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Challenges for Europe in the world, 2030

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AUGUR

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Well-Being in the Global Economy: Concepts, Measures and Data Sources

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Introduction[1]

The WP7 of the AUGUR project aims to analyse the impact of the global economy on social and living conditions. The research has two main sub-objectives:

- To analyse the interaction between human well-being and global economic growth, with particular attention to European trends;
- To compare the evolution of well-being in the different regions of the world in the next years according to the global future scenarios defined in the project.

This first paper focuses on the concepts, measures and data sources of well-being. It aims at identifying a definition of well-being that is consistent with the objective of the study as well as operational in terms of data availability.

In recent years, the concept of well-being was the focus of considerable attention on the part of both academics and politicians. A lively debate surrounds the selection of alternative indicators of social progress[2]. There is no agreement on a single concept of well-being, although the consensus is that it is intrinsically multi-dimensional, embracing many aspects of human life. Moreover, measurement is constrained by cultural differences and by the limited availability of comparable information.

The paper reviews this debate and discusses the most widely accepted definitions of the concept and the different approaches to measurement. This is intended to support the selection of the most significant dimensions to the analysis of human well-being. These dimensions will then be merged into the definition that will constitute our space of analysis and evaluation throughout the project.

Although data availability has improved in recent years, considerable information limitations remain "particularly where researchers want to conduct comparative research either across countries or within countries over time" (Harkness 2004). The second aim of this paper, therefore, is to investigate data quality, availability and definition. This is an important step in the context of this analysis, which aspires to

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[1] This paper conforms to the objectives stated in the technical proposal of the Augur project, "The World and Europe in 2030" for the 1st deliverable of WP7.

[2] In this sense, apart from the well known initiative developed by the UNDP (the Human development Index), it is useful to cite the "Global Project on Measuring the Progress of Societies" (OECD) set up in 2004 and the recent European Commission communication "GDP and beyond" (2009), which followed a conference held in Brussels in 2007. Two more high-level initiatives are worth mentioning: the "Commission on the Measurement of Economic Performance and Social Progress" established by the President of France and chaired by Joseph Stiglitz, and the Canadian index of well-being initially publicised in 2006.

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have a global vision of well-being and to embrace the main trends of the last twenty years.

The present contribution is structured as follows. The next section outlines the scope and limits of the analysis. The second section offers a brief review of literature on the concept and measures of well-being. The third section analyses data sources and elaborates on the availability and quality of relevant information. An initial choice of possible indicators is included. Finally, the last section describes the next steps of the investigation.

1. Scope of the Analysis

Work package (WP) 7, concerning well-being, is part of a wider project concerning the World and Europe in 2030. Within this broad framework, this first deliverable deals with two initial, fundamental issues. The first is the necessity to cover and analyse all world regions for an adequate period of time. The second is paying attention to some relevant aspects of human well-being, while necessarily excluding others that are already covered by other work packages of the project[3]. Furthermore, the approach adopted here is mainly operational and the objective is not that of proposing a new definition of well-being. This WP tackles the analysis of well-being with the double aim of carrying out a cross country comparison and setting conditions in the future scenarios for an improvement of global well-being and a more equal distribution of the benefits of globalisation. For this purpose, the analysis focuses mainly on "objective" measurements of well-being, which better represent the determinants of the different levels of well-being and, at the same time, allow for a more direct comparison with social and economic variables. Yet it also takes account of indications coming from subjective measurements, in order to capture cultural and social differences affecting human well-being.

The literature review carried out on well-being conceptualisation allowed to identify three key dimensions of human well-being: human and social dimension, institutions and environment. The difficulty of indentifying indicators that could correctly describe the direct impact of environment on human well-being or ill-being and the fact that environment is already the object of WP5 has restricted the attention of WP7 on social and institutional aspects of well-being. This choice is justified with the necessity to circumscribe the boundaries of the concept in a way that could be operationalised and that allows for international comparison.

Finally, the necessity to cover and analyse all world regions for a sufficient period of time also implies a selection of a basic set of indicators. The priority is, at least in

[3] This is the case, for instance, for economic and environmental variables and their evolution, already measured in WP1 and WP5.

this initial phase, choosing indicators that are based on data as widely available and reliable as possible. Hence, at this stage the primary source is the work of international institutions, such as the UNDP, WHO, ILO, World Bank and UNESCO. The second part of this work deals with the selection of indicators as well as with issues of data availability and reliability.

2. Literature Review

2.1. Main Concepts and Approaches

The nature of well-being (WB) is complex, as it necessarily involves different perspectives of social progress and quality of life. This complexity, in turn, inevitably resulted in conceptual indeterminacy. As said above, no single, commonly accepted definition of the concept exists. Moreover, several other terms represent a similar field of interest, such as "quality of life", "human development", "life satisfaction", "happiness", "well living", etc. Some authors underlined the possible overlapping of these concepts and consequently equate them (Easterlin 2001; McGillivray 2005), while others tend to stress the differences (Sen 1985).

This intrinsic difficulty brought scholars such as Gasper (2004) to propose considering WB as an "umbrella notion", which must be broken down into smaller components in order to become meaningful. Four main streams or components of the concept can be identified in the literature (Gasper 2004; Parfit 1984):

- The "preference fulfilment" approach;
- The "objective list" theories;
- The capability approach;
- The subjective approach.

The following sub-sections will consider each in turn.

2.1.1. The Preference Fulfilment Approach

A first approach considers WB as "preference fulfilment". Based on the concept of utility, this school of thought deems WB as dependent on the satisfaction of people's preferences, expressed by consumption of goods and services. Income is the central indicator of WB, because higher income allows higher consumption and, therefore, a higher utility. The most common operationalisation of this concept involved using

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market-based measures, such as GDP or national income per capita, as a measure of well being.

This approach, however, was widely criticised. Sen (1985)[4], for instance, contended that it is able to capture, at the best, a dimension of "well-having", as income is not important per se, but only insofar it gives people the opportunity to transform their resources into well-being. Other critics highlighted that GDP, much like other measures of income, presents several weaknesses (Giovannini, Hall and d'Ercole 2007; Stiglitz, Sen and Fitoussi 2008):

1) GDP, or GNP, takes into account only monetary exchanges and market activities;
2) It does not pay enough attention to income distribution within society;
3) It includes "bad goods", such as, for instance, nuclear weapons, which are not compatible with WB;
4) It focuses only on flows and not on stock (ex. GDP excludes changes in asset values).

These points are confirmed by a recent paper by Easterlin R. and Angelescu L. (2007). Based on a cross sectional and time series analysis of the relation between some indicators of WB and economic growth, they concluded that there is a clear correlation between growth and some material indicators of WB. With economic growth, they noted, "comes markedly larger amounts of food, clothing, and shelter per capita, as well as sweeping qualitative changes in the level of living". Yet growth is generally accompanied by am increase in "bads", such as pollution, urban concentration, obesity. Moreover, "the central role of economic growth becomes even more dubious" when one considers other social indicators (health, education, and political and human rights).

2.1.2. The Objective List Approach

A second stream of research on WB is generally known as the "objective list approach". The main idea behind it is that it is possible to identify some "dimensions" of WB (or quality of life, human development) that indicate a "good quality of life", independently on the individual concerned[5]. The basic needs approach emphasises the achievement of some "basic needs" in order to have a "minimal decent life". Basic needs are defined as particular levels of health, nutrition, education, sanitation.

[4] In a similar vein, the UNDP (1990) retorted that "income is a means, not an end".

[5] Among several theories included in this approach, it is worth mentioning: the basic needs approach (Streeten et al. 1981); the human needs theory of Doyal and Gough (1991, and laso Gough, 2003); and the axiological categories of Max-Neef (1993).

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The indicators used by Streeten et al. (1981) to assess basic needs are: life expectancy at birth (health); literacy and primary school enrolment as a percentage of the population aged five to fourteen (education); calorie supply per head (nutrition); infant mortality or percentage of population with access to medical facilities (sanitation). These indicators are intended to permit an analysis of the satisfaction of basic needs among a population within a given geographic area.

Doyal and Gough (1991) identified a minimum set of "needs" which, if not satisfied, may imply a "serious harm of some objective kind"[6]. They consider "physical health" and "autonomy" as basic needs, since these are necessary to achieve any other goal. Although basic needs are universal, in different cultures they can be achieved through different "satisfiers" or intermediate needs. Nevertheless, a minimum set of universal characteristics are defined and grouped into 11 categories of intermediate needs: adequate nutritional food and water; adequate protective housing; non-hazardous work and physical environments; appropriate health care; security in childhood; significant primary relationships; physical and economic security; safe birth control and childbearing; and appropriate basic and cross-cultural education. On the basis of this approach, an analysis of human WB could be carried out trough indicators operationalising objective need-satisfaction in terms of basic needs and intermediate needs.

The starting point of Max-Neef is that "quality of life depends on the possibilities people have to adequately satisfy their fundamental human needs" (1993:12). These needs "are finite, few and classifiable [....] and the same in all cultures and in all historical periods" (1993:18). What changes among different cultures and over time is the way in which human needs are satisfied (that may be done "at different levels and with different intensities"). Poverty is the not-actualisation of the human need.

Max-Neef built a taxonomy of human needs based on a matrix of needs and satisfiers, the latter divided in "being", "having", "doing" and "interacting". Part of the matrix is presented below as an example:

Human needs/ Satisfiers	**Being**	**Having**	**Doing**	**Interacting**
Subsistence	Physical health, mental health, equilibrium	Food, shelter, work	Feed, procreate, work	Living environment, social setting
Protection	Care, adaptability, solidarity	Insurance system, savings, health system	Cooperate, prevent, take care of	Living space, dwelling
…….	…….	……	…..	…..

Source: adapted by Max-Neef (1993)

The needs identified by Max-Neef are nine: subsistence, protection, affection, understanding, participation, leisure, creation, identity, and freedom.

[6] As stressed by Gough the fulfilment of need is "our most basic human interest", otherwise there is an impediment in social participation in a particular time, place and culture.

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Other contributions within this framework are worth mentioning. Alkire (2002) offers a clear analysis of different theories: Martha Nussbaum's basic human capabilities; Deepa Narayan's dimension of well-being; Robert Cummins' quality of life domains. There are some differences among these approaches, in terms of language or methodology to identify the important needs (theory-based, evidence-based, participatory methods). However, what is important to observe for our purpose is many overlaps and some common important dimensions can be observed among the different lists of human needs: health, bodily integrity, knowledge, economic security, freedom, leisure, self-expression. These dimensions can constitute a "useful tool in addressing a numbers of knotty development problems in a multidimensional fashion" (Alkire 2002:194).

2.1.3. The Capability Approach

One of the most famous and known approaches to WB is the capability approach of Amartya Sen. In several writings (1985; 1989; 1999), Sen recognises that economic growth and the diffusion of goods and services are necessary for human WB. Yet they are not sufficient. In his view, it is crucial to understand "what people are able to achieve" (or to function) with the goods and services at their disposal. When assessing human WB, the foucs is, or should be, on human functionings and on the capability to choose among several combinations of these functionings.

Functionings are the achievements of a person (for example being well nourished) thanks to a given bundle of commodities. Functionings can depend on personal and social factors. A funcitioning n-tuple represents a combination of doings and beings. *Capability* is the ability of people to achieve a given functioning, and a capability set is the different available functioning n-tuple a person can achieve (Clark 2005).

Yet, the capability approach runs into two main problems when faced with empirical analysis:

- The selection of relevant variables to measure the functionings and capabilities for analysis;
- The distinction between functionings and capabilities, the latter meaning "what people are free to do and to achieve".

Concerning the first problem, it is worth noting that there is no unique list of indicators to measure functionings and capabilities. Sen never identified a clear list of capabilities. Others tried to do it (see Nussbaum 2000[7]), but their indications are not simply transformable into empirically measurable indicators (Lelkes 2005).

[7] Nussbaum (2000) proposes the following ten items: life expectancy, bodily health, bodily integrity, senses imagination and thought, emotions, practical reason, affiliation, other species, play and control over the environment.

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Some first efforts were made by Sen himself. Comparing Brazil, Mexico, India, China and Sri Lanka he found that, although in terms of GNP per capita Brazil and Mexico were better positioned than India, China and Sri Lanka, in terms of some functionings (life expectancy, infant mortality and child death rates) Sri Lanka performed best of all, and China performed better than India (Mexico did better than Brazil). Sen also showed that women are worse achievers than males for several functionings, like age-specific mortality rates, malnutrition and morbidity (Sen 1985).

The human development approach, as conceptualised by the UNDP, is perhaps the best known attempt to apply Sen's capability approach. The human development strategy is a "people-centred strategy" (Griffin and McKinley 1992), stating that human WB is a central point for the development and the wealth of nations. The human development approach contributed to building a multidimensional concept of WB based on the enrichment of human lives, despite the fact that often it has been interpreted in a narrow sense reflected by the Human Development Index (see Fukuda-Parr 2003).

2.1.4. The Subjective Approach

Finally, a last approach is based on the concept of "subjective well-being". This approach originates from psychology, but become popular also in economics since Easterlin's study on happiness and income (1974). WB is viewed as a matter of individual mental state and as a hedonic or affective experience: it is assumed that people know what a "good life" is for them and choose, consequently, how to live it. As observed by Diener (quoted in Angner 2009), subjective well-being "is concerned with individuals' subjective experiences of their life. The underlying assumption is that well-being can be defined by people's conscious experiences – in terms of hedonic feelings or cognitive satisfaction".

There are, however, some significant differences within this approach (Angner 2009). First, some authors think that well being is *exclusively* determined by people's mental state and experiences, whereas for others WB is a wider concept, with subjective experiences representing just one component of WB (see Kahnemann 2000). Second, there is no common view about the nature of subjective WB, "whether it is constituted by a cognitive, hedonic, emotional or mood state, or some combination, and about whether to call the state "happiness", "satisfaction", or something else entirely" (Angner 2009).

A large amount of empirical work exists on the subjective approach[8]. The heated debate, within academic world and not only, stirred by this concept is due mainly to two reasons. On the one hand, subjective WB presents itself as an alternative to

[8] See par. 1.2.2 for more details.

income-based approaches or to social indicators or capability-based approaches. On the other hand, many scholars claim a relevant role for happiness as the main goal for policy interventions (see Layard 2005).

This last point is beyond the scope of this paper. Nevertheless, two key points are worth mentioning in this regard. Firstly, as observed by Sen[9], happiness can be an important aspect of WB, but it is not the only component. Secondly, if brought to its extreme consequences, this kind of approach may imply have unwanted effects on policy. Just two examples: Deaton (2008) reports that the high presence of HIV is not correlated with the reported satisfaction of people with their health. That could imply a non-intervention strategy on this issue. Clark (2010) proved the existence of a perverse relationship between unemployment and subjective WB in English regions: where the unemployment rate is high the satisfaction is higher than where the level of unemployment is low. As Clark writes "we should then concentrate on moving back into work those who live in low-unemployment regions (as they suffer the most), effectively creating ghettos. Note that although this is anti-egalitarian with respect to unemployment, it is egalitarian with respect to subjective well-being".

2.2.Measuring Well-Being

This section offers a short description of the main measures of WB. It distinguishes between objective measures and subjective measures. The discussion is based on the above review and focuses on the measures that can be applied to comparisons among countries.

2.2.1. Objective measures: adjustment to GDP and composite indexes

A first approach is aimed at correcting GDP, eliminating from its calculation those elements which do not contribute to WB while adding other aspects that are not presently included, such as social and environmental factors. These elements are aggregated to GDP through a monetary estimation of their value.

[9] "… Consider a very deprived person who is poor, exploited, overworked and ill, but who has been made satisfied with his lot by social conditioning (through, say, religion, political propaganda, or cultural pressure). Can we possibly believe that he is doing well just because he is happy and satisfied? Can the living standard of a person be high if the life that he or she leads is full of deprivation? The standard of life cannot be so detached from the nature of the life the person leads." (Sen 1991, quoted in Bandura 2008).

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Quantifying these additional elements is the major difficulty of this approach, also considering that "internationally-agreed standards on how to value these non-market factors are yet to be developed" (Boarini, Johansson, D'Ercole, 2006). An initial attempt, often referred to in the literature, was made by Nordhaus and Tobin (1973). They subtracted from NNP a number of components that do not contribute positively to welfare (such as capital consumption, pollution, and police services to combat crime) and added monetary estimates of other components that contribute positively to welfare (such as leisure or work at home), thus defining a "measure of economic welfare" (MEW). Hence they converted MEW into a "sustainable measure of economic welfare" (SMEW), taking into account changes in total wealth. The level of MEW resulted in Tobin's analysis higher than GNP, but, analysing the development of the two indicators from 1929 to 1965 in the US, they found out that the growth of MEW was slower than, but aligned to, GNP growth. Therefore, they concluded that GNP remains a good indicator of welfare.

Another indicator is the Genuine Progress Indicator (GPI)[10], aimed at integrating a measure of WB with the concept of sustainability. In GPI personal consumption expenditures on goods and services are adjusted to take into account of inequalities in a given year[11]. GPI then adds an estimated value of household volunteer work[12] and net benefit from services of consumer durables. Some other items representing social costs are subtracted, such as the costs of crime, of loss of leisure time, of underemployment[13]. Finally environmental losses are subtracted, such as pollution, loss of wetlands, loss of primary farmland, resource depletion and carbon dioxide emissions damage (by counting the current cost of the depletion or degradation of wetlands, forests, farmland, and non renewable minerals and the costs of air and water pollution as measured by actual damage to human health and the environment).

Like MEW, GPI is measured in monetary terms and can be compared to GDP. Talberth, Cobb and Slattery (2006) calculated GPI from 1950 to 2004 for the US, showing that GDP per capita and GPI per capita tend to diverge since 1970, with GDP increasing while GPI remains flat, suggesting the "threshold hypothesis" that economic growth is correlated to quality of life only up to a certain point, then economic growth implies a deterioration in the quality of life (Max-Neef 1995).

Neaumayer (2004) recommends avoiding the integration of WB and sustainability in a single indicator, because "what affects current well-being need not affect

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[10] See http://www.rprogress.org

[11] The adjustment is made by dividing the personal consumption by an Income distribution index, which measures the relative change in the Gini index (1968=100).

[12] "The GPI includes the value of this work figured at the approximate cost of hiring someone to do it. The GPI also takes into account the non-market benefits associated with a more educated population".

[13] Underemployment refers to persons discouraged, who would want to work but are not looking for a job or involuntary part-time.

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sustainability and vice versa"[14]. He proposes an approach that tests the sustainability of a current WB indicator using a specific indicator of sustainability. He carried out an analysis using the Human Development Index (see below) as a measure of the achieved current well being and the Genuine Savings (GS), which is an indicator of sustainability. GS has been proposed by the World Bank which estimates of the Genuine Savings (GS) indicator, focused on the sustainability concept. The GS is calculated as net saving (Gross National Saving minus the depreciation of produced capital), plus current expenditure on education, less depletion of natural capital (fossil energy, mineral resources and forest) and monetary value of damages resulting from CO^2 emissions. Compared to the previous indicators, GS is calculated for a more numerous group of countries (201 countries) and data are available from 1970 to 2006.

A recent study (Masayuki and Sovannroeun 2008) used GS to examine the path of sustainability of 84 countries form 1980 to 2005. They concluded that "high-income countries show relatively good sustainability, and low-income countries and resource-dependent countries are problematic in sustainability". Considering trends and instability[15] of GS the results can change. For example, they find that Japan, China and Sweden, which have a similar value of GS average, show different sustainability paths: China has the highest trend, but its path is the most unstable. Further, Sweden's GS average is lower than that of Japan, "but Sweden's GS path has a positive trend, while Japan's GS path has a negative trend. […] From integrated perspectives, Sweden may be evaluated as being better than Japan in terms of GS performance".

Another approach consists in constructing composite indexes, able to capture the multidimensional aspects of WB. Many different indices have been proposed in the last twenty years (Bandura, 2008) and their main aim is facilitating international comparisons or investigating the evolution of WB over the time.

Composite indices differ from the "supplementation strategy" as it is called in Brandolini (2008), where the analysis is conducted without any form of aggregation of the domains, but issue by issue. This has been criticised for mixing "eclectic indicators" without any conceptual link among the different variables and for making it difficult to reach an overall conclusion.

Several points are debated in the literature concerning composite indexes. One is the choice of the components of the index. In The Human Development Index (HDI), for example, the choice of the basic indicators (GPD per capita, life expectancy, enrolment ratio and adult literacy) is justified on the assumption that they represent

[14] This due to the fact that "current well-being is affected by the way in which current total capital is used. Sustainability is only affected if total capital stock itself is affected."

[15] According to the author "This instability can be thought as the result of the failure of managing the balance between the economic development and the environmental conservation. Therefore, the policy that stabilizes GS path is important for China's sustainable development in the future"

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"basic capabilities" ("to lead a long and healthy life, the ability to be knowledgeable and the ability to have access to the resources needed for a decent standard of living", UNDP 1995). Some authors suggested other possible aspects to be introduced, such as political freedoms and rights (Dasgupta 1990), human security (McGillivray and Noorbbakhsh 2004) or the distribution of income (Chatterjee, 2005). In this regard, criticism also concerns the application of the same components to countries at different levels of development. Industrial and developing countries, the argument goes, might be better characterised with distinct features. One strategy might be to avoid a simple index and using different indexes involving different components for each county or group of countries. Such method, anyway, has a high analytical cost in terms of the lack of international comparisons. A different path was suggested by Anand and Sen (1992), who proposed a unique set of components but possible variation in the indicators on the base of the different level of human development. For instance, they suggested assessing countries at a low level of human development on the basis of life expectancy, and countries at medium level trough a combination of child mortality and life expectancy.

A second issue that is often underlined in the literature is the weighting system of the components of the index. In HDI the same weight is given to the different components, following the thesis that all the components are equally important. This choice has been criticised from several points of view: a non-weighed structure implies that each component is important to achieve WB, "at all points of time and levels of achievement and in all regions, countries, cultures, levels of development". An implicit weighing comes out form the rescaling procedures adopted in HDI (McGillivray and Noorbbakhsh 2004; see also Santon 2007 for an history of the debate aorund the HDI). Many different alternatives exist to set a system of weights and each of them affects the final results so that, according to Decancq et al. (2008) some robustness test should be applied in any case.

Decancq, moreover, describes the main differences between several methods applied in order to determine the weight of components, such as data-driven weighting[16] schemes and participatory approaches. It is worth noting that some scholars tried to apply different statistical methods to the data used in HDI and their results tend to be homogeneous in ranking countries (Santon 2007). Decancq et al. also cite an interesting study carried out by Chowdury and Squire (2006) through a survey from "the expert community" in order to understand whether other weighting schemes could emerge for the components of HDI. They found out, however, that "the average weighting schemes does not statistically differ form the present equal weighting scheme".

[16] Regressions methods, multivariate analysis, frequency base weights.

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2.2.2.Subjective Measurements

Usually subjective well-being (SWB) is measured on the base of people's self-assessment. Yet there are different aspects considered in the indicators of SWB:

- Life satisfaction (defined as the overall judgment people make regarding their life at a particular point in time);
- Hedonic experience of positive or negative effects (conceived of as the flow of positive or negative emotions).

The first aspect is usually measured by asking people to self-assess their satisfaction with life in general or relative to some specific area (job, health, etc.), ordering the answers from 0 or 1 (totally unhappy) to 10 (totally happy). The second aspect, hedonic experience, is measured on the basis of a person's report of an event, at the time or shortly after[17].

A large economics literature focused on the analysis of the determinants of SWB, usually seeking the conditions that affect it. Most of the economic analysis has been concerned with what is known as the "Easterlin paradox" (Easterlin 1974, 2001). In "Does Economic Growth Improve the Human Lot? Some Empirical Evidence" (1974) Easterlin found a "noticeable positive association" within countries between income and happiness reported by people, but no correlation (for the US) between the average aggregated level of happiness and the growth of national income per capita. Other studies extended the analysis to more countries and the results were confirmed (Easterlin 1995, Blanchflower and Oswald 2000). Many explanations have been proposed:

- Income is an important determinant of WB until basic needs are met (Veenhoven 1991), then other factors become more significant, like social capital, good relations, etc.;
- People's aspirations increase contemporary to the rise of income, offsetting the increase in WB. That means that people tend to "adapt" to the changes of the environment (Easterlin 2001; Frey and Stutzer 2002);
- Perceived WB can undergo only short-term changes, because it is kept constant around a "set point" by a series of psychological devices (Cummins et al. 2003).

The debate on Easterlin paradox is still open. In 2008, economists such as Justin Wolfers and Betsey Stevenson published a paper where they reassessed the Easterlin paradox using new time-series data. They concluded that increases in absolute

[17] The world value survey, for example, has distinct questions on satisfaction and happiness, such as: 1) Taking all things together, would you say you are: 1 Very happy 2 Rather happy 3 Not very happy 4 Not at all happy? 2) All things considered, how satisfied are you with your life as a whole these days: Completely dissatisfied Completely satisfied 1 2 3 4 5 6 7 8 9 10? Eurobameter and the European quality of life survey also include these two questions.

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income are clearly linked to increased self-reported happiness, for both individuals and entire countries. The key relationship is between happiness and the logarithm of absolute income, suggesting that above a certain point happiness increases more slowly than income, though no "saturation point" is ever reached. The study provides evidence that happiness is determined not only by relative income, but also by absolute income (see also Deaton 2008).

Besides income, other topics have been analysed under the subjective approach, as for example labor conditions. The literature agrees on the fact that unemployment affects negatively the WB reported by people: unemployed people seem less happy than the employed even after controlling for their lower income (Blanchflower 2008). The same conclusion holds if one follows unemployed people over time, demonstrating that unemployment does not exclusively determine economic loss, but also low self-esteem and depression (Frey and Stuzter 2002). Some scholars proved that unemployment affects happiness (in a negative way) more than inflation (Di Tella, MacCulloch and Oswald 2001).

There is also evidence of a correlation between subjective WB and non-economic factors. Negative changes in health status tend to affect negatively the happiness of people. Adaption seems not to work in this case: less healthy people are also less happy throughout the life cycle (Easterlin 2004). Deaton (2008) is more prudent concerning the validity of self-reported health status: he finds that in Eastern Europe health satisfaction is low, in accordance with their lower level of life-expectancy, but in some African countries (where there is a significant decline in life expectancy due to diffusion of HIV/AIDS) people do not express a low satisfaction with health.

Family is another important factor related with subjective WB: marriage raises people's happiness across different cultures and societies (Helliwell 2003). Considering different birth-cohorts, Blanchflower and Oswald (2007) found a U-shaped relation between happiness and age.

The institutional context also influences subjective WB. In a recent cross-country study carried out by Bjornskov et al. (2008) found that the association between formal institutions and subjective WB is positive, thus showing a significant effect of institutions on average national happiness. Moreover they set up two different measures of institutional quality (applying a factor analysis on eight simple indicators), representing "economic-judicial[18]" and political institutions. They conclude that the "economic-judicial type seems to dominate the political institutions type when a sufficient number of developing countries enter the sample, while analyses restricted to middle-high income countries show an additional strong support for a beneficial effect of the political institutions type."

Up until today, research on subjective WB focused on developed rather than on developing countries. The main reason for this is data availability, above all in terms of time series. However, the literature on happiness and WB in developing countries

[18] Protecting life, ensuring property rights and providing economic opportunities.

has beefed up in recent years, as new sources of data have come up (Conceição and Bandura 2008)[19].

2.3.Overarching Dimensions of Well-Being

The previous analysis offered a picture of the main dimensions of WB. Among them, it is contended that the capability approach is best placed to serve as a background framework for analysis. This is due to several reasons. The capability approach focuses on the multidimensional features of human WB. Although this element is also present in other approaches, in Sen's approach the achievements reached in human WB are only a starting point. Moreover, the capability approach emphasises and takes account of human diversity: differences in personal situations and the social environment generate variations in the conversion of resources into functionings and capabilities. These elements, although too complex to be operationalised, are potentially very important in explaining possible differences across countries, and in particular between developed and developing countries.

The above analysis, furthermore, suggests some key dimensions and recurrent themes that can be considered as a minimum set of features to be considered in order to asses human WB. A cross-reading of the different approaches allows us to divide these dimensions into three broad categories: human and social dimension, institutions and environment.

Human and social dimension

This dimension encompass some basic aspects of individual and social life and relates to the capacity to access to public goods and experience social inclusion. It includes:

- The **health status** of the population, intended as length and quality of life. This is a basic functioning for a person. Dasgupta (1993) suggests that this "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".
- **Education**. There is a long tradition in economic research that identifies education and human capital as important elements for economic growth. They play an important role also in the field of human WB, not only in reaching monetary outcomes (earnings, income, etc…). The literature points to the existence of a correlation of education with subjective WB, health, social connections and participation in civic and political life. According to Griffin and McKinley (1992), the priority of human capital formation derives from three considerations: a) the returns of investing in human capital is higher than other

[19] For example the latinbarometro (from 1995), afrobarometer (form 1999), arabbarometer (form 2005).

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form of investment; b) human capital may economise the use of physical capital; c) the benefits of human capital "are in general more evenly spread than benefits from other forms of investment".

- **Employment conditions** affect human WB in a twofold manner. Firstly having a job is a first step towards avoiding deprivation and low standards of living. Work, however, can also be a source of stress, risk, negative experiences. For this reason it seems important to consider job quality and security. Yet defining what constitutes a "decent work" (according to the ILO's terminology) is not a simple exercise. This is, yet again, a multidimensional concept, involving working time, social security, stability of work, gender differences. Moreover, statistics on decent work and job quality exist in several countries, but uniform indicators do not exist for comparison in a global dimension.

Institutions

- **Institutions**. Democracy and participation are features of institutional quality which can be directly related to Sen's concepts of voice and critical voice and represent fundamental aspects of WB (Sen 1999). Citizen participation can serve to improve public policies and reduce social conflicts. The quality of institutions also depends on the existence of rules and laws as well as on their enforcement. The reliability of institutions generates trust between the members of a society and contributes to WB. "Well-functioning legal systems provide and enforce property rights, insuring citizens against violence, theft and economic exploitation, while democratic institutions and political decentralization provide everyone with the means to influence the political process" (Bjørnskov 2009).
- **Social Capital.** Defined as "social networks and the associated norms of reciprocity and trustworthiness" (Stiglitz, Sen and Fitoussi 2009), social capital positively affects the productivity of individuals and groups. Studies proved that social capital is also correlated to subjective WB. It must be said that the measurement of social capital is not a simple task, especially in an international context. Some indicators have been developed and used but they have important limits: the presence of formal civil society organisations, for example, does not say anything about the presence and density of social connections. Moreover, some aspects of social capital, such as social trust and social isolation, can be measured only through survey data.

Environment

The concept of environment is often related to that of sustainability. Yet environment can be considered as an important element affecting "current" human WB as well. However, while sustainability indicators measuring the impact of population on environment could be individuated, finding an indicator measuring a direct impact of environment on human well-being or ill-being is more complicated. Moreover, as a work on environmental indicators is carried out by the WP 5 of the AUGUR project this dimension will be not considered within the scope of our analysis.

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3. Data and Sources

This part of the paper makes a first attempt to define a measurable concept of WB. Then, chapter 4 investigates, firstly, the differences between developed countries and poorer countries and, secondly, the position of each country compared to countries with similar features. This is done in order to give a snapshot of the current levels of WB in the world.

A set of indicators representing WB is introduced in the following paragraphs. After describing the criteria guiding the selection of the variables, we scrutinise the characteristics of available data and then explain in detail the logic underlying the choice of each indicator.

3.1.Description of the Available Data

Indicators we are looking for have to reflect the multidimensional approach to WB described in preceding paragraphs and including social and institutional dimensions. On the other hand, the necessity of having an extensive coverage of countries limits strongly the possibility of using available sources. Indeed, indicators should cover most of the population living in macro areas of the world and also, in any case, most countries holding big shares of world GDP. The macro area we refer to reflects the division of the world made by the UN on the basis of countries' geo-position and income level, adjusted in order to be employed in the present research programme.

We consider UN statistical sources because they currently collect a vast array of non-income based social and political variables of WB for most countries of the world. As Harkness argued, these variables "*reflect the progress countries are making towards attaining fundamental development goals … others acts more as intermediate indicators of progress*" (Harkness 2004). Since we deal with both developed and developing countries, indicators should be able to capture very different aspects of WB that may relate to different stages of development. Consequently it is necessary to consider as large as possible a number of sources so as to measure differences between developing and developed countries, and tell the differences within the two groups.

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The **World Development Indicators** is a limited set of indicators provided by the Wold Bank on a wide range of topics, among which: balance of payments, development framework (i.e. diffusion of communication technologies), environment-related issues (as for example CO2 emission, air pollution, electric power consumption, forest and surface areas), childhood, diffusion of diseases, poverty, gender equality and population.

The **Millennium Developments Goals** (poverty eradication, development, protecting environment) were established by the Millennium Declaration endorsed in 2000 by 189 countries. They are supported by a system of 18 quantified targets and 48 monitoring indicators. Indicators measure progress toward the achievement of fundamental aspects related to human development: poverty, malnutrition, diffusion of epidemic diseases, access to primary education, access to healthcare. As regards environment, there are several variables addressing biodiversity protection as well as CO2 equivalent emissions. Data are broken down for sex and age, where appropriate. Several indicators are specifically devoted to children's condition as well as to gender issues such as women's access to education.

UNESCO provides statistics on education and literacy collected by yearly surveys on 200 countries integrated with national and international household surveys and based on national census. Data regard education attainments, enrolments, graduates, entrants, educational personnel, class size, demography and educational finance. Moreover specific surveys are conducted on movies, newspapers, radio, televisions and communication technologies collecting data on a number of media and their diffusion among the population.

The **International Labour Office** (ILO) provides global statistics on employment, unemployment, hours of work and wages.

The **World Health Organisation** (WHO) provides a large amount of detailed statistics on specific diseases as well as on diffusion of sanitation facilities, broken down by age and sex with specific information on childhood and maternity.

The **World Wide Governance Indicators** of the World Bank are aggregate indicators given by statistical combination of a range of surveys on political and civil rights made by various bodies around the world (survey institutes, think tanks, non-governmental and international organisations). The surveys are based on subjective answers on the quality of governance given by a large number of firms, citizens and expert survey respondents in industrial and developing countries.

As is well known, data quality is affected by significant constrains due to the varying local capacity to collect statistical data, especially in developing countries. However, both range and country coverage have become more and more extended and reliable in recent years thanks to UN programmes supporting capacity building and the adoption of international accounting methods.

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After selecting the indicators that are best suited to serve the purposes of this study, the availability and quality of the data will be examined. The following table summarises the characteristics of the data concerning country coverage, range, data points available and any specific limitations which might affect cross-country comparison.

Features of the indicators

Indicators	Countries with data (n)	Time	Data points/not available	Notes
World Development Indicators (World Bank)				
Fertility rate (births for woman)	205	1960-2007	5362/9840	Every 3 years data are available for almost all the countries; in recent years timing and country coverage increased.
Poorest quintile's share in national income	142	1990-2007	142/2556	a) Only one data point for each country b) Estimation based on national household data differing in methods and quality of data that make indicators not easily comparable across countries.
Primary completion rate	197	1991-2007	1950/3315	Series with missing data are completed with estimations
Internet users (per 100 people)	217	1995-2008	2666/3028	
Life expectancy at birth (years)	205	1960-2008	8841/10045	
Mortality rate under-5 (per 1,000)	192	1960-2007	2650/9216	Data available for most countries every five years
Prevalence of HIV population 15-49 years	132	1990-2007	2097/2376	
Net migration	191	1960-2005	1944/6876	Data available for most countries every five years
PM 10 pollution (micrograms per cubic meter)	189	2001-2006	1118/1134	
CO2 emissions (kg CO2 per $1 GDP PPP)	176	1990-2006	2845/2992	
Worldwide Governance Indicators (World Bank)				
Voice and accountability	212	1996-2008	2040/2120	*"Captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media"*[20]. All six indicators need caution in cross-country comparison

[20] Kaufmann, Kraay, Mastruzzi (2009).

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Indicators	Countries with data (n)	Time	Data points/not available	Notes
Political stability and absence of violence	212	1996-2008	2024/2120	*"Captures the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism"*
Government effectiveness	212	1996-2008	2060/2120	*"Captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies"*
Regulatory quality	212	1996-2008	2025/2120	*"Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development"*
Rule of Law	212	1996-2008	2051/2120	*"Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence"*
Control of corruption	212	1996-2008	1972/2120	*"Captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests"*
UNESCO				
Adult literacy	194	1980-2007	1217/7372	Most countries data available for 1995, 2000, 2005, 2006, 2007
Gross Enrolment Ratio	192	1999-2008	1406/3648	a) 2002-2005 are years with more data points b) more than 50% data points are estimated
Enrolment in upper and lower secondary education ratio	216	1999-2008	1590/2050	Many data estimated
Public expenditure on education as % of GDP	178	1999-2008	1033/1780	a) More data points for the period 199-2004 b) some data estimated by UN for developing countries and other Asian countries
UNDP - International Human Development Indicators				
Mean years of schooling (of adults)	173	1980, 1990, 2000, 2005-2010	1489/1557	Data for 2006, 2007, 2008 and 2009 are interpolated
Expected years of schooling (of children)	190	1980, 1990, 2000, 2005-2010	1606/1710	

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Indicators	Countries with data (n)	Time	Data points/not available	Notes
World Health organisation (WHO)				
Per capita governmental expenditure on health (PPP, $)	193	1995-2006	2305/2316	
Per capita total expenditure on health (PPP, $)	193	1995-2006	2305/2316	
Healthy life expectancy at birth	191	2003	191/191	
International Labour Organisation (ILO)				
Employment to population ratio, 15+, total (%)	173	1991-2008	3114/3114	Ages 15 and older are generally considered the working-age population.
Unemployment rate	120/184	1970-2008	2128/4680	a) Differences in population considered in work age by country b) Time series interrupted due to changes in statistical methods over time
Millennium Development Goals				
Proportion of population below 1 $ (PPP)	115/184	1990/2007	403/2070	a) Only one data point for each country b) Estimation based on national household data differing in methods and quality of data that make indicators not easily comparable across countries.
Population below national poverty line	87	1990-2006	169/1479	a) In average only two data points for each country b) a numerous of European countries, USA, Japan not available
Proportion of population using an improved water source	198	1990 1995 2000 2005 2008	913/990	Indicator does not take in account actual drinking water quality nor time spent on getting water
Proportion of population with access to improved sanitation	194	1990 1995 2000 2005 2008	893/970	
Environment statistics (WB)				
Environment Statistics Database (UNSD)				
Percentage of total population served by municipal waste collection	79	1990 1995-2006	495/1106	
Intentional Homicide Data (UN Office on Drugs and Crime)				
Intentional homicide (rate per 100,000 population)	198	2003-2008	766/1188	Data points present for a big numerous of countries only in 2004.

3.2.The Selection of Indicators

Six indicators (table below) have been selected from the previous list. They cover around 140-150 countries, out of roughly 230, and over 90% of the world population, since the end of the 1990s.

The indicators that were excluded present significant comparability problems, in particular between high income and medium-low income countries. The unemployment rate, for example, is excluded – albeit it is taken into consideration in the conclusions of the literature review – because the age at which a person is included in the labour force varies significantly among countries (10 to 16). Furthermore, the quality of labour force survey is yet scarce in many cases and also indicators calculated with the same method, as employment ratio (employed among population aged 15 years and over), hardly can be used for global comparison purposes. Therefore, the set of indicators will include employment ratio only for rich countries.

As far as poverty indicators are concerned, there are very few data points available, usually only one for each country, as in the case of population living on less than $1 per day.

These aspects will require further analysis to verify to what extent estimates or dummy variables can adequately cover labour market and labour inclusion components, as well as income distribution influences on well-being.

Other indicators are excluded simply because the number of countries available is insufficient for the scope of the study. This applies, for example, to the indicators on population below the poverty threshold (87 countries) and on population served by municipal waste collection (79) or to the Healthy life expectancy at birth indicator.

The set of indicators presented below constitute only an initial operational choice. As we have already mentioned before, developed and developing countries might be better characterised with distinct features. Two options to this problem could be considered: the first one involves the choice of a set of basic indicators valid for all countries and blocs that could be complemented with the choice of supplementary indicators for smaller groups of countries or blocs for which data are available (i.e. more developed countries/blocs); the second one involves the choice of alternative indicators within each dimension that could be different for developed and developing countries.

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Final set of indicators

SOCIAL DIMENSION

1. Life expectancy at birth in years
2. Proportion of population using an improved water source
3. Access to improved sanitation facilities
4. Adult Literacy/ Mean Years of Schooling/ Expected years of schooling
5. Mortality rate under-5 (per 1,000 aged under-5)
6. Employment to population ratio, 15+, total (%)

INSTITUTIONAL DIMENSION

Not yet identified

The social indicators included in the final set recall the basic needs theory according to which attention should be paid to material conditions and to access to services fundamental to individual development. In the framework of the basic needs approach, Dasgupta suggested that **improved water and sanitation facilities availability** and access to education should be considered as inputs, while **life expectancy at birth** and **adult literacy** should be seen as output of the "achievement of vital interest of people" (Dasgupta 1990 commented by Harkness 2004).

As far as education is concerned, at this stage of the study it appears more useful to consider an indicator on Mean years of schooling. It measures "*the average number of years of education received by people ages 25 and older in their lifetime based on education attainment levels of the population converted into years of schooling based on theoretical duration of each level of education attaine*"[21]. This indicators appears more adequate than the **gross combined enrolment ratio** or *percentage of the eligible official school-age population corresponding to the same level of education in a given school year*. The latter considers only the participation to education but not the educational attainment and it may be misleading for developing countries where there is a high rate of drop out, especially during the first cycle. Moreover, it considers the gross number of enrolled people and not only the enrolled among people in the range of age corresponding to a given level of schooling. The opportunity to include also the expected years of schooling, namely the mean years that a new entrants is expected to stay at school given the actual conditions, will have to be considered at a later stage. This because mean years and expected years of schooling can ensure a more reliable picture of education capabilities.

[21] UNESCO.

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Mortality rate under-5 measures the "*probability per 1,000 that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates*". In a study applying normative assumptions on well-being inspired by Maslow's theory of human needs and motivations, Clarke proposed a persuasive argument supporting the choice of an indicator describing health conditions of children: "*infant mortality reflects the safety of society's most vulnerable members (unborn and new born babies)*" (Clarke 2005). Interpreting Clarke's statement, the extent to which newborns are taken care of can give an idea of the extent to which a given society in general takes care of its members.

Having a job is a fundamental functioning and it would be misleading not considering it at all due to data comparability and quality problems. According to Sen's approach, the importance of "employment" functioning, like other functionings of a set, varies and depends on social, cultural and contextual factors[22]. There are no doubt that employment holds a very high weight in developed countries where formal work influences strongly social inclusion and the access to other functionings. Therefore, **employment ratio** is applied at least to developed countries at this stage of the work. Task of next deliverables will be identifying other indicators dealing with quality and security of job.

Dasgupta recalled the importance of institutions in determining the environment that shapes individual WB. The institutional dimension of WB deals with the concept of citizenship which consists of three constituent spheres: civil, political and socio-economic (Dasgupta 1993). It would be useful to isolate the first two. The first concerns the possibility to follow an autonomous way of life protected by the rule of law preventing the state from illegal interference. The second one concerns the possibility of participating in different ways in the exercise of political power. As mentioned before, governance indicators summarise the results of numerous surveys about specific aspects of governance, based on the perception of various civil society actors[23]. In particular, two concepts would have been adequate for our purposes. The voice and accountability indicator takes into account the extent to which a country's citizens are able to participate in selecting the government, and citizens' perceptions about freedom of expression, freedom of association and presence of free media. The rule of law indicator is based on the confidence of citizens in the quality of contract enforcement, respect of property rights, the police, the courts, and also the perception of violence and crime. Unfortunately, Worldwide Governance Indicators present huge limitations due their subjective nature and the influence of contextual factors on individual perception. Therefore, at the time being the

[22] For example, where there is a strong community spirit and informal work is widespread, the participation to social life may depend in lesser extent on having a job than in a modern town where most of people in working age have a formal work and benefit from solidarity by other people only occasionally.

[23] The aggregate method of data is the unobserved component model (World Bank 2009).

institutional dimension have been omitted; but, since its particular importance, it will be included in specific topics of the future analysis as a determinant factor of WB.

4. A initial View of Well-Being in the World

In annex 2, the values of some of the selected indicators for world regions are proposed[24]. Aggregate indicators at regional level have been calculated with the population weights of the countries where data were available.

Some very initial considerations are possible:

- Well-being components generally improved in recent years, although to different extents and starting from very different initial conditions;
- Some exceptions to this general trend are notable, such as the reduction of "life expectancy" in CIS and South African regions[25];
- As expected, Europe shows a good performance. Distance from the European level of indicators is large in the case of many countries[26];
- These trends suggest a recent decrease in regional disparities, even if the gaps are still very important. By contrast, a stabilisation or a slight increase in disparities occurred in "life expectancy".

[24] The composition of regions is detailed in annex 2. It is still provisional, because it has to be defined in agreement with the world model and the other WPs.

[25] Institutional indicators show more confusing trends: improvements and deteriorations alternate in the regions and within the region between the two indicators. A widespread deterioration of the "Rule of law" indicator in the 1996-2007 period seems worrying and demands specific attention, also in relation to the relatively sustained economic growth of the regions more affected by deterioration. We recall that the indicator is based on the main actors' perception of a pool of different elements. These two factors (perception and different elements used) must be taken into account by the explanation.

[26] At the moment, indicators are not standardised and differences are also related to the unit of measurement. In any case, the mentioned indicators show significant differences directly.

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5. Conclusions

A definition of WB based on the concept of human capability and divided into three main components (human and social dimension, environmental conditions and institutions) is consistent with consolidated approaches in the scientific literature. However, the restrictions imposed by the unavailability of indicators measuring a direct impact of environment on well being limits our operational definition to indicators related to human, social and institutional components of well being. The preference for an objective approach and measurement of WB is likewise consolidated and justified in literature[27].

The proposed definition can be used in an applied analysis. Available data allow for a measurement of the three components of WB in all the regions of the world. Constraints on indicators mainly spring from short time series and poor territorial coverage of some indicators. For some aspects, the availability of a significant number of indicators allows a more detailed analysis by components and territories. In particular, the analysis of WB in Europe can rely on a large number of objective and subjective indicators.

The selected indicators, represent an effective starting point for quantitative analysis and offer a initial picture of the main trends in global WB. The possibility to include some indicators for the labour market and income distribution must be given further consideration in the next phases better to link WB to economic behaviour and represent social conditions in a more comprehensive manner. In recent years (from the 1990s to 2007), current trends in the selected indicators suggest a general improvement in WB and a slow reduction of regional disparities; institutional indicators record a more contrasting progress.

[27] However, subjective indicators are not totally excluded from the analysis and can contribute to a better appraisal the relevance of specific aspects of WB in different regions.

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6.The Next Steps of the Analysis

The next steps of the analysis will follow the overall plan of the AUGUR project and include the delivery of three other papers:

- A historical analysis of the evolution of WB in month 18 of the project;
- A definition of the hypotheses of the scenario related to WB in month 28;
- An analysis of the results of the scenarios for WB in month 35.

Historical Analysis of the Evolution of Well-Being

The next paper will focus on the definition of a preliminary interpretative model of WB within the AUGUR project. The objective of the paper will be to investigate the relationship between WB and major economic aggregates included or potentially to be included in the model.

First, the literature review will be expanded to include studies of the main relationships between WB, economic aggregates and other factors and to investigate differences between global regions and different levels of development. This will allow better to identify the hypotheses of the subsequent analysis on the indicators. The traditional correlation between WB and GDP will be considered, but also the relationships with other variables traditionally individuated in the literature.

Secondly, a measurement system will be developed in line with the results of the present paper. Selection of WB indicators and calculation of their values will be improved in terms of robustness and territorial and historical coverage. As said above, labour market and income distribution dimensions will be analysed in detail in order to check the possibility of including further indicators. In parallel, a database with the main indicators of economic aggregates will be defined. On this aspect the collaboration with WP1 (Macro-model of the world economy and databank) will be important.

Thirdly, an analysis of WB trends and disparities will be carried out. It will include two levels of analysis. A first analysis will consider each single country bloc and will be targeted to identifying the significance of the different aspects of WB, the main trends and relationships between WB indicators and between them and economic, and non-economic indicators. Here specific attention will be dedicated to Europe. A second analysis will consider regional disparities and will focus on WB developments in the world economy in low, middle and high income countries in recent years.

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The conclusions of the paper should reflect on:

- The evolution and the recent trends of WB in the world;
- The main linkages between WB and economic aggregates and the differences among world regions;
- The possibility of having one or more synthetic measures of WB (level of aggregation, weights, etc.) or one or more particularly representative measures of WB (using for instance a principal components analysis) to use in subsequent studies.

Hypotheses on Well-Being Scenarios

The following paper will define some hypotheses for future scenarios concerning WB in the global economy and will present some initial results. The paper will examine the social and economic drivers and policies able (or expected) to improve WB in the different regions and the recent economic trends affecting WB. It will also examine, conversely, how WB influences economic growth.

A review of the policy indications and an analysis of the recent trends in public investments and public goods (education, health, accessibility to natural resources etc.) associated to WB in the different regions will identify the main forces able to affect well being.

On the basis of these results, and according to the hypotheses of the CAM macroeconomic model scenarios, the scenarios for WB will be built up. They will include economic hypotheses derived from the overall scenarios and peculiar hypotheses on the WB future trends and on the alternative policies affecting them. The scenarios will be implemented whenever possible in logical and quantitative terms.

This means that initially the directions and the potential size of the changes in the trends will be considered and a narrative description of the results for each scenario will be provided. Then, a quantification of the main indicators of WB will be attempted, where possible, on the basis of their sensitivity to the variables of the world model. These exercises will provide a more accurate estimation of future potential variation and disparities in global WB.

Analysis of the Results of the Well-Being Scenarios

The last paper will refine the scenarios and will analyse their results in detail. It will focus on the perspective of the European social model in relation to the possible alternative scenarios and will highlight the effects of different policies on European WB. It will also examine the variation in WB disparities, the components of WB more exposed to rapid changes, the economic and policy conditions for a higher level and a more balanced distribution of WB.

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Annex 1– Some indicators of human well-being

Name of index	Author and countries covered	Components	Standardization	Weighting
Human Development Index (HDI)	UNDP (1990) Global index	1- LOG income per capita (in PPP terms) 2- life expectancy at birth 3- Educational achievements (expressed by adult literacy and education enrollment ratios)	– Linear scaling (range: goalposts) – Life expectancy at birth: 25 years and 85 years – Adult literacy: 0% and 100% – Combined gross enrolment ratio: 0% and 100% – Real GDP per capita: $100 and $40,000 (U.S. dollars in PPP terms).	All components have the same weight
The Index of Economic Well-Being (IEWB)	Osberg, L. and Sharpe, A. (2002) OECD Countries	1- effective per capita consumption flows – which includes consumption of marketed goods and services, government services, and adjustment of effective per capita consumption flows for household production, changing household economies of scale, leisure and life expectancy; 2- net societal accumulation of stocks of productive resources – which consists of net accumulation of physical capital, the value of natural resources stocks, net international investment position, accumulation of human capital, and R&D stocks, as well as an adjustment for costs associated with environmental degradation; 3- income distribution - the intensity of poverty (incidence and depth) and the inequality of income; 4- economic security from job loss and unemployment, illness, family breakup, and poverty in old age	Linear Scaling (range: sample)	All components have the same weight (in the last version of the index - see Osberg L, Sharpe A. (2009)
Personal security index	Canadian Council on social development Canada	1- Economic security 2- Health security 3- Physical security Indicators express these components are both objectives and subjective (PSI data index and PSI perception index).	Linear scalar normalisation on pre-samle range (1994-2008)	– Economic 0.35 – Health 0.55 – Physiscal 0.10 Based on a survey from people

Annex 2 – Some initial elaborations

Region	COUNTRY
USA	United States
South Africa	Botswana Lesotho Zimbabwe Zambia Tanzania Malawi Mozambique Namibia Swaziland
Other South Asia	Afghanistan Bangladesh Bhutan Maldives Nepal Pakistan Sri Lanka
Other Latin America	Bolivia Chile Colombia Costa Rica Cuba Dominican Republic Ecuador El Salvador Guatemala Honduras Jamaica Mexico Nicaragua Panama Paraguay Peru Trinidad &Tobago Uruguay Venezuela Argentina
Other Developed	Australia Canada Israel New Zealand
Other Africa South Sahara	Benin Burundi Cameroon Chad Comoros Congo, Dem. Rep. Congo, Republic of Cote d`Ivoire Djibouti Eritrea Ethiopia Gambia Ghana Guinea Kenya Madagascar Mali Mauritania Mauritius Sierra Leone Niger Nigeria Rwanda Sao Tome and Principe Senegal Togo Uganda
North Africa and West Asia	Algeria Cyprus Egypt Iran Iraq Jordan Lebanon Libya Morocco Oman Qatar Saudi Arabia Sudan Syria Tunisia Turkey United Arab Emirates
Japan	Japan
India	India
Europe 1	Austria Belgium Denmark Finland France Germany Greece Iceland Italy Netherlands Norway Portugal Spain Sweden Switzerland United Kingdom Ireland Luxembourg
Europe 2	Bulgaria Croatia Czech Republic Hungary Macedonia Poland Romania Slovak Republic Slovenia
East Asia Middle Income	Indonesia Malaysia Philippines Thailand
East Asia Low Incame	Cambodia Laos Mongolia Vietnam Korea, Republic of Singapore
CIS	Armenia Azerbaijan Belarus Estonia Georgia Kazakhstan Kyrgyzstan Latvia Lithuania Moldova Russia Tajikistan Ukraine Uzbekistan
China	China
Brazil	Brazil

In the following tables, "variation" is calculated as the difference on the indicator between the last year and the first year, with the first year=100. In the case of institutional indicators ("voice and accountability" and "rule of law") variation is calculated as a simple difference of the indicators between the last and the first year. The entry "n/a" was used when data are lacking or too few. Difference of the regional indicators from the Europe1 level are calculated on the last available year.

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Life expectancy at birth (years)

Region	1990	1995	2000	2005	2008	Variation	Europe1=100 (last year)
USA	75.2	75.6	77.0	77.7	78.4	104.3	97.2
Europe 1	76.1	77.2	78.4	79.7	80.7	106.0	100.0
Europe 2	70.7	71.3	72.9	74.1	75.0	106.0	92.9
CIS	68.8	65.9	66.5	66.7	68.2	99.1	84.5
Japan	78.8	79.5	81.1	81.9	82.6	104.8	102.3
Other Developed	77.1	77.8	79.2	80.4	81.1	105.2	100.4
North Africa and West Asia	64.1	66.6	68.6	69.8	70.3	109.7	87.1
Other Africa South Sahara	48.4	48.6	49.4	50.9	51.9	107.2	64.3
South Africa	51.5	50.2	48.3	49.2	51.1	99.3	63.3
India	58.2	59.6	61.3	62.8	63.7	109.5	78.9
China	68.1	69.6	71.3	72.6	73.1	107.4	90.6
East Asia Middle Income	64.2	66.2	68.3	70.0	70.9	110.5	87.9
East Asia Low Income	64.8	67.3	68.7	70.2	71.0	109.6	88.0
East Asia High Income	71.5	73.6	76.0	78.6	79.9	111.8	99.0
Other South Asia	56.7	59.0	61.6	64.0	65.2	114.9	80.7
Brazil	66.3	68.3	70.2	71.6	72.4	109.2	89.7
Other Latin America	69.6	71.1	72.6	73.6	74.2	106.6	91.9

Source: World Bank - WDI

Mortality rate under 5 years for 1,000 inhabitants

Region	1990	1995	2000	2005	2007	Variation	Europe1=100 (last year)
USA	11.4	9.3	NA	7.9	7.6	66.7	170.7
Europe 1	9.3	6.8	5.5	4.8	4.5	47.8	100.0
Europe 2	20.9	16.8	12.7	10.0	8.9	42.8	200.9
CIS	36.5	35.2	31.1	24.6	22.3	60.9	500.3
Japan	6.4	5.9	4.5	3.7	3.5	54.7	78.6
Other Developed	9.1	7.4	7.3	5.9	5.6	61.5	126.5
North Africa and West Asia	76.9	61.6	49.4	40.9	37.7	49.0	847.5
Other Africa South Sahara	193.1	185.6	169.3	156.7	152.0	78.7	3414.9
South Africa	158.6	160.4	152.8	134.2	125.6	79.2	2821.4
India	116.6	104.1	91.2	76.9	71.8	61.6	1613.0
China	45.4	43.7	36.6	25.4	21.9	48.2	492.0
East Asia Middle Income	70.3	50.5	37.5	28.7	25.3	36.0	568.4
East Asia Low Income	66.8	58.5	46.6	36.6	33.5	50.1	752.2
East Asia High Income	8.9	6.4	5.3	4.8	4.7	52.1	104.6
Other South Asia	143.1	123.7	104.2	89.2	84.3	58.9	1893.1
Brazil	57.9	42.1	31.8	24.2	21.7	37.5	487.5
Other Latin America	47.6	40.0	32.4	27.5	25.8	54.2	579.6

Source: World Bank -WDI

Proportion of the population using improved water sources (%)

Region	1990	1995	2000	2005	2008	Variation	Europe1=100 (last year)
USA	99.0	99.0	99.0	99.0	99.0	100.0	99.0
Europe 1	99.8	99.9	99.9	100.0	100.0	100.2	100.0
Europe 2	94.3	95.3	96.6	97.4	97.8	103.7	97.8
CIS	92.0	92.6	93.3	94.2	94.3	102.5	94.3
Japan	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Other Developed	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North Africa and West Asia	84.9	86.4	87.5	88.5	88.8	104.6	88.8
Other Africa South Sahara	44.0	47.3	51.0	55.1	57.0	129.4	57.0
South Africa	53.1	55.1	57.9	60.6	62.0	116.7	62.0
India	72.0	76.0	81.0	85.0	88.0	122.2	88.0
China	67.0	74.0	80.0	86.0	89.0	132.8	89.0
East Asia Middle Income	78.1	81.2	83.7	86.3	86.6	110.9	86.6
East Asia Low Incame	63.3	69.8	77.8	84.9	89.4	141.1	89.4
East Asia High Income	88.8	90.7	93.6	96.3	98.2	110.6	98.2
Other South Asia	75.3	76.4	79.0	81.7	82.9	110.1	82.9
Brazil	88.0	91.0	93.0	95.0	97.0	110.2	97.0
Other Latin America	84.4	87.0	89.1	91.4	92.3	109.4	92.3

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Source: Millennium Development Goals

Proportion of the population with access to improved sanitation facilities

Region	1990	1995	2000	2005	2008	Variation	Europe1=100 (last year)
USA	100.0	100.0	100.0	100.0	100.0	100.0	100.1
Europe 1	99.6	99.7	99.9	99.9	99.9	100.3	100.0
Europe 2	89.4	89.8	89.7	90.0	90.1	100.8	90.2
CIS	88.3	88.3	89.0	89.9	89.4	101.2	89.5
Japan	100.0	100.0	100.0	100.0	100.0	100.0	100.1
Other Developed	100.0	100.0	100.0	100.0	100.0	100.0	100.1
North Africa and West Asia	73.9	76.2	78.9	81.5	82.3	111.3	82.3
Other Africa South Sahara	22.9	23.6	24.7	25.7	26.8	117.0	26.8
South Africa	29.8	30.6	31.5	32.2	33.1	111.1	33.1
India	18.0	21.0	25.0	28.0	31.0	172.2	31.0
China	41.0	45.0	49.0	53.0	55.0	134.1	55.0
East Asia Middle Income	49.3	54.5	60.5	65.0	67.3	136.4	67.3
East Asia Low Incame	36.6	44.5	51.6	60.1	65.6	179.2	65.7
East Asia High Income	99.9	99.9	100.0	100.0	100.0	100.1	100.1
Other South Asia	31.9	36.2	41.0	45.7	49.0	153.3	49.0
Brazil	69.0	72.0	75.0	78.0	80.0	115.9	80.1
Other Latin America	69.6	73.6	76.6	80.1	81.7	117.4	81.8

Source: Millennium Development Goals

Adult Literacy (%)

Region	1990	1995	2000	2005	2007	Variation	Europe1=100 (last year)
USA	99.0	99.0	99.0	99.0	99.0	100.0	100.3
Europe 1	97.9	98.0	98.4	98.7	98.7	100.8	100.0
Europe 2	98.3	98.2	98.5	98.6	98.6	100.3	99.9
CIS	97.9	98.0	98.8	98.8	98.8	100.9	100.1
Japan	99.0	99.0	99.0	99.0	99.0	100.0	100.3
Other Developed	98.4	98.3	98.2	98.8	98.8	100.4	100.1
North Africa and West Asia	58.6	63.7	68.2	75.5	76.0	129.6	77.0
Other Africa South Sahara	47.8	44.0	55.0	58.6	59.4	124.1	60.1
South Africa	56.4	58.6	66.2	68.5	69.4	122.9	70.3
India	48.2	48.2	61.0	64.5	66.0	136.9	66.9
China	77.8	77.8	90.9	92.6	93.3	120.0	94.5
East Asia Middle Income	85.1	85.2	86.2	92.5	92.6	108.8	93.8
East Asia Low Incame	87.6	85.9	86.3	87.5	87.6	100.0	88.8
East Asia High Income	87.7	87.7	88.0	98.6	98.6	112.5	99.9
Other South Asia	33.5	33.3	46.7	51.4	54.1	161.4	54.8
Brazil	74.6	74.6	86.4	89.6	90.0	120.7	91.2
Other Latin America	85.3	87.4	90.3	91.6	92.2	108.1	93.4

Source: UNESCO

Mean years of schooling

Region	1980	1990	2000	2005	2008	Variation	Europe1=100 (last year)
USA	10.8	12.3	13.2	12.4	12.4	114.8	119.4
Europe 1	6.6	7.9	9.5	10.2	10.4	157.0	100.0
Europe 2	8.3	9.0	10.0	10.3	10.4	125.6	100.0
CIS	7.0	8.3	9.1	9.5	9.6	137.9	92.7
Japan	8.9	9.9	10.7	11.1	11.3	127.0	108.8
Other Developed	10.3	10.9	11.5	11.6	11.7	113.4	112.8
North Africa and West Asia	2.1	3.6	4.8	5.5	5.9	279.6	57.1
Other Africa South Sahara	1.7	2.7	3.3	3.9	4.0	233.9	38.5
South Africa	2.2	3.6	3.8	4.4	4.6	210.8	44.4
India	1.9	3.0	3.6	4.0	4.2	221.1	40.4
China	3.8	4.9	6.6	7.1	7.3	192.1	70.3
East Asia Middle Income	3.8	4.4	5.0	6.2	6.5	170.2	62.5
East Asia Low Income	4.3	4.2	4.7	5.0	5.4	124.4	51.7
East Asia High Income	7.1	8.7	10.4	10.9	11.1	157.3	107.3
Other South Asia	2.0	2.8	3.5	4.3	4.5	224.3	43.8
Brazil	2.6	3.3	5.5	6.6	6.9	265.4	66.4
Other Latin America	4.9	6.1	7.2	7.6	8.0	163.8	76.9

Source: UNDP - International Human Development Indicators

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Gross enrolment ratio (%)*

Region	1999	2000	2003	2004	2007	Variation	Europe1=100 (last year)
USA	92.6	90.5	92.3	92.1	92.4	99.8	99.0
Europe 1	90.2	90.7	92.9	92.4	93.3	103.4	100.0
Europe 2	77.0	78.3	83.1	82.0	85.1	110.5	91.2
CIS			84.3	83.1	83.1	98.6	89.1
Japan	81.7	82.8	84.9	85.6	87.3	106.9	93.6
Other Developed		100.7		99.9		99.2	108.1
North Africa and West Asia			64.6	65.3		101.1	70.7
Other Africa South Sahara	39.7	41.5	44.9	46.5	51.5	129.7	55.2
South Africa	42.7	43.6	50.9	53.4		125.1	0.0
India	50.5	52.1	56.4	59.5	62.6	124.0	67.1
China			66.4	66.5	67.4	101.5	72.2
East Asia Middle Income		67.8	71.5	72.4		106.8	77.0
East Asia Low Income	61.2	61.7				100.8	68.0
East Asia High Income	91.1	92.3	95.2	95.9	99.2	108.9	106.3
Other South Asia						n.a.	n.a.
Brazil	88.1	90.2	85.6	87.5	85.1	96.6	91.2
Other Latin America	73.4	74.1	78.2	79.5		108.3	86.0

*: Total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year
Source: UNESCO

Voice and Accountability Index* (ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes)

Region	1996	2000	2005	2007	2008	Variation	Europe1=100 (last year)
USA	1.3	1.4	1.3	1.1	1.1	-0.2	84.0
Europe 1	1.1	1.3	1.4	1.3	1.3	0.1	100.0
Europe 2	0.6	0.7	0.7	0.7	0.8	0.2	58.8
CIS	-0.6	-0.6	-0.8	-0.9	-0.8	-0.3	-66.4
Japan	0.9	0.9	1.0	1.0	1.0	0.1	75.8
Other Developed	1.4	1.5	1.4	1.3	1.3	-0.1	103.5
North Africa and West Asia	-1.1	-1.0	-0.9	-1.1	-1.1	0.0	-86.7
Other Africa South Sahara	-1.1	-0.9	-0.8	-0.7	-0.8	0.3	-59.3
South Africa	-0.4	-0.4	-0.4	-0.3	-0.3	0.1	-21.0
India	0.1	0.3	0.4	0.4	0.4	0.3	34.6
China	-1.7	-1.3	-1.5	-1.7	-1.7	0.0	-131.3
East Asia Middle Income	-0.6	-0.1	-0.1	-0.3	-0.2	0.3	-18.3
East Asia Low Incame	-1.5	-1.3	-1.5	-1.6	-1.6	-0.1	-124.5
East Asia High Income	0.4	0.6	0.7	0.6	0.5	0.1	42.9
Other South Asia	-0.5	-0.9	-0.8	-0.8	-0.8	-0.3	-62.3
Brazil	0.2	0.2	0.4	0.5	0.5	0.3	37.5
Other Latin America	0.0	0.0	0.0	0.0	0.0	0.0	-1.6

*: Captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media
Source: World Bank

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Rule of Law Index* (ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes)

Region	1996	2000	2005	2007	2008	Variation	Europe1=100 (last year)
USA	1.6	1.6	1.5	1.6	1.6	0.1	121.2
Europe 1	1.5	1.4	1.3	1.4	1.3	-0.2	100.0
Europe 2	0.5	0.4	0.3	0.3	0.4	-0.1	29.5
CIS	-0.6	-1.0	-0.8	-0.8	-0.8	-0.2	-61.8
Japan	1.4	1.3	1.2	1.3	1.3	0.0	99.2
Other Developed	1.7	1.6	1.6	1.7	1.7	0.0	123.9
North Africa and West Asia	-0.6	-0.4	-0.5	-0.5	-0.5	0.1	-34.4
Other Africa South Sahara	-1.2	-1.0	-1.1	-1.0	-1.0	0.3	-71.1
South Africa	-0.5	-0.6	-0.5	-0.5	-0.5	0.0	-37.6
India	0.4	0.2	0.2	0.1	0.1	-0.2	8.7
China	-0.2	-0.4	-0.4	-0.5	-0.3	-0.1	-24.2
East Asia Middle Income	0.0	-0.5	-0.5	-0.4	-0.4	-0.5	-32.4
East Asia Low Incame	-0.7	-0.5	-0.5	-0.6	-0.6	0.1	-43.8
East Asia High Income	0.9	0.9	1.0	1.1	0.9	0.0	68.8
Other South Asia	-0.7	-0.8	-0.9	-0.9	-0.9	-0.2	-67.0
Brazil	-0.2	-0.3	-0.5	-0.4	-0.3	-0.2	-25.5
Other Latin America	-0.4	-0.4	-0.6	-0.6	-0.7	-0.3	-49.5

*: Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence
Source: World Bank

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