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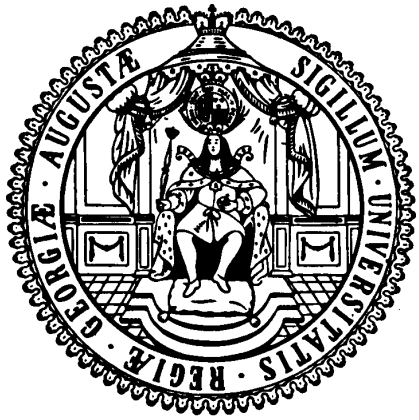



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# The capability dilemma in operational poverty assessment

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**Abstract**

This paper compares the standard economic welfare approach to poverty measurement to the empirical approaches proposed in the capability literature under the special focus of their suitability for operational poverty assessment, i.e. targeting and outreach evaluation. We question whether the measurement of per capita daily expenditures compared with a monetary poverty line justifiably remains the most widely used approach regarding poverty assessment. Its underlying value judgments and unsatisfactory assumptions differ considerably from those of the capability concept of poverty but the two approaches can be linked and critically compared with respect to the role of income, the conceptualisation of absolute poverty and the development of operational tools. We argue that despite the progress made in operationalizing the capability approach, there remain serious challenges when focussing on targeting and outreach evaluation and propose three alternative solutions for dealing with this capability dilemma in practice.

## Introduction

The old concern among donors, governments and practitioners about their success in reaching the poor has been re-enforced by the time-related urgency for effective action in order to reach the Millennium Development Goals by 2015. And it has in some cases entered national legislation as, for example, in the Microenterprise for Self-Reliance Act passed by the US Congress in 2000 and amended in 2003, which requires that all microfinance institutions that receive funding from the U.S. Agency for International Development report the share of resources allocated to the 'very poor' and the absolute number of 'very poor' among their clients. These commitments call for operational poverty assessment tools, which are both time- and cost-saving and appropriate in terms of the chosen definition of poverty. Poverty assessment here refers to all empirical measurement efforts at the project or program level that try to identify and describe the poor in the context of ex-ante targeting and ex-post outreach evaluations based on predictive rather than causal analysis. (This does not rule out, however, that some of the conclusions drawn might also apply to ex-post impact assessment over time.)

The understanding and measurement approaches in this regard have considerably improved during the last decades. Economic theorists, development researchers and practitioners made remarkable progress in the development of concepts and tools to identify and characterize the poor and to measure the magnitude and extent of poverty. This development implies that at the latest since the capability concept of poverty (Alkire, 2002b; Nussbaum, 1995; Nussbaum, 2000; Sen, 1985; Sen, 1987a; Sen, 1987b; Sen, 1992) and further contributions such as the human rights perspective (Townsend, 2005), we can no longer measure monetary income or expenditures and seriously claim that we are assessing well-being in a comprehensive way, if that is the goal. In view of the remaining challenges involved in transferring the often quite philosophical capability concepts to practical poverty assessment, however, money-metric approaches continue to play a vital role in political decision-making and evaluation. This is particularly the case in small and large-scale project and program evaluations that rely on operational tools for absolute poverty assessment to determine whether the poverty outreach targets are met.

Are political decision-makers, practitioners and researchers always aware of the moral implications and economic consequences of the chosen definition of '(very) poor'? Can the continuing predominance of monetary deprivation measures still be justified by

operationalization problems in the context of targeting and evaluation efforts? Which and how severe are the remaining challenges of operationalizing multidimensional poverty concepts?

As a complement to existing comparisons of the capability approach with classical monetary concepts (Kuklys, 2005; Ravallion and Lokshin, 2003), it is the aim of this review to critically discuss the present state of the two approaches with special focus on their contributions and implications for the operational assessment of absolute poverty. It makes explicit the implicit value judgments in poverty analysis using general rather than formal economic language.
The remainder of the paper is structured as follows. The next section discusses the conceptually diverse approaches and shortcomings to poverty in the form of income deprivation in welfare economics. The third part summarizes the core principles and theoretical justification of the capability concept as introduced by Amartya Sen and the role of income therein, followed by the discussion of challenges and recent attempts to operationalize the capability approach in the forth section. We conclude by presenting different views on the possibility to reconcile both approaches and evaluate income versus capability measures with respect to their suitability for operational poverty assessment.

**Poverty as income deprivation in welfare economics**

Welfare economics as presented in economic textbooks represents the normative branch of economics that tries to give decision rules about what is good and bad for society by means of economic theorems (Feldman and Serrano, 2006; Just, Hueth, and Schmitz, 2004). Based on the two fundamental theorems of the competitive markets mechanism and Pareto optimality, classical welfare economics is concerned with two basic economic phenomena, namely, the efficient allocation of scarce resources in a society (*economic efficiency*) and the effects on *income distribution* associated with it (Feldman and Serrano, 2006; Just, Hueth, and Schmitz, 2004; Lange, 1942). Its basic unit of measurement is the individual, which is assumed to rationally act according to own ‘preferences’ or ‘desires’ in order to maximize ‘utility’ subject to an exogenously given budget constraint. Utility, conventionally used synonymously with happiness or satisfaction, is assumed to best represent individual welfare levels (Just, Hueth, and Schmitz, 2004). The respective branch in welfare economics following this concept is called *welfarism*. The overall welfare of a society (*social welfare*) is achieved by some form of aggregation function. The respective formal representation of such value judgments in terms of a collective choice rules for ordering alternative social states in a society is referred to as *social welfare functions (*Sen, 1979a). It can, for example, describe social welfare as the

unweighted sum of individual utilities (called *sum-ranking*), a concept that refers to the classical *utilitarian* approach to welfare economics as developed by Bentham, Mill, Edgeworth, Sidgwick, Marshall, and Pigou (Atkinson, 2001; Sen, 1996).

In classical welfare economics, restrictive market assumptions are made (including the uniformity of prices faced by all consumers, the non-existence of externalities and public goods, and the marketability and constant availability of goods and services subject to individual preferences), some of which have successfully been relaxed in modern welfare models (Feldman and Serrano, 2006). At the individual level, too, strong assumptions are made concerning the preference-driven consumption behavior. They include utility maximization as the only basis for decision-making behavior, the independence of utility from non-chosen goods and services, the inexistence of an intrinsic value of choice, and the uniformity and cardinal comparability of preferences and needs across all individuals (Deaton and Muellbauer, 1980; Just, Hueth, and Schmitz, 2004; Sen, 1987a).

Empirically, individual welfare is usually expressed in *monetary* income or expenditure terms as the valid basis of welfare judgments because under the above assumptions of equal preferences and prices faced across individuals, income constitutes a valid measure of the level of indirect utility. Conceptually, it makes no difference "whether the budget set is interpreted as an *ex ante* opportunity set [in terms of income] or an *ex post* measure of utility derived from the chosen goods [in the form of expenditures]" (Kuklys and Robeyns, 2005: 18) because the act of choosing itself and the range of available options to choose from have no intrinsic value and do not change the utility level achieved from the finally chosen bundle of goods. Under this scenario, all welfare-relevant goods and services can be acquired by purchase in competitive markets so that utility increases with the amount of goods consumed and different levels of utility can only be achieved by different income (or expenditures) levels (Klasen, 2000). Hence, they constitute an essential input to all classical poverty and development analysis.

Applied welfare economics directly uses social welfare functions for policy design and evaluation regarding the overall changes in the whole income distribution without attaching special weights to certain parts of the distribution. In contrast, poverty and inequality analysis employ a poverty line Z and focus nearly exclusively on the amount and distribution of income Y of the population part below this line thus attaching zero weight to the income changes of the non-poor Deaton, 1997. In social welfare terms, this would equal a functional form of $p(Y,Z)$ with $p(Y,Z)=0$ for $Y \geq Z$ Atkinson, 1987. Poverty analysis relies on the selection of a summary measure or poverty index (such as the poverty indices by Foster,

Greer, and Thorbecke (1984)) and a decision on the relationship of poverty and inequality in the analysis. Given that these summary measures of poverty often neglect the implicit strong restrictions of the underlying social welfare function, Atkinson early proposed to directly use social welfare functions to express inequality and poverty in order to make the respective assumptions explicit and be able to adjust them to the understanding of poverty in the respective context (Atkinson, 1970; Atkinson, 1987). A simple poverty headcount H would then be expressed as $H = \int_0^z f(Y)dY$. "In this regard, poverty measures are special cases of social welfare measures" (Deaton, 1997: 141), although in practice, they often break free from this origin. This is the case when poverty analysis neglects that in reality, no such discontinuity in the welfare distribution exists as the strict cut-off in terms of a poverty line suggests. In most situations, "poverty is not really a discrete condition. One does not immediately acquire or shed the afflictions we associate with the notion of poverty by crossing any particular income line," as expressed by Watts (1977: 28-29). In this early paper, he effectively suggests a (continuous) poverty function that can be embedded in the framework of an overall utility function of society whose one part then refers to disutility due to poverty (cf. Kakwani and Son, forthcoming 2007).[1]

Apart from the choice and careful use of a poverty index or function, it is the construction of the poverty line that directly reflects the underlying definition of poverty. In the poverty literature, the line generally expresses the amount of income – or expenditures – that represents some sort of 'minimum standard of living' in a given context. As for social welfare, the most common indicators of poverty are income and consumption expenditures. The advantages of expenditures over income have been intensively discussed in the literature and can only briefly be mentioned at this point. They refer to the fact that expenditures are more stable an indicator of long-term command over resources and thus of welfare given that it reveals information on income in the past and future as well because households smooth varying income over time. It also circumvents the difficulties related to home-produced and other non-market goods that formally do not produce income (Deaton, 1997; Ravallion, 1992). Apart from the decision on income or expenditures, several methods for the adjustment of price differences and the improvement of interpersonal comparability allow for poverty comparisons across space and over time, one of the main purposes of poverty analysis.[2]

Different historical methods for the construction of poverty lines – be it a political decision regarding the eligibility for state benefits, an average perception of minimum income by 'representative' citizens, an 'objective' definition by experts respecting the fulfillment of

some ‘basic needs’, or the ‘subjective’ perception of subsistence income by the poor themselves (Goedhart et al., 1977) – have the following concept in common. Economic poverty is defined as *situational circumstances* (as opposed to individuals characteristics) in which the consumption set in terms of the *command over basic resources* is severely restricted:

“In simpler language, we may say that welfare is defined in terms of command over real goods and services-command over resources, for short. The less command one has over resources, the less welfare one enjoys; that is, the poorer one is. Poverty is then defined as a situation where command over resources falls below a certain level, *the poverty line* ” (Goedhart et al., 1977: 504).

Regarding the historical methods mentioned above, doubtlessly, social safety net programs and other state benefits for the poor have their own eligibility criteria (that might deviate from a mere income poverty line), and participatory and ‘subjective’ approaches to poverty assessment have indeed become sophisticated in the last decades and are widely used either as welfare indicators themselves, for example, in the form of Participatory Wealth Ranking (Gibbons, Simanowitz, and Nkuna, 1999), or as recently, to complement and validate ‘objective’ measures (Ravallion and Lokshin, 2006). In the mere construction of poverty lines, however, it is the ‘objective’ approaches that have become the fundamental grounds for defining minimum income levels worldwide.

One approach refers to the ‘Food-Energy Intake’ method that determines the income or expenditure level necessary to meet pre-determined food-energy requirement for a male or female individual at a given age and activity level. Usually, this underlying energy requirement does not do justice to every individual but is based on average standard recommendations by the World Health Organization (Ravallion, 1998). The common methods to relate nutritional intake to *total* consumption expenditure rely on econometric regression analysis based on an *expected value* of caloric intake. Thus, the ‘Food-Energy Intake’ method tries to find a monetary poverty line, below which nutritional basic needs are supposed to be unmet and which is expressed in terms of overall (food and non-food) consumption expenditures. Problems with these nutrition-based poverty lines arise in the case of differences in tastes, activity levels, relative prices, and in the provision of public goods across regions and over time because these may result in shifts in the relationship between food intake and consumption that are irrelevant for changes in economic welfare terms, i.e., command over basic resources (for details refer to Ravallion, 1998; Tarp et al., 2002).

The other approach is known as the 'Cost of Basic Needs' method first introduced by Rowntree (1901). It determines the cost of an appropriate bundle of goods to assure the fulfillment of 'basic' food and non-food consumption needs and is the most widely used method in less developed countries. (Note that in this context, 'basic needs' are meant as *input* factors to the calculation of a subsistence income or expenditures, which is fundamentally different from the understanding of the 'Basic Needs Approach' to poverty discussed below.) Under certain assumptions, the 'Cost of Basic Needs' ideally represents a utility-consistent cost-of-living index, although in practice, the bundle of goods rather exhibits a normative minimum income that is, however, related to existing consumption choices as closely as possible (Ravallion, 1998).[3] The food component is based on stipulated nutrition requirements converted to a culturally or regionally representative bundle of food goods, (which includes to a lower extent some of the problems faced with the 'Food-Energy Intake' method). The determination of the non-food component, however, is more complicated and alternative methods are discussed in detail by Ravallion (1998). Accordingly, a basic-needs poverty line including a modest set of non-food goods can be estimated applying a food-share Engel curve. Differences in poverty analysis over time and space depending on the use of the 'Food-Energy Intake' versus the 'Cost of Basic Needs' method have been analyzed, for example, by Tarp et al. (2002). They conclude that the latter is the recommendable alternative in terms of robustness of poverty profiles. Already before, Glewwe and van der Gaag (1990) showed that different definitions even within the context of money-metric poverty lead to different groups identified as poor and that definitions should be chosen carefully and according to the purpose of the analysis.

In the late 1970s, pioneers like Paul Streeten, concerned with the limitations of growth-related development strategies, started to counter the common GNP approach to poverty measurement with an alternative, the 'Basic Needs Approach' (Hicks and Streeten, 1979; Hicks, 1979; Streeten, 1977; Streeten, 1981; Streeten and Burki, 1978). In the context of its appearance, the Basic Needs Approach was meant as a means to track progress in development at the national level in terms of cross-country comparisons and policy guidance: "This new focus on meeting basic human needs requires an indicator or a set of indicators, therefore, by which deprivation can be judged and measured, and policies directed at its alleviation and eradication can be initiated and monitored" (Hicks and Streeten, 1979: 568). In this paper that has received much attention until today, the authors propose to separately consider *output* indicators of basic needs directly with respect to health, education, food,

water supply, sanitation, and housing or to use even a single health indicator as an alternative to (nutrition-based) income poverty lines that use these factors at most as *inputs* to calculate an adequate minimum income as described above. The usual criticism of the Basic Needs Approach is summarized by Glewwe and van der Gaag (1990: 805): "There is usually no attempt to aggregate these various aspects of basic needs into a single welfare indicator, which complicates the classification of households as poor and nonpoor. […] A second problem with this approach is the subjectivity involved in determining adequate levels of health care, housing, education, cultural amenities, and so on." A part from the debate on its operationalization and aggregation – a criticism that is has in common with the capability approach – the Basic Needs Approach is rather to be seen as a multidimensional alternative to an income-based poverty concept and can as such be considered as an early precursor of the capability approach. Sen points out that already the early welfare economist Pigou presented a list of basic needs in 1952 (Sen, 1987b), and until today, a deep moral and methodological discomfort with a mere income approach motivates lead economists to propose at least a combination of the latter with the needs theory:

> "Those of us who have been exposed to field experience have been impressed by the prominence of health concerns in what people tell you about their poverty. Income, housing, and jobs tend to predominate when health is normal, but if someone gets sick, is hit by a car, or has a friend or relative who has been raped or murdered, income poverty recedes into the background in people's perceptions. Many millions of people around the world will die from AIDS, with untold misery and deprivation. […] My view is that the World Bank should back away from its current too-concentrated focus on income headcount numbers. It should emphasize a much wider range of other measures, focusing on deprivations that may be more important than deprivation of income" (Deaton, 2001: 145).

Although the basic needs concept has been criticized by the founders of the capability approach themselves for being too narrowly linked to commodity possession, (which is considered only instrumentally relevant (Alkire, 2002b; Sen, 1987b)), there are recent advocates who prefer Streeten's needs theory even to the capability approach (Reader, 2006). The next section introduces Sen's famous concept of poverty as capability deprivation in order to contrast it to the welfarist poverty definition before we draw some conclusions regarding recent reconciliation attempts between the two and the necessary caution when using monetary measures in practice.

**Poverty as capability deprivation and the role of income**

In the previous section, we have seen that social welfare functions embody the common value judgments of social states in classical welfare economics. It is at this point of value judgments underlying our definitions and ranking of different states of well-being (and poverty) where Sen's capability approach departs from established *utility* concepts. Amartya Sen identifies himself as social choice theorist (Sen, 1995: 18). In contrast to, or rather, complementary to welfare economics, which offers market-based decision rules about what might be 'good' and 'bad' for society, social choice theory is concerned with social preferences themselves, i.e., how they might be found, how collective choice relates to individual preferences, and how to valuate different apparently 'good' solutions for society in diverse situations (Feldman and Serrano, 2006). In order to at least roughly explore Sen's differences from utilitarian welfare economics, a basic introduction to the specific language and arguments of the capability approach is necessary to facilitate the understanding of Sen's concepts.

This sub-section is based on a tiny part of Sen's extensive writing regarding his concept of poverty as capability deprivation, namely primarily the two Tanner lectures about 'The Standard of Living' (Sen, 1987a; Sen, 1987b) and his books entitled 'Inequality Reexamined' (Sen, 1992 and) 'Development as Freedom' (Sen, 2000), in addition to some further publications that are only shortly referred to.[4] It can, therefore, only give a very reduced picture of Sen's rich work and serves the specific purpose of embedding the assessment of income or expenditures into the broader context of human well-being. The simplified illustration in Figure 1 may serve as an orientation. As its name suggests, the approach centers around '*capabilities*' that refer to the '*freedoms*' or '*real opportunities*' people enjoy to promote or achieve the life they want to lead. Human capabilities include 'basic', i.e., universally valued ones (like longevity, fertility, or the capability to drink clean water) as well as 'more complex' ones (like the opportunity to learn calligraphy or to eat marzipan during the Advent season). According to Sen, the freedom to choose, which implies the availability of alternatives, has not only *instrumental* but also *intrinsic* value:

"[...] the value of the living standard is given by the capability to lead various types of life, and while special importance is to be attached to the actual life style chose, the availability of other options has some value too" (Sen, 1987a: 36).

In this regard, participatory approaches to the assessment and reduction of poverty already imply one important aspect of enhancing 'well-being' itself just by giving a group (and the marginalized subgroups therein!) the opportunity to choose and decide themselves, regardless of the actual activities or outcomes.

**Figure 1: An illustration of some core aspects of the capability approach** (Own

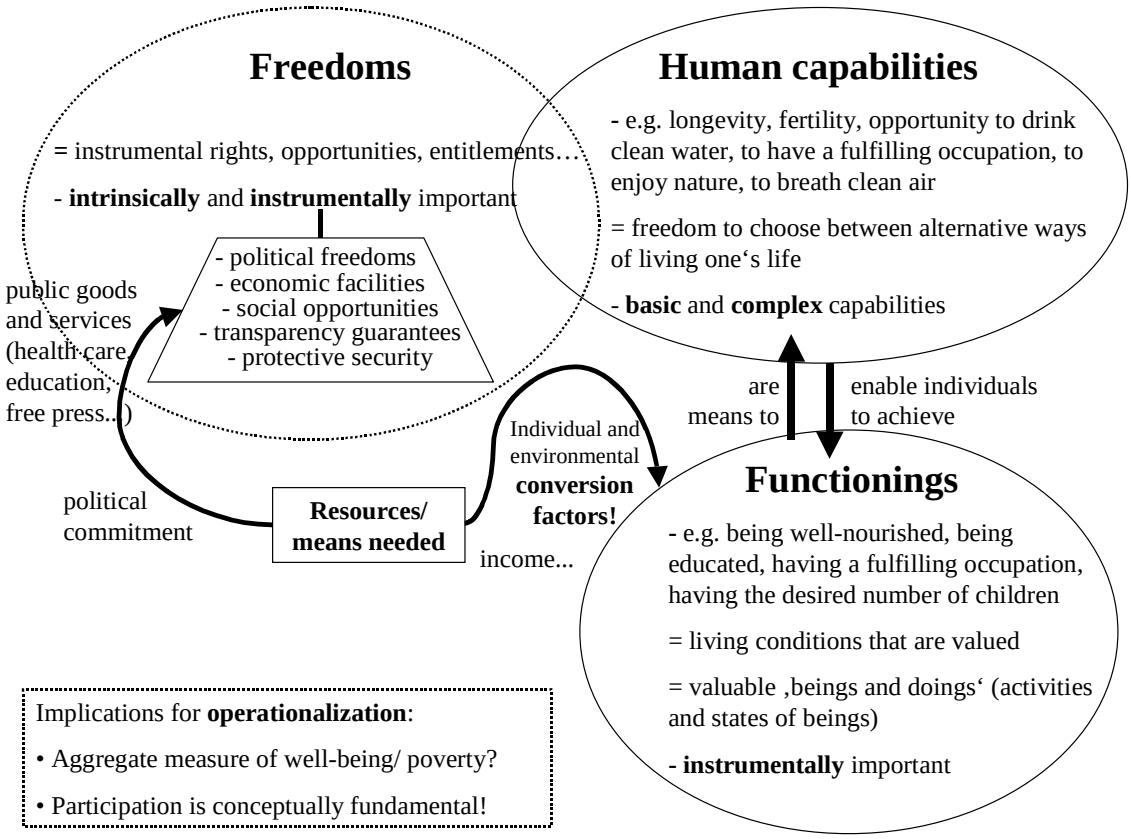


illustration based on Sen's approach as discussed in Alkire, 2002b; Sen, 1987a; Sen, 1987b; Sen, 2000)

With respect to the instrumental character of 'freedoms', Sen differentiates between five main types of "instrumental freedoms that contribute, directly or indirectly, to the overall freedom people have to live the way they would like to live", namely, political freedoms, economic facilities, social opportunities, transparency guarantees, and protective security (Sen, 2000: 38), most of which have to be provided at the aggregate level of a whole society in terms of political action and public support. These freedoms (that appear in the form of instrumental rights, opportunities and entitlements) endow people with multiple 'capabilities' or 'freedoms' at the individual level and give them the ability to achieve the *living conditions*, that is, the activities and states of being that they value. In Sen's language, these '*valuable*

*being and doings*' are referred to as '*functionings*' and represent the achieved way of life in all its facets that an individual has chosen and realized out of a wide range of possible options. Examples of functionings are: being well-nourished, having a fulfilling occupation, being adequately sheltered, being educated, having self respect and respect of others, living according to the traditions of a certain religion, or having the number of children one wanted to have. Accordingly, poverty is defined in terms of *capability deprivation* and results in the non-achievement of the actually valued functionings of a person (Sen, 2000). This view strongly departs from the widely used poverty definition related to income and/or asset ownership in utilitarian welfare economics.[5]

Coming back to Sen's fundamental critique of the traditional economic approach to poverty, he precisely questions that "any evaluative concept in economics [including the standard of living] must be ultimately based on some notion or other of utility" and instead claims that also "[…] *non*-utility features may have intrinsic and direct relevance" (Sen, 1987a: 5). This implies a critique of the omission of non-market goods and services in the utilitarian welfare concept (Kuklys and Robeyns, 2005), but Sen goes even further by raising the definition to a higher conceptual level beyond the access to resources, as we will see below.

He furthermore argues that utility, whether defined as pleasure and happiness, desire fulfillment or choice, cannot seriously claim to be *exclusively* relevant, and that happiness or choice, although legitimately valuable in this context, are not *sufficient* a basis to value the standard of living of a person.[6]

The same would apply to approaches that relate well-being directly to *commodity possession*. As outlined in the previous section, one widely accepted concept in this regard is the 'Basic Needs Approach' that usually works with a commodity-based concept in the form of a certain basket of goods that is assumed to allow the fulfillment of 'basic human needs' in a specific country or region. According to Sen, the possession of basic commodities itself – just like utility achievement – is not at all unrelated to well-being but its claim to represent the universal minimum level of well-being itself, rather than being one component of it, is questioned:

"[...] the strategic relevance of basic needs is not a controversial matter. What is open to debate and disputation is the *foundation* of this concern. Are basic needs important *because and only because* their fulfillment contributes to utility?" (Sen, 1987b: 25).

In this line of argumentation, the definition of the standard of living as 'being well off' in commodity terms, although most often related to 'well-being', reduces the *actual matter of life* to the *resources* a person has as a *means to another end*, namely, to lead a life that is of high value to an individual person (Sen, 1987a). When transferred to the opposite case of defining poverty, the analog argument says:

"In this perspective, poverty must be seen as the *deprivation of basic capabilities* rather than merely as lowness of incomes, which is the standard criterion of identification of poverty. The perspective of *capability-poverty* does not involve any denial of the sensible view that low income is clearly one of the major causes of poverty, since lack of income can be a principal reason for a person's capability deprivation. Indeed, inadequate income is a strong *predisposing condition* for an impoverished life" (Sen, 2000: 87, accentuations added here).

This point is central to the discussion of monetary poverty assessment as presented in this study as it includes some important implications for the self-concept of such an exercise: Firstly, in the above citation, it is recognized that income deprivation (whether measured directly or through expenditures) is an important cause of poverty. As an important means to well-being, income can thus be a valuable and important part of evaluating living standards. Secondly, however, it represents only one of several dimensions that matter, and as such, income as well as the fulfillment of 'basic needs' can only be *instrumentally* significant (Sen, 1987b; Sen, 2000) and represent an "*intermediate* stage of the analysis" (Sen, 1987b: 26).[7] It follows that income deprivation should not be equated with a comprehensive poverty definition itself unless a monetary poverty line is set in a way that it represents the *costs of achieving basic human functionings*. According to Kakwani, "[h]owever, that is not the case with the most frequently used international poverty measure, the PPP $1/day per person. It was constructed by World Bank researchers in 1990 as the median of the lowest ten national poverty lines available in a sample of 33 countries" (Kakwani, 2006a: 21), and not according to any ethical consideration of well-being or basic needs (Edward, 2006).

Suppose that we rather deal with a more meaningful 'cost of basic needs' poverty line, as described in the previous section. At first view, the resource-type measure of income seems conceptually quite similar to the idea of a capability set because it contains alternative bundles of goods and services that could *potentially* be bought. This view is expressed by Greer and Thorbecke (1986: 60-61) who state that "Sen [himself] has provided an important argument in favor of a monetary poverty line: it allows the individual the freedom to choose how or even whether to satisfy his or her basic needs. Individuals who have the ability to meet the

minimum needs should not be considered poor even if they do not do so." In difference to the income constraint, however, the capability constraint refers to both *marketable and non-market goods* (including externalities and public goods) and considers the interpersonal heterogeneity in converting a resource into an achieved output (Kuklys and Robeyns, 2005).

This latter aspect is based on the observation that even if price adjustments and differences in purchasing power are considered, a certain income level can produce very different standards of living according to the availability of (public) goods and services and the requirements for leading the desired life under the environmental, economic, political, social, and cultural conditions across regions (Blackwood and Lynch, 1994). The same difference in *conversion factors* applies to the individual level (cf. Figure 1):

"Despite the crucial role of incomes in the advantages enjoyed by different persons, the relationship between income (and other resources), on the one hand, and individual achievements and freedoms, on the other, is neither constant nor in any sense automatic and irresistible. Different types of contingencies lead to systematic variations in the 'conversion' of income into the distinct 'functionings' we can achieve, and that affects the life style we can enjoy" (Sen, 2000: 109).

Thus the same level of *input* in the form of monetary income can mean very different *outputs* in terms of standard of living given the size, age, sex, gender role, health and physiological conditions of a person (Sen, 1996), which is what we could simply name the difference in *needs*. Seen this way, it is by no means 'odd', as suggested by Kakwani (2006), to call a millionaire with an incurable disease as – at least partly – capability poor. The millionaire would definitely be less capability deprived than a low-income person with the same incurable disease but being a millionaire does not make this person non-poor in the capability space. (This observation is irrespective of whether the disease can be alleviated by public action like health services.)

Two aspects are important here. In the first place, whether and how the conversions of available income into valued (and not just available!) functionings take place, is impossible to evaluate at the stage of income measurement, even when measured in terms of expenditures for marketable goods. This objection aims at the convention in utilitarian welfare economics, according to which the observed market choice is interpreted as a direct expression of individual utility, an aspect of utility theory that Sen criticizes as the confounding of (observable) choosing with (unobservable) benefiting (Sen, 1987a).

Secondly, the above argument indirectly leads us to a further major constraint of the monetary income approach as it is currently employed in the form of household surveys, namely, its inability to capture the actual income poverty at the *individual* level. The individual's actual command over resources remains disguised in the averaging exercise of dividing overall income of the household by its members, (which even applies when equivalent scales are employed, although to a lower extent (Deaton, 1997)).
This 'interpersonal heterogeneity in converting income into welfare' is neglected in welfare economics (Kuklys and Robeyns, 2005: 9). Consistent with this line of argumentation, Sen formulates the following, remarkably challenging demands on policy-makers:

"The respective roles of personal heterogeneities, environmental diversities, variations in social climate, differences in relational perspectives and distributions within the family have to receive the serious attention they deserve for the making of public policy" (Sen, 2000: 109).

Having said so, he consequently recognizes that "there is, of course, a long way to go" (Sen, 1987b: 38) in terms of re-thinking the traditional ways of understanding and measuring poverty as well as of operationalizing the capability approach. The latter aspect obviously is an important pre-condition for all applied development economics and poverty analysis. In the following, we will clarify if Sen wanted his concept to be operationalized at all and present some recent attempts to empirically measure capability deprivation.

**Capability measurement as an operationally feasible alternative?**

Apart from mentioned theoretical debates concerning Sen's critique of utilitarian assumptions, skeptics of the capability approach have often complained about its openness and abstractness that would seriously complicate its operationalization. Sen himself defends this openness as being essential for a market-independent formation of social preferences and valuation of alternative development objectives and strategies: "In the case of functionings and capabilities, since there are no markets directly involved, the weighting exercise has to be done in terms of explicit valuations, drawing on the prevailing values in a given society […]. This explicitness is not, in itself, a bad thing, since it gives the public a clear opportunity to question the values and to debate the decisions" (Sen, 1996: 58). And he explicitly argues that "[…] the approach must nevertheless be practical in the sense of being usable for actual assessments of the living standard" (Sen, 1987b: 20), which, however, "[…] does not, of course, imply that all the refinements are easy to incorporate in empirical studies" (Sen,

1987b: 38). He never made such an attempt himself and argued against the specification of a general blueprint list of basic capabilities or functionings needed for practical implementation.

Several efforts to empirically apply the capability concept have been undertaken in the context of comparing, combining or contrasting the capability approach with income poverty measures of standard welfare economics, and vice versa (c.f. Klasen, 2000; Ravallion and Lokshin, 2003). A comprehensive example of such comparative, theoretically sound research is the work by Kuklys and Robeyns (2005). They show that recent approaches in non-welfarist research allow to relax some of the strict assumptions of utilitarian welfarism at least in macroeconomic welfare analyses. Behavioral assumptions such as the equality of utility functions across individuals have been considered by the employment of equivalence scales that account at least for some of the exogenously given heterogeneity in conversion factors or needs. Regarding the market assumptions in microeconomic poverty analysis, however, this would imply the use of an extremely extended indirect utility function including shadow prices for public and non-market goods and externalities at the individual level, the estimation of the individual value of choice and the consideration of individual conversion factors or needs (Kuklys and Robeyns, 2005). Needless to say that the related feasibility constraints in terms of measurability, data collection and econometric challenges make the use of an input-type variable like income in the spirit of the capability approach more than difficult. The only alternatives are to accept the welfaristic assumptions attached to the money metric or use direct measures of output of welfare.

Recent examples of such output-oriented approaches in terms of empirical applications of the capability approach can be roughly divided into at least three branches according to the data source used: i) one that conducts welfare analysis in terms of policy evaluation using *aggregated data and national statistics at the macroeconomic level* (c.f. UNDP, 1996; UNDP, 1997), ii) another that performs either social welfare analysis, poverty and inequality analysis, or targeting and outreach evaluations, as emphasized here, all of which determine a certain poverty cut-off and use *microeconomic data from household surveys* to measure welfare at the individual or household level (c.f. Klasen, 2000; Kuklys, 2005; Qizilbash and Clark, 2005), iii) and a third one in the form of welfare or poverty analysis using *primary (qualitative) field data and participatory techniques* (c.f. Alkire, 2002b).

In order to translate Sen's theoretical concept into operational methodologies, Robeyns (2006b) identifies three specifications that have to be made, namely, i) how to quantitatively or qualitatively select the relevant capabilities or functionings and their respective indicators, ii) whether and at which stage to aggregate the measures and which weights to use, and – most essentially – iii) whether to analyze functionings or capabilities.

With respect to the first aspect, some general procedural selection criteria for theoretically generating a list of capabilities have been formulated by Robeyns (2003). A more concrete effort in this regard is contained in the book by Sabina Alkire entitled "Valuing Freedoms" (Alkire, 2002b: chapter 5 and 6). In the context of small-scale project evaluation, she addresses the questions of how to normatively and empirically identify relevant dimensions of well-being[8], and how to implement the generated list in participatory impact assessments. The proposed procedures have in common that they recommend to proceed in at least two stages to draw up such a list. One step represents the ideal theoretical case of all relevant functionings necessary for human well-being and the other derives a pragmatic list based on current constraints concerning data collection and feasibility, which allows to continuously adapt the second list to changing constraints over time (Robeyns, 2003).

Due to evident feasibility constraints that would only be overcome by conceptual rethinking, redirected research funding, public action and debate, most empirical applications in the first two literature branches of large-scale policy evaluation and poverty analysis rather seem to jump directly to the second step and use *ad hoc* lists and weights based on the available data without explicitly discussing the selection and weighting exercise in the form of theoretically grounded draft lists in the literature (as done by Robeyns, 2003 and Alkire, 2002b) or in public debates (as demanded by Sen (see citation above)).

The second specification aspect regarding aggregation is conceptually cumbersome. Interestingly, practical implementations of multi-dimensional poverty and welfare measurement tend to stick to the economic tradition of calculating an aggregate measure. These appear in the form of, for example, reduced summary indices with arbitrarily set weights like the Human Development Index (UNDP, 1990) and the Human Poverty Index (UNDP, 1997) based on data at the national level, or scientifically sound composite measures. The development of the latter commonly pursues the following steps of analysis (c.f. Kuklys, 2005): i) the selection of latent functionings to be investigated depending on the purpose of the analysis and of observable indicators for each functioning based on the reasoning and judgment of the researcher, ii) the determination of numerical values for the measurement of the achieved functionings, iii) the estimation of a 'functioning production function' or

'conversion function', a specific feature of the capability approach (as described in the previous section) to explain the achieved level of functionings by causal determinants in terms of individual or external conversion factors (and income), and finally, iv) the aggregation of different functionings into one deprivation measure.

One example is Klasen's composite index measuring *relative* deprivation based on i) 14 functionings each represented by only a single indicator, ii) the numerical measurement of each achieved functioning by intuitively set cardinal rank order scores, iii) the causal modeling of the conversion function by regression analysis, and iv) the aggregation of all functionings into a deprivation index employing statistically set weights by principal component analysis (Klasen, 2000). A theoretically more comprehensive approach – although more distant to the actual capability concept of differentiating between resources, functionings and capabilities – is presented by the multidimensional indices for *absolute* poverty measurement by Bourguignon and Chakravarty (2003). The study involves a careful consideration of formal postulates like subgroup decomposability and transfer principles. Its empirical example rests on i) only two dimensions, which are the resource income and the functioning education represented each by a single indicator, ii) the determination of numerical values in terms of classical average income per capita and years of schooling, and the definition of an arbitrary absolute poverty line for each of the two, iii) the lack of a 'functioning production function' or 'conversion function', which might be seen as a draw-back from the capability perspective because the influence of individual and external conversion factors on the achieved level of functionings remains befogged, and finally, iv) the aggregation of the two indicators into one deprivation measure while considering different degrees of substitutability between them and two alternative arbitrary weighting schemes.[9]

In order to circumvent the conceptually difficult aggregation decisions, also non-aggregated measures have been proposed. In a separate analysis of non-aggregated indicators of social functionings, Qizilbash and Clark (2005), for example, use a fuzzy poverty measure of continuous cut-offs based on survey data of people's own identification of basic functionings.[10]

At this point, a general comment on aggregation is appropriate. Whether the economic tradition of using a single quantitative aggregate poverty measure is the conceptually best way to deal with capability deprivation (apart from being highly attractive in order to allow country rankings and comparisons with classical income measures) has been questioned by Sen himself. He argues that "[…] it is difficult to see why simplicity of use should have such

a priority over relevance. As it happens, the more diverse characterizations of living standard, with various components separately presented, can be used in many practical exercises without great difficulty." (Sen, 1987b: 34). The problem related to the mentioned "simplicity of use" is associated with the necessary task of selecting capability indicators and their respective weights as a condition for aggregation. Accordingly, Alkire (2002b: 30) concludes "[…] that if certain functionings/ capabilities are identified as valuable, then it is evident that, even if there is substantial disagreement as to the relative weights of the various capabilities, having more of *each* of them would be an improvement." The above mentioned examples of multidimensional poverty measures illustrate the difficulties and disaccord regarding the selection and weighting of functionings, not to think of doing the same for unobservable capabilities.

All of the studies mentioned above analyze functionings.[11] Due to the fact that it is much more difficult to measure capabilities, even less empirical applications can be found in this field. Motivated by the legitimate argument that "by concentrating on functionings alone, the analysis might do no more than multivariate work on poverty does already and it fails to exploit one of the most distinctive elements of the capabilities approach" (Anand, Hunter, and Smith, 2005: 14-15), Paul Anand and his co-authors have undertaken the only attempts we are aware of to analyze potential instead of achieved outcomes, i.e. capabilities instead of functionings (Anand, Hunter, and Smith, 2005; Anand and van Hees, 2006). Based on Nussbaum's pre-established list of basic capabilities and British survey data on self-reported aspects of well-being, they show to what extent the different capabilities have gender-sensitive impacts on subjective overall satisfaction. This causal analysis underpins the first step of all applied capability analysis, which is the selection and combination of possible capability indicators. What remains open is the task to develop one aggregated or several single deprivation measures and possibly procedures to identify an adequate cut-off for empirical poverty analysis based on these interlinkages between capabilities and well-being.

The above examples show that there is still little overall consensus on how to operationalize the capability approach respecting the decisions which functionings should be selected for welfare measurement, how they should be measured and compared, and how to empirically move from the *achieved* functionings to derive the *potential* functionings, i.e., the capabilities that represent Sen's ultimate measure of well-being in terms of freedom to choose. Among the causes for this situation are the relative recentness of the field, the still limited number of applications, and the data constraints to analyze capability deprivation, but also the

disciplinary gap in terms of scientific language and techniques between the capability literature and classical welfare and poverty economics (Kuklys, 2005).

Nevertheless, this review of some of the main existing applications of the capability approach demonstrates some general aspects of income deprivation that are interesting in view of operational targeting and outreach evaluation. In summary, the cited studies show that

- income is one factor of overall satisfaction, serves as indicator of the basic capability of being able to hold property and has various subjectively reported interlinkages with other basic capabilities (Anand, Hunter, and Smith, 2005),
- income and expenditure-related variables serve as appropriate input indicators for economic deprivation, which is one component of multidimensional poverty, but that they do not necessarily predict the state and outcome of overall human well-being (Wagle, 2005), a core argument of the capability approach,
- income has little direct impact on certain single functioning achievements like health or housing when compared to the influence of individual conversion factors such as gender or marital status (Kuklys, 2005), and
- the relative poverty rankings, the identification of poor social sub-groups and the policy conclusions resulting from outcome-oriented capability indices (that may include income or expenditures as an indicator for one of several components) and pure input-type income measures differ considerably (Klasen, 2000; Kuklys, 2005).

This leads us to the question of how to evaluate income versus capability measures and draw the respective conclusions with regard to operational poverty assessment.

**Pulling the strings together**

We have seen that the empirical consideration of the theoretical animadversion of the capability approach on the welfaristic market and behavioral assumptions underlying income would be particularly cumbersome in microeconomic poverty analysis (c.f. Kuklys and Robeyns, 2005). This, of course, applies equally to the development and use of targeting and outreach evaluation tools that rely on poverty assessments at the household level.

The unsatisfactory assumptions have motivated economists in all times, including today's capability researchers, to look for alternatives to the income measures. Sen shows that already Lagrange and Adam Smith found it necessary to take note of different needs for different nutrients (and goods and services) by different people according to their physical, mental, social and occupational situation. "If the perspective of functionings and capabilities has been neglected in the literature on real income and living standard, the reason for this cannot be

found in the absence of early initiatives in that direction" (Sen, 1987b: 23). Already in the 17th century, Sir William Petty made attempts to include non-income indicators in his measurement of the living conditions of people. "But he was also realistic enough about measurement problems to concentrate almost exclusively in opulence when it came to estimation" (Sen, 1987b: 21). Some of these 'measurement problems' in terms of selecting and weighting functionings or capabilities have been illustrated in the previous section.

A particularly difficult issue is the aggregation of single capability deprivations into an overall poverty index. For the purpose of developing and using targeting or outreach assessment tools, such an aggregated measure would not only require the *relative* weighting of capabilities (or functionings) to derive an overall measure of the standard of living but would have to be based on *absolute* cut-off levels of single or overall capability outcomes in order to allow regional or inter-project comparisons of deprivation.[12] The questions that such poverty tools commonly have to provide answers for are: What percentage of the program or project participants are capability deprived in terms of a certain (potentially fuzzy) absolute deprivation level? This allows to investigate whether the program reaches its outreach objectives to the actually deprived and to assess how it performs in comparison to other policies. To know that project participants are *relatively* more deprived than the control group (as made possible with Klasen's (2000) capability index presented above and other existing multidimensional measures of relative poverty like the CGAP poverty assessment tool developed by Zeller et al. (2006)) would not be enough. (For potential uses of operational tools assessing relative poverty see van Bastelaer and Zeller, 2006.)
Although the presented attempts to operationalize capability poverty are promising, they do not yet (and cannot without public agreement on reasonable cut-off levels) provide satisfactory answers for absolute capability measures at the national or regional program level. Therein lies one of the reasons for otherwise willing economists concerned with large-scale monitoring and evaluation to always come back to income measures and thereby taking the risk that 'simplicity gains priority over relevance,' if income assessments are not accompanied with measures of at least some functioning achievements.

Apart from the empirical challenges, a further stumbling block of interdisciplinary cooperation seems to be the dissent between traditional welfare economists and capability researchers concerning the question whether or to what extent the two approaches to poverty measurement are theoretically reconcilable. Kuklys (2005) argues that a valuation in terms of

wrong or right of the two concepts is difficult because "[b]oth are normative approaches and differ in their underlying philosophical foundations, which are subject to reasoning rather than statistical testing" (Kuklys, 2005: 3). Welfare economists, in contrast, tend to minimize the differences by saying that "[t]he idea of 'capabilities' does not substitute for utility (or some money metric of utility) as the individual welfare indicator but complements it, by introducing more information into assessments of poverty, information that would otherwise be hidden from view. Attempts to present the two approaches as fundamentally different and to debate their relative merits can thus be misleading" (Ravallion, 1998: 9). The confusion of poverty economists might be enhanced by the doubt whether the command over material resources is not only a means to another end but could itself be seen as a basic capability, namely that of being able to hold property (Anand, Hunter, and Smith, 2005), and if so, whether income would be an adequate indicator for it (McKinley, 2006). However, with reference to the importance of conversion factors for achieving functionings, which themselves are defined as 'beings or doings' rather than 'material havings,' we cannot satisfactorily conceptualize the command over marketable goods as capability itself, at least not in the terminology of Sen's capability approach.[13] An alternative, conceptually sound way of dealing with monetary measures would rather be the "'costing' of capabilities instead of basic food and non-food needs. But many capabilities are difficult to cost; and it is pointless to cost others, e.g., political freedom" (McKinley, 2006). This dilemma does not, however, sanction the use of monetary measures (that consider public goods as well) as one of the – if not *the* – most important *input* indicator for economic or material deprivation (Wagle, 2005).

It is not our purpose here to justify or valuate either of the above positions concerning the reconciliation of both approaches but to elucidate why and under which definitional restrictions monetary welfare measures would have to be used in operational poverty assessment.

What remains as alternatives after having discussed the advantages and problems of capability as compared to income poverty are: i) to give up the idea of outreach evaluations at the national level and limit capability-based analyses to small project areas where participatory poverty research on the selection of capabilities, local indicators and absolute cut-off levels can be conducted, ii) to use a multidimensional poverty assessment tool (using functional forms such as the Bourguignon-Chakravarty Indices) while accepting the conceptual challenges in terms of aggregation weights and the arbitrary value judgment concerning absolute cut-of levels, or iii) to virtually accept the welfaristic assumptions of monetary

welfare measures but conceptualize expenditure deprivation as only one ingredient to multidimensional capability poverty (recognizing that it does not necessarily predict the state and outcome of overall human well-being) and ideally complement it with non-income measures.

For the task of implementing operational, low-cost targeting tools for absolute poverty assessment that are derived from survey data and can be used to adhere to and scrutinize the manifold political and legal commitments related to the Millennium Development Goals and national poverty reduction strategies, we prefer the third alternative. Coming back to Kakwani's millionaire with an incurable disease, we would not identify her as 'expenditure deprived' applying the monetary poverty measure in the first step but definitely as 'capability deprived' as soon as additional non-income measures are considered. The opposite would be true for the long living beggar introduced by Bourguignon and Chakravarty (2003). Which of the two situations deserves to be called 'poverty' is up to the stakeholders' preference. Kakwani (2006) implicitly suggests to only call the resource-related expenditure deprivation 'poverty' in order to distinguish it from 'capability deprivation'. We would rather avoid the term 'poverty' alone and use 'monetary poverty' or 'expenditure deprivation' to remind the reader and ourselves of the fact that human well-being depends on much more than income.

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[1] As an alternative and intermediate stage between using a continuous welfare functions and a clear poverty line, fuzzy poverty measures try to account for the fact that poverty is no discrete condition (see Qizilbash and Clark (2005) and the references therein).

[2] There is no room here to discuss the alternatives and consequences with respect to the choice of consumer price indices, calculation of purchasing power parities, or consideration of household size and composition by means of equivalence scales. For details and remaining problems refer to Cutler, 1984; Deaton, 2001; Ravallion, 1998; Ravallion and Lokshin, 2006; Sabates, Gould, and Villarreal, 2001; Son and Kakwani, 2006; Székely et al., 2000.

[3] Greer and Thorbecke (1986) show for Kenya that an empirically derived cost-of-calories function might be more precise in capturing actual consumer preferences and prices than a normative cost-of-basic-(food)-needs approach.

[4] Other prominent authors of related capability concepts, particularly Martha Nussbaum, and researchers that further developed Sen's approach like David A. Clark can only be mentioned at this place due to the limited scope of the present study and their partly different (legal, political, or macroeconomic) focus. Others will be referred to in the section on the operationalization of the capability concept. For a recent bibliography see Robeyns (2006a) and the references in Kuklys (2005).

[5] Due to the philosophical jargon typical for the literature of the capability approach, it has received relatively little recognition in applied and theoretical welfare economics. For a comprehensive effort to translate the multi-dimensional capability concept into formal economic language and techniques, see Kuklys and Robeyns (2005).

[6] More specifically, Sen's theoretical criticism regarding welfare economics centers around the utilitarian concept of defining overall welfare as the sum of maximized individual utilities, the associated proscription of interpersonal comparisons based on the conviction that pleasure or desire-fulfillment have no common denominator across individuals, and the Pareto criterion of optimality. The discussion takes place in the context of Arrow's 'impossibility theorem' and Rawls's 'difference principle'. For details refer to Sen (1979b) and Sen (1996).

[7] For a detailed definition of 'capabilities' or 'freedoms' as the fundamental higher ends, under which certain 'valuable activities and states of being' or 'functionings' of a person can be achieved, refer to Sen (1985).

[8] Sabina Alkire presents an insightful comparison of such lists of essential dimensions of well-being proposed by Martha Nussbaum, John Finnis, Manfred Max-Neef, Deepa Narayan et al., and others and finds basic agreement between the latter three with respect to the following dimensions of human development: material well-being, physical well-being (health), security or protection, social well-being (affection/ friendship/ relationships), understanding or knowledge, psychological well-being (identity, happiness, peace of mind), participation, leisure or play, creation or work, religion or transcendence, and freedom of choice and action (Alkire, 2002a; Alkire, 2002b).

[9] As far as inequality is concerned, a methodologically sound approach employing structural equation modeling is applied by Kuklys (2005: chapter 3 and 4). It is based on i) two separately analyzed functionings represented each by various indicators, ii) the numerical measurement of each functioning made up of a formal model (confirmatory factor analysis) of the respective indicators, iii) the causal modeling of the conversion function by a structural model, and iv) the aggregation of functionings into a weighted composite index in the form of a axiomatically sound multidimensional measure of inequality, not poverty.

[10] A further example of non-aggregated measurement of multidimensional well-being is the approach employed by Wagle (2005), which is conceptually not satisfactorily comparable to the terms and procedures of Sen's capability. Nevertheless, the study achieves to quantify the causal relationships between five unobservable, latent 'dimensions' of well-being and details the first step of capability analysis, namely, how to identify relevant indicators for each dimension using an estimation procedure based on structural equation modeling as well.

[11] Note that Klasen (2000) and Qizilbash and Clark (2005) state to analyze basic 'capabilities' while referring to achieved outcomes of certain dimensions of well-being. In line with the terminology used so far in this paper, we identify *achieved*, observable outcomes (after making a choice between available alternatives) as 'functionings' and *potential* options as 'capabilities' (c.f. Alkire, 2002b; Kuklys, 2005; Kuklys and Robeyns, 2005).

[12] Qizilbash and Clark (2005) discuss the empirical implications of the fact that Sen conceptualized deprivation at the level of resources (like income) as *relative*, at the level of outcomes of well-being (in terms of capabilities or functionings), however, as indeed *absolute*.

[13] Note that in addition to Sen's capability and functionings concept of 'beings and doings,' Max-Neef Elizalde, and Hopenhayn (1989: 32-33) include a further component of 'havings' (such as, e.g., having teachers) although not to be understood in a strictly material sense.