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## The Capability Approach and Well-Being Measurement for Public Policy

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### Abstract

This chapter presents Sen's capability approach as a framework for well-being measurement with powerful and ongoing relevance to current work on measuring well-being in order to guide public policy. It discusses how preferences and values inform the relative weights across capabilities, then draws readers' attention to measurement properties of multidimensional measures that have proven to be policy-relevant in poverty reduction. It presents a dual-cutoff counting methodology that satisfies these principles and outlines the assumptions that must be fulfilled in order to interpret ensuing indices as measuring capability poverty. It then discusses Bhutan's innovative extension of this methodology in the Gross National Happiness Index and reflects upon whether it might be suited to other contexts. It closes with some remarks on relevant material in other Handbook chapters.

**Keywords:** capability approach, Amartya Sen, preferences, ordinal data, relative weights, AF dual-cutoff counting methodology, multidimensional poverty, Bhutan's Gross National Happiness Index.

**JEL classification:** D60, I30, I32, A13

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## 1 Wellbeing Measurement: Demand, Relevance, and Usability

The demand for rigorous measures of well-being that go beyond economic conditions is evident in the reverberating echoes of the Stiglitz-Sen-Fitoussi report commissioned by President Sarkozy. It is seen in the ongoing national experiments in well-being measurement in the UK, the Netherlands, Italy, Germany, Australia, and Canada;<sup>1</sup> found in the curiosity sparked by Bhutan's Gross National Happiness index (Ura et al. 2012); and is motivating measurement innovations in Bolivia and Ecuador (Ramírez 2012, GoE 2013). This demand can hardly be denied as initiatives like 'Beyond GDP' become institutionalized, mainstream champions emerge, and active communications hubs grow.<sup>2</sup> The window of political space for better well-being metrics appears to be open, awaiting measures that can drive policy responsibly.<sup>3</sup>

The fact that a perfect measure has not yet poured through the open window is encouraging. For the amplitude of aims and tastes that characterise well-being make it as difficult to measure as it is important. There are further challenges of integrating well-being measures into policy modelling and linking them to macroeconomic analyses. Hence the task of improving well-being measures is too important to settle hastily - space for reflection and experimentation is apt. A fruitful starting point might be to appreciate the daunting complexity of broader measures, well articulated by Amartya Sen:

There are two major challenges in developing an appropriate approach to the evaluation of the standard of living [or well-being in our case]. First, it must meet the motivation that makes us interested in the concept ... doing justice to the richness of the idea. It is an idea with far-reaching relevance, and we cannot just redefine it in some convenient but arbitrary way. Second, the approach must nevertheless be practical in the sense of being usable for actual assessments ... This imposes restrictions on the kinds of information that can be required and the techniques of evaluation that may be used.

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<sup>1</sup> For an overview of some explorations in well-being measurement beyond GDP by national governments or statistics offices, refer, for instance, to Bhutan's GNH Index (Ura et al.), the Canadian Index of Wellbeing (CIW 2012), the Measure of Australia's Progress (MAP 2013), Measuring Well-Being in the UK, the Dutch Life Situation Index (Bijl et al. 2012), the Italian measure of Equitable and Sustainable Well-being (ISTAT 2013) among many others.

<sup>2</sup> Updates are consolidated on websites such as WikiProgress and EU-COSI.

<sup>3</sup> Alkire et al. 2015 Ch 3 survey a range of methodologies for multidimensional poverty comparisons, including dashboards, dominance comparisons, statistical methods, fuzzy set and axiomatic approaches. Some observations may be relevant for well-being comparisons.

These two considerations – relevance and usability – pull us, to some extent, in different directions. Relevance may demand that we take on board the inherent complexities of the idea of [well-being] as fully as possible, whereas usability may suggest that we try to shun complexities if we reasonably can. Relevance wants us to be ambitious; usability urges restraint. This is, of course, a rather common conflict in economics, and while we have to face the conflict squarely, we must not make heavy weather of it (Sen 1987).

Researchers, for better or worse, seem dispositionally unable to skirt heavy weather, but we will try to pass through the discussions swiftly. This chapter argues that well-being and its lack should be measured in the space of capabilities and seeks to clarify what this implies. Drawing on Sen's writings, it considers resources and utility as possible spaces for well-being measures and finds these still to be vital but incomplete – and so affirms the powerful ongoing relevance of capabilities as a space for the evaluation of well-being at the present time. Establishing a space, however, is but a preliminary step towards measuring capabilities. We identify relevant measurement features of the capability approach, such as its focus on a set of capabilities, its regard for values and value judgements and public debate, and its emphasis on freedom. As considerable concern has been raised, including in chapters in this Handbook, regarding the weighting of capabilities, we address weights and preferences at length. Empirically there have been many creative and worthwhile proposals for measuring capabilities that are surveyed elsewhere;<sup>4</sup> due to space limitations we discuss but one: a dual-cutoff counting methodology that has been applied extensively for multidimensional poverty reduction. We scrutinize the properties that have enabled this measure to interface effectively with public policy in recent years. We then review how the Royal Government of Bhutan has extended this methodology to well-being measurement in their official Gross National Happiness Index and reflect on how such an approach might be adapted appropriately in other contexts. The closing section responds to relevant comments in other chapters regarding capabilities and measurement. Thus this chapter presents Sen's capability approach as a framework for the measurement of well-being for public policy, outlines its powerful and ongoing relevance conceptually, and sketches one empirically feasible and theoretically rigorous methodology that can and has been used in practice. In doing so, it proposes some core properties of an adequate well-being measure for public policy, and calls for further rigorous experimentation. Although such

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<sup>4</sup> For just a few examples, see Chiappero-Martinetti and Roche (2009), Clark (2008), and Robeyns (2006), Arndt and Volkert (2011), and Van Ootegem and Verhofstadt (2012), or consult the Human Development and Capability Association (HDCA) and the bibliographies on capabilities published in the *Journal of Human Development and Capabilities*.

measures will never be as poetic or rich as the idea itself, they may usefully shape policies that do, in fact, enhance well-being on the ground. And that, after all, is their aim.

## 2 The Space of Well-being Measurement

A preliminary requirement for public policy is to select the space in which measurement of well-being will occur (Sen 1976). In practice indicators may pertain to different spaces, but a conceptually coherent approach should articulate its fundamental space. The arguments for focusing on the space of capability rather than resources or utility were initially and compellingly advanced by Sen, and the key points in those discussions remain relevant to contemporary debates. In addition, new clarifications have emerged from dialogue with recent empirical work on happiness and subjective well-being.

### 2.1 Capabilities and functionings

Sen's capability approach is widely regarded to be at once novel and of substantive importance for the conceptualization of multidimensional poverty and well-being (Jenkins and Micklewright 2007, Arrow 1999, Atkinson 1999, Anand 2008). The capability approach conceives of measured well-being as the freedom people have to enjoy valuable activities and states. Amartya Sen has powerfully articulated the features, scope, advantages, and considerations of the capability approach in relation to measures of well-being and living standard.<sup>5</sup> This approach, which pertains to a long line of reflection advanced by Aristotle, Adam Smith, Karl Marx, John Stuart Mill, and John Hicks among others, argues that well-being should be conceived directly in terms of functionings and capabilities instead of resources or utility. 'The central feature of well-being is the ability to achieve valuable functionings. The need for identification and valuation of the important functionings cannot be avoided by looking at something else, such as happiness, desire fulfilment, opulence, or command over primary goods' (Sen 1985). We first define these terms, then elucidate their value-added.

*Functionings* are beings and doings that people value and have reason to value. They can include quite elementary achievements, such as being safe, well-nourished, and literate, or quite complex achievements, such as waging a political campaign for election or performing a classical dance routine exquisitely. As the Stiglitz–Sen–Fitoussi report described them, 'Functionings is a broad term used to refer to the activities and situations that people spontaneously recognize to be

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<sup>5</sup> Sen (1984, 1987, 1992, 1993, 1996, 1997).

important. These can also be conceived as a collection of the observable achievements of each person (e.g. their health, knowledge or having a meaningful job) ... As people in different places and times have different values and experiences, the list of the most relevant functionings depends on circumstances and on the purpose of the exercise. In this perspective, the well-being of a person is a summary index of the person's functionings' (p. 151).

Note that by definition functionings are valuable both objectively and to the person concerned. But the fact that they are valuable does not mean that they can be mechanically reduced to a single common denominator, such as happiness. Rather, the capability approach recognises genuinely plural kinds of human achievements.<sup>6</sup> They are incommensurable in the sense that no permanent priority or relative weight can be associated with them. The weights well-being measures apply to different functionings are, as we will discuss, value judgements that reflect the relative importance of each functioning within some set for the purposes of the evaluation.

*Capability* refers to 'the *real opportunity* that we have to accomplish what we value'. It is 'the various combinations of functionings (beings and doings) that the person can achieve. Capability is, thus, a set of vectors [or n-tuples] of functionings, reflecting the person's freedom to lead one type of life or another... to choose from possible livings' (Sen 1992, both quotes). The *Idea of Justice* frames it thus:

In contrast with the utility-based or resource-based lines of thinking, individual advantage is judged in the capability approach by a person's capability to do things he or she has reason to value. A person's advantage in terms of opportunities is judged to be lower than that of another if she has less capability – less real opportunity – to achieve those things that she has reason to value. The focus here is on the freedom that a person actually has to do this or be that – things that he or she may value doing or being. Obviously the things we value most are particularly important for us to be able to achieve. But the idea of freedom also respects our being free to determine what we want, what we value and ultimately what we decide to choose (2009: 232).

The Sen–Stiglitz–Fitoussi Commission described the freedom relevant to the capability approach as 'expanding the range of information relevant for assessing people's lives beyond their observed achievements, to the full range of *opportunities* open to them. The limits of focusing on

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<sup>6</sup> It is quite difficult to aggregate distinct capabilities and functionings into one common measure of utility, as Sen notes: 'How do we *sum up*, on the basis of some objective measures of intensities, the respective desires for an ice cream, freedom from a headache, writing the most beautiful sonnet ever written, going to bed with one's favourite film star, and being morally impeccable?' Sen (1980/1981).

achievements for assessing [quality of life] become obvious when considering cases where a low observed functioning (e.g. low calorie intake) reflects a choice (as in the case of fasting) or where a high level of functioning reflects the choices of a benevolent dictator'. Following Sen, they also stress the agency or process aspect of freedom: 'The concept of freedom emphasises the importance of empowering people to help themselves, and of focusing on individuals as the *actors* of their own development' (Stiglitz et al. 2009:151).<sup>7</sup>

Rather than focusing only on material functionings, or only on emotional states, the capability approach encompasses achievements of intrinsic importance: 'any achievement that is rooted in the life that one oneself leads (or can lead) rather than arising from other objectives, does have a claim to being directly relevant to one's standard of living'. So the capability approach *per se* does not categorically exclude any intrinsically valued achievements. 'It is possible that this way of drawing the line is a little too permissive,' Sen wrote, 'but the alternatives that have been proposed seem clearly too narrow' (Sen 1987).

Of course any well-being measure will select certain dimensions or capabilities and exclude others, but the capability approach *itself* does not preselect these. Rather, the capability approach is applied differently depending on the purpose of the measure, the place and situation (or, if comparability is required, the places and situations), the level(s) of analysis, the data available, the policies it will guide, and the kind of analyses required. These features shape and limit the set of relevant capabilities for measurement, but the capability approach overall is not limited to certain dimensions or sectors *a priori*.

As was mentioned above, Sen initially contrasted the capability approach with resource-based approaches – comprising measures of income and of basic needs or commodities – and utilitarian approaches – which initially covered economic concepts related to cardinal utility or revealed preference theory, and more recently include subjective well-being and 'happiness'. We briefly reiterate these contrasts before moving on to observe the measurement implications of taking a capability approach.

## 2.2 Resources

The most common well-being measures by far reflect the resources commanded by different persons, for example indicators of income or consumption. Non-monetary resource measures may include assets, as well as access to certain basic needs such as housing, water, electricity, and roads. In some approaches resources are extended to include access to education or health services, or

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<sup>7</sup> This chapter focuses on the well-being aspects of freedom; on agency please see Sen (1985, 1999) and Alkire (2008b).

social primary goods.<sup>8</sup> The resource-based approach to well-being measures has an appeal because it appears to respond to needs while refraining from any potentially intrusive value judgements, and leaves each person or family free to arrange their resources in whatever way seems best to them. Resources, seen as general purpose means, appear to respect privacy, non-interference, and freedom of choice.

While resources are clearly vital and essential instruments to achieving a high quality of life, Sen's and others' arguments against measures based on resources alone continue to be relevant.<sup>9</sup> First, many resources are not intrinsically valuable; they are instrumental to other objectives. Well-being arguably depends not on the mere existence of resources but on what they enable people to do and be: 'The value of the living standard lies in the living, and not in the possessing of commodities, which has derivative and varying relevance' (Sen 1987). This would not be problematic if resources were a perfect proxy for intrinsically valuable activities or states. But instead people's ability to convert resources into a valuable functionings varies in important ways. Having a purple iPad mini might be a delightful source of recreation, pleasure, and status to one particular teenager. But if a person is intimidated by electronics, blind, fingerless, or illiterate, its presence in their household would not automatically augment their well-being to the same degree.

Similarly, two people might each enjoy the same quality and quantity of food every day, which would reflect equality in the space of resources. But if one is sedentary and the other an athlete, or one is has a low metabolism and one is pregnant, or one has an allergy to that particular food and the other utterly relishes it, their nutritional status from the same resources may diverge significantly. The athlete, the pregnant woman, and the person with food allergies may be noticeably less well nourished. While it is possible to adjust resources to some extent for people's varied abilities to convert resources into functionings – as equalized income does for people of different ages – direct measures of functionings such as nutritional status provide objective data relevant to well-being achievements that are arguably more precise reflections of nutritional well-being than caloric intake plus pregnancy status, for example. For many kinds of personal heterogeneity, differences in physical and social context, and cultural differences all affect people's ability to convert resources into capabilities. Finally, while resources appear to refrain from value judgements or a 'comprehensive moral doctrine', the choice of a limited set of resources also imposes some assumptions about well-being. A resource-based measure is not value-free.

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<sup>8</sup> Rawls (1971, 1993) and Rawls & Kelly (2001). For a useful dialogue between the capability approach's social primary goods arguments see the volume edited by Brighouse and Robeyns (2010).

<sup>9</sup> These arguments appear for example in Sen (1984, 1985, 1987, 1989, 1992, 1993, 1999, 2002, 2009).



Although resources may not be an adequate space for assessing well-being, *indicators* of resources – of time, of money, or of access to particular resources such as drinking water, electricity, housing, and services – are still highly relevant to well-being measures, and often are used to proxy functionings (at times adjusted for quality or some interpersonal variations in conversion of resources into functionings). Resources may also be used to investigate limitations on capability sets. For example Zaidi and Burchardt (2005) used time use and monetary data together to map constraints on the capability sets of individuals.

### 2.3 Utility, happiness, and subjective well-being

Utility and related concepts form another visible and compelling source of data and insights into well-being.<sup>10</sup> The welfare economics advanced by Bentham, Mill, Edgeworth, Sidgwick, Marshall, and Pigou relied on a utilitarian approach. As Sen observed, ‘Utilitarianism was for a very long time the “official” theory of welfare economics in a thoroughly unique way’ (2008). His early arguments extensively addressed various forms of utilitarianism, including revealed preference and preference utilitarianism which viewed well-being to be preference-fulfilment (Adler 2014, Bykvist 2014, and Haybron 2014).

In the revealed preference approach, Samuelson popularized a particularly prominent and much-reduced form of utilitarianism. As early as 1971, Sen criticized this revealed preference approach from a number of angles. First, Samuelson developed this approach in order to avoid the need to look inside consumers’ heads. Yet it only makes sense to refer to a consumer who reveals a preference for  $x$  over  $y$  on one occasion and  $y$  over  $x$  on another as a person exhibiting ‘inconsistent’ behaviour if you do ‘peep into the head of the consumer’ (1973: 62). Second, Samuelson’s axiom does not itself rest on a strong empirical basis: it had not demonstrated that people choose consistently over time and under infinite price-income configurations (indeed such assumptions have been empirically overturned). Third, in situations in which there is interdependence of consumers’ preferences, strategic choices (Prisoners’ Dilemma), or indifference (Buridan’s ass), an external observer who inferred the actors’ preferences directly from their choices would have a flawed understanding. Fourth, people’s actual choices from a limited set are often relative to available options in a choice set - but “menu-dependence of preference is ...ruled out by the assumptions such as the weak axiom of revealed preference (WARP) proposed by Paul Samuelson...” (1997b: 752). Already in 1973 Sen had concluded that “[t]he thrust of the revealed

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<sup>10</sup> Diener et al. (1999), Frey and Stutzer (2002), Diener (2000), Diener and Suh (1997, 2000), Kahneman et al. (2004), Kenny (2005), Layard (2005), Fleurbaey (2006), Kahneman and Krueger (2006), Graham (2010), Bruni *et al.* 2008, Clark (2012).

preference approach has been to undermine thinking as a method of self-knowledge and talking as a method of knowing about others' (1973: 72). The capability approach re-introduces these informational sources.

Different distinctions are relevant in the case of hedonic utilitarianism, which suggests that well-being is reflected *exclusively* in the subjective state of the person – defined variously as subjective well-being, happiness, and satisfaction. This new and fast-growing literature has enriched the empirical basis of utilitarianism significantly. In terms of measurement, hedonic utilitarians argue that subjective well-being should be used rather than income, resources, or capabilities as the focal space in which to measure and judge overall social progress and well-being. For example Layard argues that, 'if we want to measure well-being, it must be based on how people feel' (Layard 2005).

Sen agrees that happiness is arguably of 'intrinsic value' – and being happy seems to be 'a momentous achievement in itself' (Sen 2008, 2009). Furthermore, subjective data reflect relationships, achievements, and environmental factors – as well as material means. Also, even if capabilities or freedoms were the focal objective, it might be hoped that happiness would follow from their achievement, at least in some cases: 'It is natural to take pleasure in our success in achieving what we are trying to achieve. Similarly, on the negative side, our failure to get what we value can be a source of disappointment' (Sen 2008).

For these reasons, well-being measures are highly likely to engage subjective and self-report data among other data sources, and happiness is often recognised as a dimension of well-being in the capability approach (Sen 2009). But utilitarians go beyond this and view happiness as the only locus of human value. Sen among others gives compelling arguments against adopting happiness as the *sole* unidimensional metric for well-being.

First and most directly, although happiness is clearly of intrinsic value and is 'an important human functioning', it is arguably not 'the only thing that we have reason to value, nor the only metric for measuring other things that we value' (Sen 2008). People pursue various activities not simply as strategies to generate the greatest fundamental joy, but because these activities seem worthwhile in themselves (Hurka 2014).

Second, there remain some perplexing difficulties in the use of subjective measures for policy purposes. Sen's longstanding observations on 'adaptive preferences' remain apt (on adaptive preferences see Nussbaum 2001, Burchardt 2005, Clark 2012, Graham 2010):

The utilitarian calculus based on, say, happiness can be deeply unfair to those who are persistently deprived, such as the traditional underdogs in stratified societies, oppressed minorities in intolerant communities, precarious sharecroppers living in

a world of uncertainty, sweated workers in exploitative industrial arrangements, subdued housewives in deeply sexist cultures. The hopelessly deprived people may lack the courage to desire any radical change and often tend to adjust their desires and expectations to what little they see as feasible. They train themselves to take pleasure in small mercies. The practical merit of such adjustments for people in chronically adverse positions is easy to understand: this is one way of making deprived lives bearable. But the adjustments also have the incidental effect of distorting the scale of utilities (2008).

The particularities of this difficulty vary according to the subjective indicators in use. At a general level, complexities arise because people's happiness is a function of several factors: people's personalities, their values, people's objective state, their knowledge of alternatives, those to whom they are comparing themselves, and their evaluation of the likelihood of future improvement. This makes subjective data quite intricate – particularly as a guide for policy. For example, an introverted middle-aged woman's self-reported health may go up (a) because her objective health improves (objective); (b) because she had seen the Olympics just before the first survey, and had been unconsciously comparing herself with the athletes but now the memory has faded (frame of reference); (c) because she recently tried a new medicine and is optimistic it will provide better health than she had previously ever hoped to attain (optimism); (d) because in coping with a life change she became more extroverted (personality); or (e) because she realized she would never be in perfect health and so has somehow come to peace with her situation, and become grateful for the strength she does have (adaptive preferences). While techniques are under development to 'clean' subjective data of changing references frames, aspirations, personality types, adaptive preferences, and other influences, it is clear that subjective data do not solely and directly proxy the person's objective achievements, and reflect influences other than their consciously held values.

While happiness alone may not be a sufficient measure of well-being, it could have two roles in well-being measures. First, as mentioned above happiness of different kinds – such as reflective life satisfaction and emotional and psychological well-being – might be conceived of as discrete and general functionings, to be measured alongside other important functionings such as being healthy, being well-nourished, and working. If two people shared exactly the same material living standard and other circumstances, but one was usually joyful, the other embittered, this could be important to notice, as well-being would seem to improve if *ceteris paribus* more people were joyous, and fewer, morose.

Second, subjective data might be used alongside other information sources to provide insights on people's values and perceptions with respect to other dimensions of interest. Functionings are things that people actually *value* – as well as have reason to value. Hence information on people's actual values enjoys central importance. Subjective data are being vigorously explored in the assumption that a unidimensional question on life satisfaction, for example, can provide some indication of people's present values with respect to *each* element of a vector of functionings (Decanq and Neumann 2014, and Fleurbaey 2014). While it seems far-fetched to presume that responses to a survey question on overall life satisfaction alone precisely and accurately summarize the different relative values each respondent places on each functioning, this broad topic remains an important research question. To cite Sen's summary: 'Happiness is not all that matters, but first of all, it does matter (and that is important), and second, it can often provide useful evidence on whether or not we are achieving our objectives in general' (Sen 2008).

### 3 Capabilities and Well-being Measurement

The previous section set forward the proposal that well-being measurement should be conceptualised in the space of capability and functionings (they are the same evaluative space), even if some of the data used will be resources or subjective states. This section observes the implications that a choice of capability space has for well-being measurement. First, we briefly rehearse the implications enumerated in the Stiglitz-Sen-Fitoussi Commission report. Second, we address the issue of weights both on and across indicators – and the links such weights might have to preferences. Third, we move to empirical considerations, and finally, to functional forms.

**Theoretical Implications:** The Stiglitz–Sen–Fitoussi Commission enumerated the salient features of the capability approach for the measurement of quality of life as follows:

The intellectual foundations of the capability approach include a number of notions. First is a **focus on human ends**, and on the importance of **respecting people's ability to pursue and realise the goals that he or she values**. Second is the rejection of the economic model of individuals acting to maximize their self-interest heedless of relationships and emotions, and a recognition of the **diversity** of human needs and priorities. Third is an emphasis on the **complementarities** between the various capabilities for the same person (while valuable in themselves, many of these capabilities are also means of expanding others, and leveraging these interconnections increases quality of life) and their **dependence on** the characteristics of **others and on the environment** where people live (e.g. illness may spread from one person to

another and be influenced by public health and medical programmes). A last feature of the capability approach is the role played by **moral considerations and ethical principles**, and its central concern with justice, in the form of either bringing each person above a given threshold for each capability, or assuring equal opportunities to all in the ‘capability space. (Stiglitz–Sen–Fitoussi 2009: 151–152, bold added).

Later in the report, after enumerating a proposed set of dimensions of the quality of life,<sup>11</sup> exactly three cross-cutting issues for quality-of-life measurement are raised: inequality, links across dimensions, and aggregation. In **inequality**, the report observed that naturally the mean achievement in each dimension – including non-monetary dimensions – would be an inadequate reflection of well-being, as the same societal mean could be supported by different distributions of achievement. It called for a ‘comprehensive’ approach to assessing inequalities, including ‘looking at differences in quality of life across people, groups and generations’. In terms of **links across dimensions**, the report observed that ‘ignoring the cumulative effects of multiple disadvantages leads to sub-optimal policies. For example, the loss of quality of life due to being both poor and sick far exceeds the sum of the two separate effects, implying that governments may need to target their interventions more specifically at those who cumulate these disadvantages’. This has implications for the order of aggregation, as it implies constructing measures that reflect the joint distribution of achievements or deprivations. This is often most easily accomplished by aggregating across dimensions for each person first using data from the same survey or information for the same unit of analysis, as the counting methodology we later present does. In **aggregation** the text acknowledges that, ‘[w]hile assessing quality-of-life requires a plurality of indicators, there are strong demands to develop a single scalar measure’ and calls upon national statistical offices to make available the data required for their construction’ (p. 55 all quotes).

Clearly it is only possible to touch the surface in this chapter of these measurement implications, and more has been written elsewhere, but let us turn to scrutinize one controversial issue in greater detail.

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<sup>11</sup> The dimensions proposed were: i. **Material living standards** (income, consumption, and wealth); ii. **Health**; iii. **Education**; iv. **Personal activities** including work; v. **Political voice** and governance; vi. **Social connections** and relationships; vii. **Environment** – conditions in the present and future; and viii. **Insecurity** of an economic as well as a physical nature.

### 3.2 On Weights and Preferences

The feature of a capability-based measure appears to cause the most consternation is the selection of a weighting system across indicators and dimensions. This consternation would spark great accord if existing precise and ‘scientific’ methods were in use for other measures. But part of the reason for profiling the Sen–Stiglitz–Fitoussi report is that the first chapter of that report is, precisely, a discussion of the manifold difficulties in weighting the elements of GDP per capita, and of the very real errors that current conventions appear to introduce – particularly if it is to indicate well-being. The discussion runs as follows:

Valuing [all final goods] with their prices would thus seem to be a good way of capturing, in a single number, how well-off society is at a particular moment. Furthermore, keeping prices unchanged while observing how quantities of goods and services that enter GDP move over time would seem like a reasonable way of making a statement about how society’s living standards are evolving in real terms. As it turns out, things are more complicated (2009: 21).

As the report goes on to delineate, in fact, prices may not exist for goods, public services, or non-market production like childcare. Market prices ‘may deviate from society’s underlying valuation’ – for example in the case of environmental damage or the depreciation of capital goods. Income and consumption do not reflect wealth, requiring imputations such as for rent vs home ownership. Measuring inflation and growth when both prices and qualities of goods change is hard and imprecise.

The Stiglitz–Sen–Fitoussi report, like many others in its genre, thus picks through weighting issues, seeking to identify and redress oversights, without expecting the revised measure to be perfect – just less inaccurate. It could seem that such a pragmatic, imperfect, and iterative approach to setting and revising weights – one that is already in action in the revision of GDP and of monetary poverty lines for example – might be a fruitful advance in capability measurement. But what might the basic information required to set capability weights or ‘prices’ be?

The starting point in weighting capabilities is reasoned evaluation of their contribution to well-being. Sen offers a succinct and intuitive summary of this position as follows:

It is of course crucial to ask, in any evaluative exercise of this kind, how the weights are to be selected. This judgmental exercise can be resolved only through reasoned evaluation. For a particular person, who is making his or her own judgments, the selection of weights will require reflection, rather than any

interpersonal agreement (or consensus). However, in arriving at an ‘agreed’ range for *social evaluation* (for example, in social studies of poverty), there has to be some kind of a reasoned ‘consensus’ on weights, or at least on a range of weights. This is a ‘social choice’ exercise, and it requires public discussion and a democratic understanding and acceptance. It is not a special problem that is associated only with the use of functioning space (1999: 78–9).

Well-being measures, like poverty measures, require a reasoned ‘consensus’ on weights or on a range of weights. Sen mentions that public discussion and democratic understanding and acceptance will play a role in the social choice exercise that generates such weights. Indeed experimental processes for doing so appear to be very well underway. For example, a preliminary step is identifying which dimensions of well-being have a positive or non-zero weight. Different studies and authors have addressed this question, through participatory and deliberative bottom-up activities or by considering ‘lists’ of dimensions of well-being generated by expert groups and similar processes, or by referring to instruments such as universal declaration of human rights or a national plan, or by behavioural and psychological studies, and the regularly mentioned capabilities are now apparent.<sup>12</sup> Going further, studies have sought to create a set of weights (or ranges of weights) across dimensions or indicators that reflect a ‘reasoned consensus’ whether through participatory methods (such as Pogge and Wisor 2014), sensitivity analysis, survey data analysis, or expert interviews.<sup>13</sup> Robustness tests to such weights or to final aggregation, using different methodologies to set weights, (Decancq and Neumann 2014) are a key part of this field, which is in an early and active phase of development.

Less attention has been paid to the extent of consensus that may be possible and the potential inaccuracies and injustices that could result from setting uniform weights (however derived) across dimensions. This question is most relevant when the order of aggregation is first across dimensions for the same person, because then the weights could change for each person. The literature where these issues are explored focuses on individual preferences. There seem to be diverging views regarding the relationship between preferences and Sen’s account of capabilities. The remainder of this section will make a few observations on the relationship between social evaluations that draw upon public reasoning and individual preferences.

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<sup>12</sup> Alkire (2002a, b, 2008a), Narayan et al. (2000), Ranis, Samman, and Stewart (2006), UNDP (2013), Wolff and de-Shalit (2007).

<sup>13</sup> See footnote 2, Wolff and de-Shalit (2007), Decancq and Lugo (2012), Alkire et al. (2015, Ch 6), and the references therein.

Most authors recognise capabilities and functionings to be valuable in Sen's capability approach.<sup>14</sup> But they differ in assessing whether they are (a) things people value; (b) things people have reason to value; or (c) things people both value and have reason to value.

In Sugden's 1993 review of Sen's *Inequality Re-examined*, he interprets Sen to be claiming (b):

[I]n valuing functionings, we should not use information about individuals' preferences or choices. It seems that the same should apply to the valuation of capabilities, so that we should not distinguish any element of the capability set in virtue of its being most preferred by, or being chosen by, the person concerned (1993: 1953).

In *Beyond GDP* and in Fleurbaey and Blanchet (2014) probe the capability approach insofar as it can motivate a sound measure of well-being. Fleurbaey and Blanchet argue that, when it comes to weighting the elements of well-being for an overall measure, there are two fundamentally different measurement options: either each of the elements can be weighted according to each person's values or else 'one valuation system for functionings' can be used, hence applying the same weight to each element of well-being for all people. Like Sugden and Arneson they interpret the capability approach to adopt the second view: 'the classical writings on the CA reject the idea of allowing individual-specific weights for the different dimensions of capabilities' (Fleurbaey and Blanchet 2013: 205, cf. 226, 230). They assess the implication of adopting this second view to be that the capability approach must address charges of perfectionism and of paternalism – although they acknowledge that the deliberative public discussions may enlarge areas of consensus, and the focus on capabilities rather than functionings still offers people the freedom to choose their own vector of functionings. They argue that this 'basic pillar' would need to change if the capability approach was applied using Fleurbaey's 'equivalent income' approach. And in their view, 'there is nothing in the basic principles of the CA that seems to preclude taking this route'.

If Fleurbaey and Blanchet's and Sugden's interpretations were correct, then the measurement of capabilities would be delinked from individual's own values and instead reflect an account of what people 'have reason to value'. However this interpretation seems inaccurate in the case of Sen's writings, on which this article is focused.

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<sup>14</sup> Robeyns (2011) is distinctive in arguing that 'the notion of "functionings" is a conceptual category that is in itself morally neutral'. In Robeyns's view, 'Functionings can be univocally good (e.g., being in good health) or univocally bad (e.g., being raped)'. This is an interesting position, but it is clearly not Sen's. It would hardly be coherent to celebrate, as Sen does in articulating the purpose of development, the 'expansion of capabilities' if that might imply the expansion of the univocally bad functionings Robeyns recognises. By de-linking functionings from any assertion of human value, Robeyns organises their valuation as a separate activity.



It is true that in *Uncertain Glory* Dréze and Sen define the human progress as ‘the progress of human freedom and capability to lead the kind of lives that people have reason to value’ (2013: 43), and in *The Idea of Justice*, Sen describes the capability approach as judging individual advantage ‘by a person’s capability to do things he or she has reason to value’.

Taken in isolation this phrase ‘reason to value’ in each definition might seem to suggest, that the capability approach focuses solely upon what a person ‘has reason to value’ in the abstract, regardless of what she actually happens to value. However reading on, consideration for the person’s own values comes into view immediately: ‘The focus here is on the freedom that a person actually has to do this or be that – things that he or she may value doing or being. Obviously the things we value most are particularly important for us to be able to achieve’ (2009: 232, both quotes).

Another text that clarifies the relationship between preference and capability is *Rationality and Freedom*, whose introduction states: ‘In assessing the opportunity aspect of freedom, the role that a person’s preferences – in the broadest sense – may play cannot but be a central issue. The opportunity aspect can hardly be divorced from the valuing of different options’ (2002: 13). Sen then considers ‘various proposals to assess the opportunities, which a person enjoys, entirely independently of what he himself wants and has reason to want’ – but in the end discards these preference-independent approaches, concluding that ‘the evaluation of sets from the point of view of opportunity and freedom must be sensitive to the person’s preferences and reasons for them’ (2002:14).

Sen may be most precise when he uses a slightly intricate yet penetrating phrase that draws attention to both what people value and what they have reason to value. For example, in discussing the relationship between happiness and achieved functionings, he writes, ‘Achievement of other things that we do value (and have reason to value) very often influences our sense of happiness’ (2009: 276). In acknowledging happiness as a valuable capability without asserting it to be the only capability of interest, he writes, ‘happiness is not the only thing we seek, or have reason to seek’ (2009: 276–277). And in the Arrow Lectures he writes, ‘A person’s opportunities – and thus the opportunity aspect of freedom as it applies to her – can hardly be assessed without paying attention to what she values and has reason to value’ (2002: 596).

Thus the capability approach aims at expanding the intersection of what people value *and* have reason to value – not just one category or the other.<sup>15</sup> If it neglected the former, how could Sen

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<sup>15</sup> This is not the same as the ‘intersection approach’ Fleurbaey and Blanchet (2013) discuss.

write, ‘What tends to inflame the minds of suffering humanity cannot but be of immediate interest both to policy-making and to the diagnosis of injustice’ (2009: 388). And if it neglected the latter, would it be coherent to emphasize to the extent Sen does, the contribution of democratic practice, public debate, public reason, constructive discussion, and the impartial spectator to expanding capabilities?

How, in practice, can this framework calm the above-mentioned consternation widely observed regarding the setting of weights. In a section of *The Idea of Justice* named ‘The fear of non-commensurability’,<sup>16</sup> Sen helpfully discusses this topic which he begins by referring to as ‘a much-used philosophical concept that seems to arouse anxiety and panic’ (2009: 240). Criticising the utilitarianism (that underlies, among other things, GDP), Sen observes that it works towards ‘beating every valuable thing down to some kind of an allegedly homogeneous magnitude of ‘utility’’. But utilitarianism cannot succeed in its aim, Sen claims, because ‘any serious problem of social judgement can hardly escape accommodating pluralities of values’ (2009: 239, both quotes). Sen also rejects the argument ‘which claims that the capability approach would be usable – and “operational” – only if it comes with a set of “given” weights on the distinct functionings in some fixed list of relevant capabilities’ – pointing out that the ‘choice of weights may depend on the nature of the exercise’ and that values may vary across people and over time. Instead, he proposes that reflective evaluation on the relative weights of capabilities – or ranges of weights – requires reasoning and also openness to public debate, which can improve the reasonableness of the weights. ‘Public discussion and deliberation can lead to a better understanding of the role, reach and significance of particular functionings and their combinations’ (2009:242, both quotes).

What implication does this have for the measurement trade-offs Fleurbaey raised? First, and very clearly, there is no single way to measure or to weight capabilities. But second, the capability approach does not reject individual-level information if the purpose of the capability measure requires it. Still, the challenges of generating empirical personalized well-being indices to guide public policy are not incidental. First, given that people's preferences are not fixed and consistent, menu- or context- independent, and so on, the *data requirements* to design each person's relative weights, or ranges of relative weights, on a vector of functionings; to ensure each person's weights are roughly accurate, informed, and reflective; and to ascertain the time period(s) for which each

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<sup>16</sup> [N] on-commensurability is present when several dimensions of value are irreducible to one another.’ Sen clarifies that ‘capabilities are clearly non-commensurable since they are irreducibly diverse, but that does not tell us much at all about how difficult – or easy – it would be to judge and compare different capability combinations’ (2009: 240, both quotes).

person's weights are expected to be valid, are considerable. If data may be imperfect, robustness tests to alternative personalized weighting structures will be essential but may lessen their distinctiveness. Second, *comparisons* across people, groups, ages – and across time - will be affected both by different achievement levels and by different weighting structures. But policy is expected to address achievements. Thus to guide the policy a measure will need (a) to be able to disentangle weights from achievements; and (b) to illuminate which investment, for which individual people, will increase component functionings, and overall well-being, the most. Third, it may not be trivial to ascertain what weighting functions to *ascribe* to infants and young children, the very ill, and other populations whose data may be missing. Fourth, if measures based rigorous scientific studies on people's preferences and well-being abound, it is not clear what role public debate, agency, and critical scrutiny could have in *changing* measures that participants, on reflection, judged to be inaccurate. At an individual level, it is also not clear how an individual could 'change her mind' and submit a different preference vector if views shift, including significantly. Fifth, although any measure can be manipulated, this approach could actually provide *incentives* to manipulate preferences or values rather than address shortfalls in achievements, if this would be the least-costly policy action to generate the largest impact on measured well-being.

This being said, having such fascinating challenges (such as comparing a trade-off between thirteen year old passions for smart phones and eighty year olds, for electric blankets) may be a very attractive feature for personalized indices, and are here observed in that spirit. As Kierkegaard put it, “Is not the thing most needed an honest seriousness which ... does not frighten men into being over hasty in getting the highest tasks accomplished, but keeps the tasks young and beautiful and charming to look upon and yet difficult withal ... For the enthusiasm of noble natures is aroused only by difficulties” (*Epilogue to Fear and Trembling*, 1843, transl. W. Lowrie 1941: 65-66).

#### 4 A Policy-Relevant Measurement Methodology

A well-being measure might be presumed to be generated not only to satisfy curiosity – as important and vital as that is – but also and perhaps primarily to guide policy. If we take this perspective, then – modifying related criteria for poverty measurement (Alkire et al., Ch 6) – an adequate well-being measure must:

- be understandable and easy to describe;
- conform to ‘common sense’ notions of well-being;
- be able to target the deprived, track changes, and guide policy.;

- be technically solid;
- be operationally viable;
- be easily replicable (Székely 2006).

The data available for capability measures necessarily shape the measurement enterprise (Chakravarty and Lugo 2014). Most data reflect achieved functionings rather than capabilities. Fleurbaey points out that there could be good reasons for a well-being measure to include some achieved functionings (2006), and he as well as others provide several reasons for this. The first is related to equality or inclusion: ‘if groups differ systematically in the level of achieved functionings, then one may conclude that the members of those groups did not have access to the same capabilities, unless there are plausible reasons why they would systematically choose differently’ (Robeyns and van der Veen 2007; see also Robeyns 2003). The second is that for some groups such as the severely disabled, small children, or people in intensive care, functionings may be the best indicator that we can have. The third is that in many cases adults do not have a capability in isolation, and it is in fact quite difficult to measure their capability set, because whether or not they have a capability depends upon choices of another actor, such as a life partner.

However functionings data do not necessarily reflect freedom, and Sen (2009) continues to reject a functioning-only based approach.<sup>17</sup> Alternatively, data regarding the circumstances of coercion or freedom that accompanied a functioning may be collected and used. A number of very different innovations in this regard are possible and/or underway. To take one, might a measurement methodology itself, using functionings information, shed some light on capabilities? We explore this option now.

#### 4.1 Dual-cutoff counting methodology

This section briefly introduces the class of  $M_\alpha$  measures developed by Alkire and Foster (AF) that build on the Foster Greer Thorbecke (FGT) index (Alkire and Foster 2011). There are a total of  $n$  persons (rows) and the well-being of each is measured in a total of  $d$  dimensions (columns). When referring to a particular person we call them  $i$ , and a particular dimension,  $j$ . The whole dataset is presented as a matrix where each cell represents the achievement level of individual  $i$  (from 1 to  $n$ ) in dimension  $j$  (from 1 to  $d$ ). So looking across a row of the matrix we can scan the achievements

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<sup>17</sup> A number of authors explore subjective assessments of capability, and make the quite difficult claim that subjective survey data reflects capabilities. See for example Robeyns (2005) and Anand and van Hees (2006) but also the concerns on subjective data and adaptive preferences mentioned above.

of one person, and looking down a column we observe the distribution of a given dimension across people.

To focus on deprivations, we set a deprivation cutoff  $z_j$  for each column. For each dimension, individual  $i$  is deprived in dimension  $j$  if her achievement level is lower than the dimensional cutoff ( $z_j$ ). A deprivation matrix ( $g^0$ ) compiles this information, assigning a 1 if individual  $i$  is deprived in dimension  $d$  and a 0 if the individual is not deprived. For each person we now look across the row and add up the positive entries, weighting each dimension by its value ( $w_j$ ) where deprivation values sum to 1. The weighted sum of deprivations ( $c_i$ ) is the deprivation score, and shows the percentage of weighted deprivations that person  $i$  experiences.

Next, we identify who is multidimensionally poor. A person is identified as poor if their deprivation score  $c_i$  is greater than or equal to the poverty cutoff  $k$ . For example, if a person is deprived in 35% of the dimensions (that is their deprivation score is 35%) and the poverty cutoff is 33%, that person is identified as poor ( $35\% \geq 33\%$ ). This has been called an intermediate or dual cutoff identification method, because it uses the deprivation cutoffs  $z_j$  to identify whether a person is deprived or not in each dimension, and the poverty cutoff  $k$  to identify who is multidimensionally poor.

Having identified the poor, we construct a *censored* deprivation matrix  $g^0(k)$  that collects the deprivations of those persons who have been identified as poor, as before, but now replaces deprivations of non-poor people with zeros, in order to focus henceforth only on deprivations of poor people. The censored deprivation matrix is the basis of the AF multidimensional poverty measure and its associated dimensional partial indices. For example, the censored headcount ratios, which provide the percentage of the population who are poor and are deprived in any given dimension, are simply the means of its columns. The measure  $M_0$  is the mean of the censored vector of weighted deprivation scores ( $c_i(k)$ ) times  $d$ .  $M_0$  can also be expressed as the product of the (multidimensional) headcount ratio ( $H$ ) and the average deprivation share among the poor ( $A$ ), which reflects the intensity of multidimensional poverty.  $H$  is simply the proportion of people who are poor, or  $q/n$  where  $q$  is the number of poor people.  $A$  is the average share of weighted deprivations poor people experience:  $A = \sum_{i=1}^n c_i(k)/q$ .

$M_0$  satisfies a number of useful axioms (Alkire and Foster 2011, Alkire et al. 2015). The same class of measures also include additional measures that are appropriate for use with cardinal data and that reflect the depth of deprivation in each dimension through a normalized gap, or a powered normalized gap.

The adjusted headcount  $M_0$  is here presented because it is being used for policy, and our analysis of which properties are particularly relevant for policy derive from these experiences. First, the measure can be implemented with binary, ordered categorical, and ordinal data as well as cardinal data (*ordinality*). Second the measures can be decomposed by different subgroups in the population such as region, ethnicity, or age (*subgroup decomposability*), thus revealing which groups are poorest and whether poverty is reduced among the poorest groups most. Third, measures are sensitive to the multiplicity of people's deprivations: poverty rises if the number or weighted sum of a person's deprivations rises (*dimensional monotonicity*), which provides policy incentives to reach the poorest among the poor even if they do not exit poverty. Fourth, measures can be broken down by dimension, after identification, to show the composition of poverty (*dimensional breakdown*), which can be useful for coordinating policies across sectoral ministries and for decisions such as allocation or monitoring. These properties have proven policy-relevant in official multidimensional poverty indices (MPIs), as used for example by the governments of Mexico, Chile, Colombia, and Bhutan, and in smaller areas like Ho Chi Minh city and the state of Minas Gerais in Brazil, and seem important to consider in well-being measurement design.

#### 4.2 When might the AF class measure capabilities?

In Alkire et al. (2015, Ch 6), drawing on Alkire and Foster (2008), we have proposed that in some circumstances the  $M_0$  could be interpreted as a measure of capability poverty. In breve, the argument is as follows: Consider a set of dimensions, each of which represents functionings or capabilities that a person might or might not have – things like being able to be well-nourished, literate, sheltered from inclement weather, and safe from violence. The deprivation vector for each person shows which functionings they have attained and in which they are deprived in a binary sense. In our formal exposition we presume equal weights for convenience; this could be extended to general weights.

Suppose also that there is considerable agreement regarding the value of achieving the deprivation cutoff level of these functionings, such that most people would achieve that level if they could (they actually value it). Furthermore, suppose that we could anticipate what percentage of people would reasonably refrain from such achievements in certain functionings – those who might be fasting to the point of malnutrition at any given time, for example. And assume that the cross-dimensional poverty cutoff  $k$  reflects these predictions of reasonable voluntary abstinence, as well as anticipated data inaccuracies, while recognizing that a sufficient battery of deprivations probably signifies

poverty and thus is roughly accurate in identifying the poor.<sup>18</sup> Setting the cutoff in this way permits a degree of freedom for people to opt out if they so choose while seeking, insofar as is possible, to identify as poor people for whom the deprivations are unchosen. Applying such a poverty cutoff reduces errors in identification – for example by permitting people who would voluntarily abstain not to be identified as poor and avoiding identifying people as poor because of data inaccuracies. Among the poor, the more deprivations they experience, the poorer they are. Having identified who is poor, we construct the Adjusted Headcount Ratio ( $M_0$ ).

In this case a higher value of  $M_0$  represents more unfreedom (or capability poverty), and a lower value, less. Given that the set of indicators will be unlikely to represent *everything* that constitutes poverty, if each element *is* widely valued, and if people who are poor and are deprived in a dimension would by and large value being non-deprived in it, then we anticipate that deprivations among the poor could be interpreted as showing that poor people do not have the capability to achieve the functionings in which they are deprived. Thus  $M_0$  would be a (partial) measure of unfreedom, or capability poverty.

Such an interpretation relies upon assumptions about data quality and accuracy across dimensions that require verification. It has quite a restricted and uniform approach to values: for example, using a non-union poverty cutoff permits a fixed degree of voluntary abstinence from functionings, when in fact this may vary. But it might at least signal an avenue of measurement worth pondering, not least because the resulting measures could be policy relevant.

Under these conditions, we formally relate identification strategy and the multidimensional poverty measure to Pattanaik and Xu's signature work (1990), except that we focus on unfreedoms rather than freedoms. Pattanaik and Xu propose that the ranking of two opportunity sets in terms of freedom should depend only on the number of options present in each set.<sup>19,20</sup> In contrast, our approach addresses unfreedoms, and we interpret a person's being deprived in at least a minimum set of widely valued achieved functionings as unfreedom, or capability poverty.

### 4.3 Well-being Measurement: Bhutan's GNH Index

The discussion above focused on capability poverty. There are good reasons with starting with the measurement of capability poverty; the primary one is that there is likely to be more agreement

<sup>18</sup> We are presuming that those who are deprived in less than  $k$  deprivations are not poor in any case; we are also presuming that among the poor, there is no voluntary abstinence in the selected dimensions (each deprivation is unchosen) and that the deprivations of the poor are not due to measurement error. This is unlikely to be perfectly true, so such a measure can only be 'roughly' accurate for any given poverty cutoff.

<sup>19</sup> Pattanaik and Xu subsequently extended their approach to reflect the quality of the option (1998, 2000).

about a smaller set of severe capability deprivations than a larger set of capabilities to achieve well-being (Anand and Sen 1997; Sen 1992: 44–45).

However, the foregoing measurement methodology need not be restricted to poverty; it may be applied to well-being also, in an open, experimental way that can be adjusted and improved. The Royal Government of Bhutan's Gross National Happiness (GNH) Index provides an interesting example. Released in 2008 and updated in 2012, Bhutan's multidimensional GNH index uses a well-being application of the AF methodology to measure well-being in nine domains. The methodological extensions are as follows: (i.) The deprivation cutoff is reconceptualised as a sufficiency cutoff; (ii.) The poverty cutoff(s) are reconceptualised as happiness threshold(s); and (iii.) The national index is reported in positive terms as  $(1 - M_0)$  - so reflects well-being rather than poverty. The original consistent sub-indices are analysed to illuminate policy routes to increasing GNH.

This section presents the fundamental motivation of the GNH Index and its extensions in greater detail. The GNH index is introduced by Ura et al. as follows:

One of several tools for public policies to advance GNH is an index of Gross National Happiness that enables policymakers to track progress across the different aspects of GNH. Caveats are natural: an index cannot include all aspects of GNH that are relevant. Nor is it sufficient to guide policy – it must be complemented by an in-depth, narrower analysis of policies and programmes, tailored to local realities. Further, it must be advanced by a plurality of institutions. Because advancing GNH depends upon actions by civil servants, government workers, the private sector, and civil society, the objective of maximising GNH must resonate with plural groups across Bhutanese civil service and society.

So while an index alone is limited and insufficient, a robust and compelling index – rigorously formulated and clearly presented – can do what no other single tool can do, which is sketch roughly how GNH is evolving across Bhutan as a whole over time, as well as for different groups, regions and people. It can also convey *how* people are happier – or unhappier – than previously, and thus inform practical action (Ura et al. 2012:8).

*Sufficiency cutoff.* The first distinctive feature – a cutoff to indicate sufficiency rather than deprivation – is introduced by Ura et al. as follows:

A sufficiency cutoff functions like a poverty or deprivation cutoff, but is set at a higher level. A person is identified as having a *sufficient* attainment if his or her achievements in that indicator meet or exceed the cutoff... For example, if a



perpetual student had been studying for 30 years and the sufficiency cutoff were 21 years, then the perpetual student would be treated as if they had 21 years of education. Achievements *above* the sufficiency cutoff do not *further* increase GNH. The level at which the sufficiency cutoff is set is a value judgment, which can be a topic for public discussion, but the fact that it may be difficult to set an exact cutoff should not obscure the reasonableness of setting *some* sufficiency cutoff... (Ura et al. 2012).

Bhutan's sufficiency cutoffs were justified in various ways: using international standards (e.g. for hours of work), national standards (e.g. for income), value judgements (for positive emotions), and participatory consultations. The participatory work illuminated the fact that no one set of thresholds would be accurate or meaningful given the diversity of people's situations and motivated the cross-dimensional happiness threshold (Ura et al. 2012: 28).

*Weights.* The weights were set normatively, drawing on various sources of information. For example, participatory field studies were done to ascertain how focus groups set relative weights on the nine domains. Technical information was also used - for example subjective indicators were given a 'lighter' weight in all domains except psychological well-being, because of concerns that their trends would be difficult to compare meaningfully. Robustness tests were conducted to ascertain the effect weights had both on the ranking of districts and on the composition of poverty. And the measure's structure was published in more popular formats to evoke public debate.

*Happiness Threshold.* The happiness threshold implemented in Bhutan's GNH – which is the corollary of the poverty cutoff  $k$  – is introduced as follows:

[The happiness threshold] is set across the nine domains and the 33 cluster indicators. The question that it asks is 'how many domains or in what percentage of the [weighted] indicators must a person achieve sufficiency in order to be understood as happy'? Here it is important to acknowledge that this approach is an experiment. Happiness is a very deeply personal experience and any measure of it is necessarily imperfect. The index is offered to the people of Bhutan for understanding, discussion and debate to see if it frames and captures their understandings and how this might change or be improved (Ura et al. 2012: 23).

The cutoff is further justified as permitting *diversity* – because not every person may be able to achieve sufficiency in each indicator (an old person may not be able to go to school). Another consideration is non-sampling *measurement error* – the data may not be completely accurate. The third, *freedom of choice*, is described as follows:

Many people are fully happy without achieving sufficiency in every single indicator. Maybe they are not healthy but they have achieved a kind of flourishing, fulfilment and richness of life that is important. Maybe they are illiterate or have material challenges but that need not necessarily be decisive for their happiness. Thus to allow some freedom of choice we have set the happiness threshold at 66% (Ura et al. 2012: 24).

Note that the cutoff is described in positive terms; its corollary would be a  $k$  value of (1-66%) or 33%. Note also that Ura et al. report a happiness gradient of three cutoffs (one above and one below the happiness threshold) and publish extensive robustness tests to weights and cutoffs.

The GNH Index, like the MPI, was computed using variables having different scales of measurement, thus used an adaptation of the Adjusted Headcount Ratio so as to treat all variables rigorously (*ordinality*). It was analysed for each of Bhutan's 20 districts, as well as by gender, rural-urban areas, age, and occupation, and later affected resource allocation (*subgroup decomposability*). The composition of shortfalls in GNH revealed areas where policy could contribute (*dimensional breakdown*). Finally, policy-makers stressed that there were two ways by which GNH could change: people could become happy by graduating over the happiness cutoff or people could become less unhappy by enjoying sufficiency in a greater range of indicators (*dimensional monotonicity*). Within this broad framework, some adjustments were made in the 2012 GNH Index indicators and weights over the 2008 version, and additional adjustments are anticipated eventually.

Thus like the GDP, the construction and fine-tuning of the GNH Index and its underlying survey and variables is iterative. Yet because the GNH Index is such an innovative measure, and is setting standards rather than implementing conventional wisdom, the rate of improvement and change is (in this case appropriately) faster than in many measures, whose methodologies only change once in a decade or even several decades. As standards develop, one might expect well-being measures to be stable for a longer period.

#### 4.4 Where from Here?

This section has stepped back from theory to look quite practically at one particular policy-relevant measurement methodology. We introduced a measurement methodology, articulated the particular situations in which it might be interpreted as a measure of capability shortfalls, and described how it was adapted to measure well-being in Bhutan and to illuminate how policy might remedy shortfalls in well-being. Some observations about the feasibility of pursuing this line of research are in order. First, because the order of aggregation is first across dimensions for the same unit of analysis, and then across all units (people, households), all variables must be available for the same

unit of analysis. This is accomplished using a survey instrument containing relevant variables, or linked data sources. However in many countries, data sources are dispersed and such linkages are impossible – in which case only some dimensions will be included and the others added as a dashboard, or as regional aggregates. Second, in Bhutan, the idea of sufficiency cutoffs was natural and acceptable; in Western capitalist and consumerist countries this may need to be formulated differently: cutoffs might reflect ‘middle class’ status, for example. Third, in some contexts fewer dimensions and indicators might be appropriate; in others, more. We end with a much-quoted phrase of Sen which is particularly apt for the task of well-being measurement: ‘In all these exercises, clarity of theory has to be combined with the practical need to make do with whatever information we can feasibly obtain for our actual empirical analyses. The Scylla of empirical over-ambitiousness threatens us as much as the Charybdis of misdirected theory’ (Sen 1985: 49).

## 5 Response to Criticism

In this Handbook authors were encouraged to exchange views with other contributing authors, and while the text above has done so where possible, it might be appropriate to respond directly to certain points within others’ reflections on the capability approach and multidimensional poverty measurement (Pogge and Wisor 2014; Duclos and Tiberti 2014).

### 5.1 Multidimensional Poverty Measurement

Pogge and Wisor have done careful and fascinating work on gendered poverty which can push the envelope of discussions on female poverty. In the course of their chapter they comment on the global MPI which is one implementation of one member of the AF class of poverty measures (Alkire and Santos 2014). In their first criticisms, they, like Duclos and Tiberti, wish to build poverty measures using only ratio-scale data – but such data do not exist at a large scale for many functionings. They acknowledge that in constructing the global MPI we have ‘chosen’ to limit ourselves to existing data. But the counterfactual is not clear, as we mention in our discussion of data limitations (Alkire and Santos 2014). Second, they argue incorrectly that ‘the MPI is similarly insensitive to the extent to which a household’s proportion of weighted deprivations falls below or above the threshold proportion [or poverty cutoff]’. Yet the MPI is precisely a gain over a poverty headcount ratio because it *adjusts* the headcount ratio by the proportion of weighted deprivations

households experience on average – the intensity.<sup>21</sup> Third they object to the focus axiom, by which the AF measures are deliberately insensitive to the extent to which non-poor household's deprivations fall 'above' the threshold. We view this property to be desirable because poverty measures are used to direct limited fiscal resources to poor rather than non-poor people's deprivations, but can and do illuminate levels of the near-poor by implementing multiple poverty cutoffs.<sup>22,23</sup>

Pogge and Wisor also criticise the MPI because, although it draws on participatory and deliberative exercises, 'the specific design of the measure and the selection of dimensions have not been justified through a public, deliberative process'. It would be helpful for them to provide a clear account of the inherently difficult tradeoffs between participation and other activities, given scarce resources. For example, what should a 'public deliberative process' look like (for example one that covered the 5.4 billion people living in 110 countries for whom the MPI is computed); how much *should* be invested in this task rather than in poverty-reduction activities themselves; how should aggregation across varying viewpoints, expressed in different languages and with various quality of participation, legitimately occur and by whom; how to treat the inevitable 'outlandish outliers' in participatory value judgements; and how the participatory and deliberative publications of actors who have been deeply engaged in these issues in local contexts over the longer term, or large-scale exercises such as the My World survey, should be properly drawn upon for global poverty measurement design. These are issues all comparable poverty measures face, and a serious treatment of these topics would be tremendously helpful indeed.

The criticisms of Duclos and Tiberti (2015) come from a different angle. They begin their paper with the emboldened title, 'Beware of the use of popular indices.' Our real disappointment with their paper is that their fundamental criticisms of the MPI are not actually criticisms of the MPI or AF class of measures at all. Rather, they object to *all* measures that are implemented using ordered categorical, ordinal, or binary data, which most existing poverty data is.<sup>24</sup> The properties they prefer of monotonicity and continuity are impossible to satisfy if a well-being measure were to include indicators like child mortality, access to electricity, illiteracy, open defecation, or employment status. It would be quite helpful if they might therefore propose feasible indicators of capability poverty

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<sup>21</sup> The global MPI does not respect monotonicity, as that requires cardinal data; however we have published destitution measures, which use a second vector of deprivation cutoffs, to illuminate similar issues (which we emphatically agree are important – for example, if a person has lost two children or is severely malnourished).

<sup>22</sup> In the case of the global MPI, cutoffs of 20%, 33%, and 50% are published in UNDP's *Human Development Reports*.

<sup>23</sup> Their chapter refers mainly to 'binary' data; we have observed that dichotomization is required to use ordinal data rigorously.

that are all meaningfully ratio-scale. The often-used examples are income, body mass index, and years of schooling. Yet even these require adjustment: for example, the natural zero for body mass index is not zero, given that humans cannot survive at even much higher levels. The scaling may also need to be adjusted to reflect the chosen space of measurement: does the increment from having zero to one years of education reflect an equivalent expansion in capabilities as the increment from eight to nine years? These are not easy issues, but discussion of them is vital for policy-relevant measures. Furthermore, when data are ratio scale, the requirements of 'weights' become far more stringent. Now the 'precision' weights must indeed reflect marginal rates of substitution across all dimensions at all relevant levels of achievement (Alkire et al. 2015, Ch 6; Alkire and Foster 2010). Their third favoured property, sensitivity to multiple deprivations, is possible as they point out for binary data, but cannot be satisfied unless the ensuing measure fails to respect dimensional breakdown – which as we have mentioned has proven to be the key policy-relevant property of the MPI and of the GNH Index (Alkire et al. 2015).

Yet Duclos and Tiberti rightly wish to consider inequality among the poor. Out of a similar concern, within data constraints and while retaining the property of dimensional breakdown that is key for policy, we have developed, implemented, published in a databank, and analysed for ninety-one countries, as well as across time, a variance-based measure of inequality among the poor (Seth and Alkire 2014), and compared it empirically with other possible measures of inequality among the poor (e.g. Theil 1 and 2, Gini, Atkinson, and generalized entropy). Our proposal thus is to supplement a multidimensional poverty measure that respects dimensional breakdown with measure(s) of inequality among the poor.

Duclos and Tiberti's paper closes by recommending dominance analysis. In our evaluation, dominance analysis can enrich but not replace multidimensional poverty measurement to inform public policy for several reasons. First, when dominance holds, conclusive comparisons can be made, but when there is no dominance, no unambiguous comparisons can be made. Yet unrankable situations may be far from identical and reasoned analysis could find much to consider. Second, even when dominance comparisons are empirically feasible and generate ordinal rankings of regions or societies across time, it is impossible to compare the extent of differences in well-being across two societies in any cardinally meaningful way. In other words, it is not possible to say how much better a region is compared to another or how much well-being has fallen or gone up over a certain period of time. Yet it is precisely these comparisons that inform public policy and animate public debate. Finally it may not be possible to compute dominance widely using more than two or three dimensions due to the 'curse of dimensionality' – the need for the sample size to increase exponentially with the number of dimensions. As Duclos, Sahn, and Younger (2006a) put

it, ‘most existing datasets in developing countries are probably not large enough to support tests on more than a few dimensions of wellbeing’ (p. 944). Yet comparisons of well-being and poverty may need to consider more than three dimensions (Alkire et al. Ch 3).

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