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# IQuaL: A dynamic model for assessing quality of life and evaluating the impact of public policies

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**Well-being assessment and policy simulations: toward a micro-macro and dynamic integrated approach based on the capability approach**
(Provisional draft)

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*"Wealth is evidently not the good we are seeking,*
*for it is merely useful and for the sake of something else"*
*(Aristotele, 384-322 a.CV.)*

**Introduction**

This paper is the conceptual or back-ground paper of a two-year research project "Quality of life and sustainable human development in affluent societies"[1]. The overall goal of this research project was to conceptualize the well-being-generating process and to implement a policy modelling based on the capability approach that could allow us:

i) to describe the well-being-generating process from a complex and multidimensional perspective,

ii) to assess empirically the quality of life and measure the sustainability of this process in an affluent society (namely, in Italy),

iii) to simulate public policies, measure the impact of alternative patterns of public expenditure on individual well-being and evaluate their sustainability in terms of human development.

On the basis of a reformulated version of the capability approach, the well-being is conceived here as a sort of "well-being production function" that links the means to achieve (inputs of the well-being production process), with a special emphasis on public expenditure and public services provided by the policy maker, to the functionings achieved (outputs of this production process) via the individual rates of conversion.

The proposed model - **IQuaL** – **I**ndividual **Qua**lity of **L**ife Model - tries to distinguish and integrate two distinct but strictly interrelated layers of analysis, namely:

i) what can be defined as the "macro-side" of the model that takes into consideration the role that the policy-maker can play in terms of public services provision (e.g. health or education services) as well as the degree of efficiency in providing this "means to achieve" well-being through a "public services production function" and

ii) what we identify as the "micro-side" of the model that focuses on the individual ability to convert these means into achievements or functionings.

This integrated macro-micro model allows us to simulate and evaluate what could be the potential impact of a change in the public provision of goods and services on individual well-being and to introduce some assumptions on how external (socio-economic or institutional) factors can affect both the public production process as well as the individual well-being production.

[1] The research project, financially supported by an Italian Foundation (Fondazione Lombardia per l'Ambiente) and the Institute for Advanced Study (IUSS- Istituto Universitario di Studi Superiori) at Pavia, was coordinated by Enrica Chiappero-Martinetti and Stefano Pareglio. The research team included also Luciano Canova, Enzo Di Giulio, Marco Grasso, Emanuele Massetti, Michele Merola, Stefania Migliavacca, Paola Salardi and Alessandro Vaglio. Preliminary results were presented at a workshop held in Pavia, 16th of June 2006: see http://www.iuss.unipv.it/hdcp

The empirical analysis is based on Italian statistical data (both aggregate as well as micro-data sets) and takes into consideration four functionings ("being healthy", "being educated", "living in secure environment", and "living in a safe and clean environment") and six subgroups of population identified according gender and age criteria (young, adult and elderly; men and women)

The overall results of our research project are discussed in four distinct papers. While the current paper will introduce the conceptual underpinning of our model, the Canova et al.'s paper (2007) will present the analytical features and the methodological assumptions of IQuaL, as well as the empirical results of the macro side of the model.

Chiappero-Martinetti and Salardi's paper (2007) will be focussed on the micro side of the model and on the estimation of the conversion rates. Finally, the impact of our policy simulations on individual well-being will be presented in Di Giulio et al. (2007).

The aim of the present paper is thus twofold: first of all, the overall goals and structure of the research project will be presented, highlighting the potentiality of the capability approach as an appropriate theoretical framework for describing the quality of life in rich societies as well as for simulating and evaluating the impact of public policies aimed to promote individual well-being. Secondly, the conceptual structure of the dynamic model IQuaL implemented within this research project, will be introduced through a reformulation of the capability approach with the aim to identify the different steps that characterized the well-being production process in our model.

## 2. The process of determining well-being as a multidimensional holistic framework: a general overview

As highlighted in the introduction, the theoretical framework to which we refer in this paper is represented by the capability approach formulated in the mid-80s by Amartya Sen and subsequently further developed by various scholars from different disciplines. The particular aim of these scholars was to tackle various normative and methodological issues and to address problems related to empirical measurement as well as the public policy implications supposed to derive therefrom.

There are two main reasons why this theoretical framework is particularly suited to the analysis and measurement of the quality of life and the sustainability of development processes. Firstly, individual well-being is not described as a static and materialistic condition defined by the mere possession of a certain amount of material resources at one precise moment of time (thus, by referring either to income or to the amount of goods available), but rather as a *process* in which the means and resources acquired or available are instruments – undoubtedly essential – to obtain well-being but which do not make up a rigid and adequate metric with which to measure the complexity of an individual's well-being or the quality of life achieved. Secondly, the capability approach is an intrinsically complex framework, not only because it pays attention to a plurality of well-being dimensions as also other approaches did, but takes also account of a multiplicity of

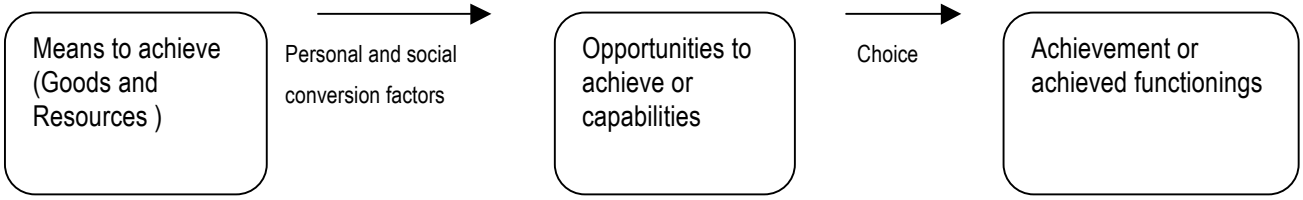
personal and familial factors, as well as diverse social, environmental, economic, institutional and cultural contexts of crucial importance for the process of well-being. The following sections will clarify these distinctions.

### 2.1. From the "income = utility = well-being" relation to the process of well-being

In the language of the capability approach, welfare, understood in the traditional sense as the availability of resources, is replaced by an idea of *well-being*. This is a broader condition which comprises "what an individual can do and can be" with the goods and resources available (in Sen's terms *beings* and *doings*) and further concerns how the person is able to transform these means into achievements which are valued by him/herself personally. Thus, an individual's various personal goals which are potentially achievable (a vector of functionings, namely the *capability set*) or actually achieved (so-called *achieved functionings*) contribute to determination of a person's well-being and quality of life.

Figure 1 depicts in a simplified way the process of well-being outlined in this section:

Fig. 1 – The well-being process




In regard to the first part of the diagram, to consider only the quantity of goods and resources available to a single individual or to an entire community, as it been done traditionally by the standard economic theory is a rather simple undertaking.[2] Yet there are aspects of human life to which people give value but are not necessarily directly and straightly connected with monetary value: for example, education and knowledge in general, the level of nutrition and health, personal safety, the quality of the environment in which an individual lives, the political, civil and cultural freedoms enjoyed, etc.[3]

The difference between the capabilities approach and the more traditional utilitarian view of well-being are thus rather evident. Sen's formulation of well-being calls into question two aspects taken for granted by the

[2] The idea that a monetary metric can be used to measure income, wealth or real consumption in a simple, immediate and sufficiently accurate way, is very widespread but not entirely correct. Problems occur when we endeavour to evaluate certain sources of income and to measure forms of 'self-consumption' crucial for a person's life but not easily recorded, such as unpaid work or the value of leisure time. If such aspects are regarded as crucial parts of an individual's or nation's well-being, the measurement of mere income may generate false implications.

[3] One could state that a high income automatically makes it possible to benefit from those other aspects in the field of health and education. However, besides this particular case, there is not necessarily a direct and automatic linkage between income and other dimensions of well-being: there are relatively rich countries in which the level of democracy, security and gender equality is only to a certain extent or not at all guaranteed; further, there are families which are not particularly well-off and yet are able to provide their members with an adequate education, health, work and spare time. To sum up: the way in which income is distributed and in which the access to resources is guaranteed is not a minor problem regarding inequality in the dimension of income. Rather, it should be considered as a possible source of inequalities in other dimensions.

utilitarian approach: i) the existence of a direct and determinable linkage between the quantity of goods and resources possessed and the total utility attainable therefrom; ii) the notion that utility and well-being are conceptually identical.

Regarding the first assumption, according to more classic interpretations the concept of utility can be understood as a state of happiness or feeling of pleasure, or alternatively as the satisfaction of desires through a binary relation underlying individual choice. This, however, does not seem adequately to express the standard of living experienced by an individual. It appears more plausible that the relation between the quantity of available goods and resources and the utility obtainable with them is more complex and not necessarily interlinked in such a direct way. What a person can achieve with a set of goods depends on a variety of factors as well as on individual and environmental conditions. Hence to judge personal benefit only in terms of the amount of money, goods and resources available may generate a series of misconceptions. With respect to income, resources or goods, we are able to achieve different levels of *well-being* according to our individual capabilities to transform these resources into a vector of functionings (our capabilities set, namely the middle part of diagram 1) or further into achieved functionings (the right side of diagram 1).

Conversion factors and individual choices are thus two central components of the capabilities approach. Conversion factors depend on our personal characteristics, such as age, sex, physical and psychological conditions, abilities and talents, as well as on other factors such as the family context, and social, economic, environmental, cultural, political institutional circumstances. An example may help clarify this aspect. The income, goods and services available (such as the availability of schools, libraries, university accommodation but also the guaranteed right to an education) remaining equal, a person's real opportunities to achieve different levels of education (from the lowest level of formal schooling to the highest level of university education) and thus achieve certain functionings (for example, a vocational training certificate or a degree in the humanities or sciences) depend largely on a series of personal and social factors.

A handicapped person may be prevented from realising some of his/her educational goals or desires for a variety of reasons which would certainly comprise the nature and severity of the disability, but not these alone: other aspects such as an overprotective family may hamper the acquisition of certain degree of autonomy and self-sufficiency. Likewise the existence of architectural or cultural barriers may impede the concrete exercise of the right to an education, thus playing a crucial role in defining the overall capabilities space with reference to achieved functionings in the case of education. In this context it is evident that the aim of public policies may be to reduce the physical, cultural and economic barriers which obstruct the realisation of free and individual choices in a field in which the well-being of people is of such an essential and instrumental nature.

Besides conversion factors, of central importance in Sen's theoretical framework is responsibility for one's choices, even if its role very different from that envisaged by the neoclassical theory, in which individual

choices and preferences are considered the most crucial elements.[4] Within the Senian approach, choices are involved in the shift from the capabilities space (which identifies the extension of well-being in terms of plurality of options available, which an individual is able to choose) to that of achieved functionings: choosing to carry out an action (for example, choosing to acquire a certain level of education, such as a vocational training certificate), while having a plurality of alternatives available, has an intrinsic value for the well-being of individuals which should be taken into account and valued, especially with respect to certain conditions in which the same achievement (namely, the same level of education) is the only option available (for example because family reasons or social conditions preclude any alternative choices).

As regards the second assumption – the one which considers an individual's utility to be the sole and crucial item of information with which to evaluate his/her well-being – Sen's criticism is directed against its partiality. The personal utility which we derive from our actions is only one of the materialistic aspects of a much more general condition of well-being which also encompasses interests, ideals, aspirations, motivations and moral feelings extending beyond the pursuit of material well-being. Being part of a campaign to raise awareness about the rights of minorities or dedicating time and energy to voluntary work (for example, regarding the environment or culture) may have a positive effect on a person's emotional well-being even though they absorb time and resources that could instead be devoted to increasing his/her material well-being. The opportunity to carry out actions, to have a own concept of good, and to pursue objectives, values and commitments which do not stand in direct relation to personal benefit: all these fall outside the utilitarian notion although they are of increasing importance in contemporary society in terms of time, material and human resources, and results.

Neglecting these multiple dimensions of evaluation, explanatory elements and contextual factors involved in the determination of well-being is to omit a large part of those aspects with crucial value for human life and to ignore the complex of factors which affect such processes.

### 2.2. Some further specifications: the concepts of well-being, standard of living, freedom and agency

Defining some of the key terms used with reference to the theoretical framework suggested by Sen may aid understanding its richness in interpretation and of various distinctions. In regard to the condition of well-being, Sen distinguishes among some theoretical and empirical categories of importance in his approach.

A first distinction is between the concepts of *standard of living* and *well-being*: where the former concerns only the various dimensions of well-being directly linked to an individual's personal life, while the latter refers to a wider space which also comprises other aspects and self-fulfilments which do not directly influence a person's life but contribute indirectly to increasing his/her well-being. For example: living in an area with crèches, playgrounds and parks may indirectly increase my well-being even if I do not have children. My standard of

[4] See Sen (2005) for a discussion of the concept of choice and its relations with the concepts of rationality and freedom. The discussion is not restricted to the capabilities approach but examines these aspects within the broader economic theory debate.

living is not in any way influenced by the availability of such facilities but knowing that other people can benefit from them and that children can play outside may make me 'feel better'.

A further category introduced by Sen is the concept of *agency*, meaning an individual's capacity to pursue specific aims and objectives to which she assign values, independently of whether they affect her standard of living or well-being. Again using the previous example, my personal capacity to act refers to the fact that I, myself, can suggest and promote concrete actions to the local authorities together with other people living in my area, and thus be able to play an active role so that facilities for children such as crèches, parks and playgrounds are built in the area.

Lastly, as already discussed before, the concept of *freedom* is central to the Senian approach. It refers in the first place to freedom of choice: the real ability to freely choose which actions to undertake, which aims to pursue, which life-projects to fulfil gives not only instrumental but also intrinsic value to our personal conception of freedom. This refers to the fact that we can freely choose among a plurality of possible options within the capabilities space whatever our ideas and values regarding development and well-being may be. Referring again to the previous example, the real availability of a crèche and the real opportunity to benefit from it (for example because there are not long waiting lists or high fees to discourage use of these facilities) increases my real freedom to choose. This freedom does not only have instrumental value (thanks to the availability of crèches I can choose whether and when to return to work after maternity leave); it also has intrinsic value because it thus increases my options (for example, between a crèche and a child-minder based on motivations concerning education and socialisation with other children) so that my capabilities space comes to overlap with my well-being.[5]

As should by now be evident, the concepts of well-being, freedom and agency combine and interweave with each other with reference to the two (principal) concepts introduced above: those of capability and functioning. The capabilities space, or set of opportunities available to a person, comprises various combinations of functionings: the more numerous the alternatives available, the greater the freedom of choice in pursuit of a life on which an individual sets value (*well-being freedom* or *capability*), regardless of whether the choices made have direct effects on personal well-being. The successful achievements of well-being (*well-being achievements* or *functionings*) represent what the individual has chosen to do or to be for himself/ herself or for others by exercising his/her capacity for action (*agency*).

Thus, it is possible – or should be possible – to investigate the quality of life of people in various respects. Although the availability of information or the aims of the analysis may pay direct attention to a particular aspect determining the well-being of an individual (for example, by concentrating the analysis on the dimension of *agency* in one specific context or on a restricted number of achievements), it is the composite

[5] It is also possible to argue that this choice may have a direct impact on my child's standard of living by increasing her autonomy and level of knowledge, as well as by improving her social behaviour, and indirectly my *well-being*, though not on my standard of living, if the reason for this choice are not the exigencies of my work but rather altruism towards my child.

meaning of 'well-being' or 'quality of life' that is important and innovative within the Senian theoretical framework, with its interweaving of different levels of analysis (micro and macro, means and ends, individual and context) which are traditionally separated and not adequately considered within any other unified theoretical approach. It is in this direction that we now proceed by presenting the conceptual scheme of our dynamic model.

### 3. The capabilities approach: a dynamic view

In general, first to be pointed out is that the capabilities approach is by its nature intrinsically dynamic. The basic components of well-being, in fact, are closely interdependent and they constitute a complex system of actions and retroactions – whose unitariness, however, does not diminish the role performed by each component.

More specifically, and adopting a normative perspective, the individuals meanings of 'dynamic' which characterize the capabilities approach can be schematized on three levels:

(a) the first is the temporal level: the dynamic between different generations can be likened – as regards the extent of the area of inquiry and bearing the evident imprecisions in mind – to the traditional notion of 'sustainability' declined according to the economic, social and environmental perspective;

(b) the second level is internal, so to speak: it inter-relates the various functionings that characterize an individual's or a group's quality of life;

(c) the third level is the institutional one: it comprises the interactions that take place between the individual or the group and the institutional context in which they are embedded.

The aim of a dynamic approach articulated into the above levels is to define a normative criterion with which to foresee *ex ante* the possible effects of policies that act on the capabilities space and/or to appraise their effectiveness and efficiency *ex post*. The representation of an individual's or group's quality of life therefore extends beyond the traditional models of multidimensional analysis. Because these latter are designed to produce a set of indicators or a synthetic index, they enable merely quantitative analysis conducted in temporal or territorial terms.

In what follows, the three levels of sustainability are discussed in detail. However, it should again be stressed, as in the introduction, that although the institutional dynamic is theoretically significant, it has not been fully developed in our model thus far.

#### 3.1. The temporal dimension of the dynamic

The temporal dynamic characterizing the capabilities approach resumes and partly extends the traditional meaning of 'sustainability' *à la* Brundtland. In fact, when individual and social well-being concern the interests of individuals belonging to the present and future generations, one has a model of sustainable human

development which – by promoting economic and social justice, strengthening institutional capabilities and protecting the environment – enables individuals or groups to pursue – now and in the future – the life-project which they deem satisfactory.

Sen stresses the importance of the concept of sustainability and the 'pioneering' role of the Brundtland report, especially because it simultaneously considered the present and the future (Sen, 2002). According to Sen, however, it is important to go beyond the notion of sustainability centred solely on the fulfilment of needs and adopt a broader perspective of "enhancing human freedoms on a sustainable basis" (Sen, 2002, p. 2). This perspective finds robust bases in the capabilities approach, with its broader notion of well-being which privileges the possibility to enjoy a series of essential freedoms in pursuit of a specific life-project.

In light of these preliminary considerations, it is possible to conduct more thorough reflection on the relationship between the concept of sustainability in the broad sense and the dynamic dimension of the capabilities approach.

As said, sustainability according to Sen can be generally defined as an equitable and lasting improvement in the quality of life (Anand and Sen, 1994). Sen accordingly defines sustainable development as: "development that promotes the capabilities of the present generation without compromising capabilities future of generations" (Sen, 2000, p. 5).

This definition extends the notion of classical sustainability *à la* Brundtland. Whilst both approaches are equally concerned with the quality of the life, inter-generational aspects, and the ability of individuals to pursue their goals, the difference between them resides specifically in the evaluative space. Brundtland considers individuals only in terms of the fulfilment of needs, while Sen stresses the importance of expanding the set of capabilities available to those same individuals (Massarenti, 2000).

The concept of well-being has manifold ramifications within the Senian paradigm. It is therefore advisable to specify which of them are denoted, from the theoretical point of view, by the notion of sustainable human development specified here. The reference is to the dimension of 'agency' and, more precisely, to the category of 'agency achievements'. As stated in section 2.2, well-being achievements exclusively concern "the wellness of the person's state of being" (Sen, 1993, p. 36), that is, the functionings effectively accomplished by the individual. By contrast, agency achievements broaden the field of inquiry to the individual's success in pursuing the goals to which s/he gives priority. Achieved functionings, therefore, seem limited with respect to the objectives of sustainable human development. The latter, in fact, extends beyond the individual's quality of life because it also concerns that of other individuals, as well as of future generations. Agency achievements, instead "would involve evaluation of states of affairs in the light of those objectives [in this quotation the objectives are the country's independence or prosperity] and not merely in the light of the extent to which those achievements would contribute to her own well-being" (Sen, 1992, p. 56). This implies a "differential weighting of the shared elements (e.g. for the functionings that are pertinent both to one's well-being and to

one's other objectives, possibly different weights may be attached in agency evaluation vis-à-vis well-being appraisal)" (Sen, 1993, p. 37) which allows agency achievements to include the multiple and inter-generational dimensions of sustainable human development.

### 3.2. The internal dimension of the dynamic

The internal dynamic of the capabilities approach refers, on the one hand, to the interrelations that arise among the functionings and which determine their evolution over time. On the other, it focuses on the possible expansion of the capabilities space in terms of both an increase in the number of component functionings and their progressive complexification produced on subsequent temporal horizons by the reciprocal actions and retroactions that take place among the functionings themselves.

The value added of a reading of the internal dynamic derives, we believe, from a superseding of the traditional models of multidimensional analysis. Such approaches allow at most the conduct of exercises in 'comparative statics' through the temporal, and purely quantitative, interpretation of how the indexes/indicators evolve. Vice versa, the inner dynamic dimension of the capabilities approach enables one also to identify the qualitative evolution of the functionings (and of their measures, that is, of the indicators) brought about by the interrelation among them in terms of change in the nature and extent of the capabilities choice-space. This feature also allows one to supersede the paternalism of multidimensional approaches, which appraise well-being according to an interpretation rigidly determined by the researcher when identifying the indicators to consider. And it is a perspective which becomes in some respects 'dictatorial' given the impossibility of qualitative and quantitative evolution in the set of indicators.

By contrast, the capabilities approach does not propose a closed list of functionings, in either quantitative or qualitative terms; nor does it in some way restrict the expansion of the capabilities space. Some authoritative critics (Sugden, 1993; Roemer, 1996; Nussbaum, 2003) view this feature as a weakness in the Senian approach. Despite this apparent 'vagueness' – vigorously sustained by Sen himself by virtue of the role that agency must perform in the free process of choosing the relevant functionings – we believe it to be crucial for the unfolding of the internal dynamics. In fact, by not "rigidifying" the functionings and the capabilities space, it allows their qualitative and quantitative adaptation not only to the evolution of the life-projects of individuals or groups but also to change in the institutional, and in general external, context. In other words – and above all when, as in our case, the capabilities approach is used for the *ex-ante* or *ex-post* evaluation of policies – it is the subjects affected by the government's action that must decide their goodness in terms of repercussions on their evaluative space. And they can do so only if the evaluative space, i.e. the set of functionings, registers the impacts of public action in its quali-quantitative evolution.

A further crucial role played by the internal dynamic concerns the essence itself of the capabilities approach: its focus on individuals conducting the type of life that best responds to their aspirations, "on the ability of

human beings to lead lives that they have reasons to value and to enhance the substantive choices they have" (Sen, 1997, p. 1959). The inner dimension of the dynamic is, in this sense, intrinsic to the capabilities approach: removing it would undermine the Senian theoretical edifice. In fact, because humans beings evolve, deliberately or otherwise, it is inevitable that "the lives that they have reason to value" will follow this evolution and change accordingly. Therefore the range of the "substantive choices that they have" is modified and extended. This consideration, we believe, is particularly important when, as in this case, the capabilities approach is the normative referent for the *ex ante* forecasting of the effects of policies on the capabilities space and/or for the *ex post* appraisal of their effectiveness and efficiency in complex and specialized societies like those of the West. In these societies, in fact, achievable functionings may reach a level of such sophistication that their full fruition entails a certain period of learning for individuals and groups and, above all, the possibility for achievable functionings to be revised in both qualitative and quantitative terms in light of that period of learning.

### 3.3. The institutional dimension of the dynamic

Institutions play a fundamental role in the theoretical scheme of capabilities. Sen himself is deeply interested in the dynamic that operates between the institutions and the quality of life: "Individuals live and operate in a world of institutions. Our opportunities and prospects depend crucially on what institutions exist and how they function" (Sen, 1999, p. 142).

The definition of 'institutions' used here has been put forward by North (1993; 1994) and the New Institutional Economics. In general, by 'institutions' we mean a society's rules of the game, or more formally, the limits that structure the human interaction produced by society itself. Institutions consist of formal rules (laws, regulations) and informal elements (conventions, norms of behaviour, self-imposed codes of conduct), as well as the enforcement of these two formal and informal components. To prevent misunderstandings, institutions should be distinguished from organizations: also the latter define the limits that structure human interrelation but, unlike the institutions that define the rules of the game, they are the players, and are understood here as forms of collective and repeated action based on processes of largely stable and structured differentiation and integration.

Sen maintains that the institutions are among the means by which it is possible to broaden the space of the constitutive freedoms, that is, functionings and capabilities; or alternatively to reduce deprivation, this being a multidimensional notion of poverty that comprises, for example, illness and poor health, hunger, a low level of education, lack of power and 'voice', insecurity, humiliation, a lack of access to basic infrastructures (Narayan et al., 2000). The role of institutions in the capabilities approach is thus distinct from that traditionally ascribed to them both in development economics, i.e. as largely 'benevolent' exogenous factors, and in the neoclassical

approach, which implicitly believes that they are of no importance, in that the only policy direction should be that indicated by models of allocative efficiency.

Simultaneously, Sen argues that institutions are necessary to convey and to develop instrumental freedoms (Sen, 1999), and herein lies their dynamic dimension. In other words, in order to promote the quality of their lives, individuals and societies have a set of instrumental freedoms which favour the workings of the institutions and which, in their turn, are strengthened by the effectiveness and efficiency of the institutions. The notion of instrumental freedom therefore pertains to the ways in which rights, opportunities, and endowments contribute to the expansion of the choices space and, ultimately, to the promotion of development (Sen, 1999). Instrumental freedoms are the means with which human development is to be pursued, but they may, in their turn, be decisive for the effectiveness and efficiency of the institutions in extending the capabilities set. Each instrumental freedom performs a specific and separate role in the promotion of human development; nevertheless they are at the same time interconnected. In fact, they "link with each other and with the ends of enhancement of human freedom in general" (Sen, 1999, p. 10).

The instrumental freedoms that influence institutional action with respect to sustainable human development are clearly stated by Sen, although the list cannot be regarded as exhaustive. Sen (1999: 38-40) identifies five families of instrumental freedoms:

- political freedoms: opportunities for people to participate in public debate and determine the roles of government;
- economic facilities: opportunities for people to utilize resources for the purpose of consumption, production and exchange;
- social opportunities: society's response to demands for education, health, quality of the environment, and other social dimensions that determine the quality of life;
- transparency guarantees: the rules of the game that determine access to markets;
- protective security: an adequate safety net against poverty and life-risks.

In light of these considerations it appears evident that the institutions and the instrumental freedoms enjoyed by individuals have a role of prime importance in determining individual and social well-being in that, jointly with personal and social conversion factors, they foster the transformation of the available resources into functionings and capabilities.

It should be pointed out that the institutional dimension necessarily intervenes at the aggregate level, determining 'rules of the game' common to all the individuals belonging to the same community. Because of individual conversion factors, in a static context different individuals are subject to institutions defined exogenously and common to everybody. But in a dynamic context, the availability of the above-described instrumental freedoms may modify the institutions in their turn, and therefore the rules of the game. In other words, in democratic contexts where instrumental liberties are not only accessible but also exercised, citizens

can contribute through their agency to inducing changes in institutional arrangements. As Sen himself acknowledges, the capabilities approach can be employed both to conduct aggregate appraisal of well-being and to support institutional and political choices (Sen, 1993). From the point of view of the institutions, the aggregate perspective thus becomes an essential and integral component of the individual perspective in the capabilities approach, and it requires account to be taken of the complex web of interrelations between instrumental freedoms and institutional efficiency.

## 4. A first reformulation and schematization of the capabilities approach

On the basis of the foregoing discussion and in relation to the broader purposes of the research project mentioned in the introduction, this section suggests a first reformulation of the capabilities approach. The intention is to represent – albeit with the necessary schematizations – the complex process of well-being, seeking to show in particular the role of policy-makers, as well as certain interactive dynamics which characterize that process.

Figure 2 is a more detailed and more 'operational' specification of Figure 1. It refers to a specific dimension of well-being, namely health, which belongs among those considered in the maquette of our IQuaL model.[6]

### 4.1. Integration between 'micro' and 'macro' analysis and well-being

The model schematized in Figure 2 has a series a of distinctive features.

Firstly, it distinguishes and integrates a 'macro' dimension of analysis (left-hand part of the diagram) – which refers to the policy-maker actions, in our example the public production of health services, – and a 'micro' dimension of analysis (right-hand side of the diagram) which refers to the conversion resources – well-being process that takes place at individual level. The latter depends on the level of disaggregation made possible by the data available for estimation of the rate of conversion factors. Therefore, the unit of reference may vary in theory from the single individual to homogeneous subgroups in the population according to a 'vector' of personal characteristics (e.g. age, sex or ethnic group).

The distinction and the attempt to integrate the two dimensions, micro and macro, is a distinctive feature of the research, in that it allows a distinction to be drawn between, on the one hand, goods and services of 'public production' conditioned by the policy-makers' choices and subject to theoretically non-differentiated consumption,[7] and on the other, goods and services purchasable on the market and to which people have different degrees of access (typically, in relation to their disposable income).

[6] Figure 2 can be found at the end of the document.

[7] We are assuming here that the public services provided by the policy maker are equally available for all the individuals living in a given area or region. It might be of interest for the purposes of public policy-making to consider forms of access differentiated by categories of citizens: this would allow the modelling of policies for selective access to public services and social services. This is an important area of research and modelling that we would like to develop subsequently.

In regard to the definition of 'well-being', note that the three main blocks in Figure 2 (the cross-hatched boxes) represent the inputs and outputs for the public production of goods and services and the process of determining individual well-being within an integrated (macro-micro) framework. Defined on the dimension of macro analysis is the production process of goods and public services based on technical production coefficients. The output from this process is one of the inputs to the process that transforms resources into well-being and comes about at individual level. Individuals transform goods and health services produced by the public policy-makers (output from the process of public production) and goods and services purchasable on the market into what constitutes the final output from the process of determining well-being within a specific functioning, namely health.[8] As already discussed in section 2, rather than looking at achieved functionings (conditions of health objectively and externally appraised, or the subjective evaluation of one's state of health), attention could concentrate on the space of achievable functionings, i.e. the capabilities set (represented by the oval). To focus on the former space can provide a more satisfying evaluation of a person's well-being because it also includes freedom to achieve and the exercise of choice in the calculation.[9] Nevertheless, this can prove to be a complex exercise, not directly observable and, for our purposes, not strictly necessary for the simulation and analysis of the impact of policies. For these reasons, we have decided to restrict our attention to the functionings space, rather than that of capabilities, at least in this first methodological phase.

### 4.2. Conversion factors and environmental contexts

The model in Figure 2 is characterised also by the following aspects:

The second and fourth block on the left side indicate the 'technical' factors of the two production processes. Regarding the technical coefficients of production, it has already been said that they capture the efficiency of the public production process.[10] The internal conversion factors (either individual or of homogenous subgroups in the population) express in a certain way the 'efficiency' of the individual or subgroup in transforming goods, services and resources into well-being. Assessment of conversion factors is the part of analysis which may create the most difficulties given that some factors cannot be directly observed. They could be defined on the

[8] Naturally, in this case too, an interesting extension of the model could concern the analogous production of goods and services by private firms, followed by comparative analysis on private/public efficiency in delivering the same services (for instance, in education or healthcare). We do not consider this aspect here, however, and regard only privately-produced goods and services purchasable on the market.

[9] An example may be useful in clarifying the concepts previously introduced. Having full access to healthcare (for instance, I have free access to doctors, medicines, hospital facilities, methods of treatment and prevention, or I have sufficient income to purchase these goods and services on the market, or I have both possibilities), and with relatively favourable conversion rates (I am not afflicted by handicap nor am I exposed to unintentional risks to my health, I am relatively young, I have a level of education suited to acquiring and processing all useful information on health care, and so on), my potential health conditions (capabilities) may be very good. Contrarily, my real conditions (functionings) may be very precarious: for instance, because I choose to consume alcohol or tobacco in such quantities as to jeopardize my psycho-physical state and/or because, out of personal choice, I do not pay attention to my health. The differences in the evaluation exercise appear evident in the sense that focusing on the space of achieved functionings enables us to distinguish those who have low achievement in terms of health because they do not have adequate means and resources available or because they have unfavourable conversion rates, and those who instead, as in our example, choose this condition even though they have alternative options available.

[10] On the estimation of this part of the model see the contribution of Canova at al (2007) to this research project.

basis of certain 'common sense' assumptions or estimated on the basis of the conditions observable, i.e. in relation to the inputs (the amount of public or private services available or purchasable), and the output (observed functioning) and given a vector of personal characteristics.[11] Other conditions remaining equal, one may expect that being young or having a higher level of education or not suffering a handicap, or having a job not subject to particular risks, will give rise to more advantageous conversion rates and therefore to a higher level of well-being (measured within the space of achieved functionings).

Finally, the horizontal block in the lower part of the diagram denotes a set of external factors related to the socio-economic or the institutional context, which may act both on the 'macro' level (influencing the actions of policy makers) or on the ''micro' level (influencing the action of the individual). Operationally, these factors are the ones which allow the model's base hypothesis to be changed by introducing alternative assumptions with respect to institutional factors (for example, a different degree of efficiency of local institutions, changes in the 'rules of the game' as described in section 3, or a different sensitiveness of policy makers to problems such as pollution or traffic) or contextual factors (territorial setting, demographic size, social structure). This also concerns the hypotheses incorporated into model and relative to the different types of behaviour – altruistic or egoistic – which individuals may adopt, and with which they may influence the well-being process. Those factors can act only on the macro-dimension, or only on the micro-dimension, or on both. For example: the hypothesis of altruistic behaviour may have effects either on the 'right-hand side' of the diagram (my well-being is better off if I live in a neighbourhood where there are good-quality care or recreational facilities for single old people, even if I am not specifically interested in using those facilities because I am young and do not have parents or relatives who need such facilities), or on the 'left-hand side' of the diagram (not only is my well-being positively influenced by my knowledge that there exist care and recreational facilities for old people but also because I actively exert pressure on the institutions so that facilities of this kind are supplied). It is thus possible to take account, even if partially and perhaps not entirely satisfactorily, of the different meanings of *agency, well-being* and *standard of living* mentioned above. Concretely, this comes about by modifying, *ceteris paribus*, the matrix of the technical coefficients and of the conversion rates.

[11] Conversion factors are frequently equated to, and confused with, personal characteristics, in particular when moving from the theoretical level to the empirical level of analysis. It is obvious that there is a strong and direct linkage between them; yet they should be kept distinct. Conversion factors are the 'technical synthesis' of a set of personal characteristics, some more directly determinable (like age and sex), others more difficult to observe (for instance, to use Sen's examples, the metabolism of a person, or his/her abilities and talents). Combined in various ways, these features give rise to a certain conversion rate of resources into well-being. As already highlighted, the handicap of a person certainly influences the conversion factor between the available means and the achievable or achieved functionings but not necessarily in a direct and unambiguous way. It is the interaction between these conditions and other personal features such as 'being young', 'being old', being a woman', 'being a man', a person's emotional and psychological stability that gives rise to a different conversion factor. On these aspects and, in particular, on the estimation of the rates of conversion see the contribution of Chiappero-Martinetti and Salardi (2007) to this research project.

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