education attainment level ranking
He_R = per capita health expenditure ranking
Ho_R = dwelling facilities ranking
C_R = non-violent crimes ranking
En_R = per capita CO2 emission ranking
RD_R = gross domestic expenditure on R&D as a percentage of GDP ranking
Cp_R = civil participation ranking
Pp_R = political participation ranking
[a] = correlation significant at level 0.01
[b] = correlation significant at level 0.05

[13] The Spearman rank correlation coefficient is appropriate for ordinal variables like those in Table 3. The range of the coefficient is from -1 to +1. The absolute value indicates the intensity of the correlation (0 = no correlation; 1 = perfect linear correlation). The sign of the coefficient shows the direction of the correlation.

Some results

Table 4 shows the predictably close correlation between the Borda and GDP rankings (Y_R). This confirms the importance of economic aspects (income) for well-being, as repeatedly stressed by both Dasgupta and Sen. Similarly close are the correlations between Borda and employment rate (Em_R), health expenditure (He_R), housing conditions (Ho_R), R&D expenditure (RD_R), civil (Cp_R) and political (Pp_R) participations. Conversely, economic and social well-being seems insensitive to education attainment (Ed_R), while it is negatively correlated with environmental quality (En_R) and with crime (C_R). These last results are rather discouraging, especially the one concerning the environment. However, the environmental indicator selected (per capita CO2 emissions) is empirically strictly related to economic growth (in fact, the correlation with Y_R is significant and negative[14]), which is a major assumption of Borda. It is also possible to assume that Borda-powerful countries have neglected or sacrificed environmental quality for other dimensions of well-being, and that in the end environmental degradation is the price paid for economic growth.

Furthermore, it is very likely that the crime indicator (C) is negatively correlated to Borda and to other indicators because of the peculiarity of the

[14] It is worth pointing out again that the Borda rule entails, in the present analysis, that the country with the most favourable situation in the specific indicator is given a score of 25. Therefore, in the case of En, the highest score is given to the country with the lowest per capita CO2 emissions (Latvia, with 2.52 metric tonnes), while the lowest score is given to the country with the highest level of per capita CO2 emissions (Luxembourg, with 19.37 metric tonnes).

rankings of C. In fact, Sweden, Germany, the UK, France and Denmark are at the bottom of C_R, while they show very high Borda rankings (see Table 3). In our opinion this circumstance is due to the indicator selected, C, the rate of reported non-violent crime (fraud, drug offences, car theft). This choice implies, in fact, the use of data about the reporting of crimes, not their prosecutions, and this circumstance is decisive as regards interpretation of results: people are more likely to report crimes in contexts where civicness is developed. For instance, the rate of reported thefts in Sweden (which shows the worst C_R), may be higher than in, say, Portugal (which has the best C_R), not because crimes are more frequent, but because Swedish, owing to the existence of a well developed cultural background, are more likely to report crimes than Portuguese are.

It is interesting to point out as well that there is no significant correlation between Y_R and Em_R (0.490), whilst at the same time the correlation between Borda and Em_R is strong (0.707). This finding bears out the decision to include Em among the indicators of economic and social well-being in order to stress the important non-economic contribution made to well-being by employment, which, as pointed out above and confirmed by the results of the correlation analysis, cannot be demoted to the sole income dimension.

As far as the other correlations are concerned, we point out the counterintuitive and least evident ones, which mainly relate to the Ed_R figures.[15] In fact Ed shows negative correlation both with Borda and Y_R. Education attainments neither seem to improve well-being nor to favour access to more

[15] EnR, too, raises some perplexities, examined above.

remunerative jobs. This circumstance may suggest on the one hand that higher educational levels are not enough to provide an adequate command over the conditions and resources necessary for increasing well-being, and on the other hand that markets are unable to reward skills gained by attending higher levels of education. However, we believe that the apparently counterintuitive correlations of educational attainments depend as well on to the very good results achieved by some EU's new members with low Borda and Y_R, such as some Eastern European and Baltic countries, in terms of Ed. This is not surprising, given the social status associated with education in those countries, and the important role that it has traditionally performed, also as a policy goal for the ex-socialist regimes. Moreover, Ed_R is also inversely correlated with the quality of the environment (En_R), and with civil (Cp_R) and political (Pp_R) participation. These findings are again difficult to interpret, unless one hypothesises that European education systems privilege a sterile model not always able to foster civic consciousness.

Interestingly, the findings of the present work are very similar, in terms of correlations and their dynamics, to those obtained by a similar analysis of the 20 Italian administrative regions (Grasso, 2002), and, in terms of overall results, to those emerged from an assessment of the quality of life in the EU based on a different methodological approach (Grasso and Canova, forthcoming).

Concluding remarks

The common view shares with the utilitarian framework the notion that income coincides with well-being. The aim of this article has been to define a broader notion of economic and social well-being and to verify its magnitude in

the EU. It is therefore sensible to consider the differences between the Borda ranking of the EU member countries and the income-based one (Y_R).

First, we have called attention to the close correlation between the two rankings, which means that Borda and Y_R are not very dissimilar (see Table 5).

Table 5 - Ranking of the EU member countries according to Borda and per capita GDP

Borda	**Ranking**		**Y_R**
Sweden	1	1	Luxembourg
Denmark	2	2	Ireland
Austria	3	3	Denmark
Netherlands	4	4	Austria
Ireland	5	5	Netherlands
Finland	6	6	Belgium
France	6	7	Germany
Luxembourg	6	8	France
Germany	9	9	Italy
Belgium	10	10	Finland
United Kingdom	11	11	United Kingdom
Portugal	12	12	Sweden
Slovenia	12	13	Spain
Spain	14	14	Greece
Italy	15	15	Slovenia
Czech Republic	16	16	Portugal
Cyprus	17	17	Cyprus
Hungary	17	18	Malta
Greece	19	19	Czech Republic
Slovakia	20	20	Hungary
Malta	21	21	Slovakia
Lithuania	22	22	Estonia
Poland	23	23	Poland
Estonia	24	24	Lithuania
Latvia	25	25	Latvia

Source: Table 3
Borda = Borda ranking Y_R = per capita GDP ranking

Nonetheless, there are some interesting differences. First, it should be pointed out that, in terms of the rankings of Table 5, there are two sharply differentiated blocks in the EU: on the one hand the 15 countries that formed

the EU before the 1 May 2004 enlargement (O15); on the other, the 10 new members (N10). The O15 countries in general occupy the top 15 Borda and Y_R positions, whereas the N10 ones are at the bottom of both rankings. Both for Borda and Y_R, only Slovenia from the N10 appears in the highest three-fifths (the top 15), while only Portugal and Greece from the O15 group enter the lowest two-fifths, respectively for Y_R and Borda.

Moreover, the N10 group shows a marked consistency of rankings in terms of Borda and Y_R, while there are some striking inconsistencies among the O15 countries, in spite of a certain general degree of consistency: namely Sweden (first in terms of Borda and only twelfth in terms of Y_R), and Luxembourg and Italy (the former sixth in Borda and first in Y_R, and the latter respectively fifteenth and ninth). In general, it seems possible to identify two patterns: Nordic and the Mediterranean. The former is displayed by Sweden, Denmark and Finland and is characterized by a dominance of Borda over Y_R, highlighting better economic and social well-being ('quality of life', in Dasgupta's words) with proportionally lower incomes. The Mediterranean pattern (Italy, Greece and Spain), where the Borda figures are lower than the Y_R ones, instead highlights some sort of inability by these countries to turn income into well-being.

This analysis – apart from confirming the divide between the old EU countries and the newcomers – does not allow definitive conclusions to be drawn on the economic and social circumstances that have shaped the current situation[16], but it prompts a number of important considerations nevertheless.

[16] This would require the indicators to be linked with the economic and social policies that have produced the situation. This, however, is beyond the scope of this study.

Southern European countries (the Mediterranean group) seem to be still suffering the consequences of a model of development that, although able to generate and promote economic growth, has neglected or even imposed heavy tolls on the other dimensions of well-being. The Nordic countries, by contrast, have followed development paths which have yielded higher levels of well-being, as the term is defined here. The continental countries of the O15 (plus Ireland and the UK) have maintained their long-standing traditions of ensuring acceptable levels of well-being for their citizens. Finally, the backwardness of the latest EU entrants is confirmed in terms of both income and well-being.

The new Europe is highly heterogeneous as regards both income and quality of life. Furthermore, our findings too confirm the sense that enlargement has generated an inevitable increase in internal diversity. Hence, economic growth alone is probably not enough to give to the EU a unitary identity, and cohesion policies should be addressed to a broader spectrum of social and political issues.

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