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**Measurement and Public Policy
Uses of Subjective Well-Being**

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Abstract

Over the centuries happiness, or more broadly, well-being has been subject of unremitting debate. Recently, measures of so-called subjective well-being (SWB; e.g. self-reported happiness) have gained prominence and are receiving increasing attention from scientists, policy makers and the public alike. A consensus appears to be emerging that people's self-assessment of how well life is going can convey important information, in particular on underlying emotional states. This paper introduces measures of SWB, examining whether the measures are meaningful and valid, and exploring a possible role in shaping and appraising public policy. The first part elaborates what SWB means and discusses some of the indicators used to measure the construct. Special attention is paid to the quality of different SWB measures, i.e. their reliability and validity. SWB appears to be largely defined through the specific indicators used to measure it but that is not to say that these measures are not capturing something important. In the second part, several possible uses of SWB in the making of policy are discerned: (1) SWB as an explicit policy target; (2) SWB as a complement to existing measures of well-being; (3) SWB as a measuring rod in cost-benefit analyses; and (4) the use of SWB in the construction of poverty statistics and equivalence scales. The broad conclusion that emerges is that SWB indeed can help shape and appraise public policy. This holds despite the fact that SWB research still has important gaps. What is more, future research promises to secure further the usefulness of SWB research in policy applications, not least as improvements in measurement take hold.

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1. INTRODUCTION

Measures of subjective well-being (commonly abbreviated as SWB) or, in more popular terms, *happiness*, are a contemporary contribution to an age-old debate. Interest in happiness and its pursuit, or more generally what makes for a good life, started at least two millennia ago with Aristotle (384-322 BC) and, later, Epicurus (341-270 BC). Others, including Thomas Aquinas, David Hume and Jeremy Bentham continued and added to the debate. The consensus was that happiness matters. In fact, many went so far as to claim that, ultimately, happiness is all that matters.¹ However, massive conceptual difficulties suggest a less strong conclusion: maximising the experience of happiness, and related notions like flourishing, joy or pleasure, whilst minimising painful episodes, is the quintessential motive underlying human behaviour.²

Given the widespread recognition of the importance of happiness, the study of SWB has a surprisingly short history (cf. Kahneman et al., 1999; Sirgy et al., 2006). Systematic research of SWB, in particular into its correlates and causes, did not start until the second part of the 20th century (Fellows, 1966 and Wilson, 1967 present early overviews).³ The literature has bourgeoned since then though. First, psychologists and other social scientists have taken huge steps in their understanding of the factors influencing people's SWB.⁴ Second, the measurement of SWB has drastically improved, which it is expected to continue to do with the spreading use of advances in information- and communication technology. In important ways, then, SWB research has proven itself a serious contender in the wider discipline of

¹ Short, but more elaborate accounts of the history of the happiness debate can be found in McMahon (2004). Angner (2005) provides a more thorough overview of philosophical issues related to the concept of happiness or, more generally, well-being. King and Napa (1998) present evidence that people indeed attach great value to happiness (see also Diener et al., 1998 and Diener and Oishi, 2004).

² For some common philosophical conceptualizations of happiness and well-being, see Blackburn (1996) and Walsh (2005).

³ SWB, our preferred term for reasons detailed below, is actually a broader notion than just happiness (see, for example, Diener, 2006). Happiness, however, is the more familiar, and certainly catchier, term often used to refer to the whole construct of SWB.

⁴ Diener (1984, 1994), Diener et al. (1999), Easterlin (2003), Frey and Stutzer (2002), Nettle (2005) and Layard (2005) provide overviews of this literature.

social science, capable of providing valuable information on an essential aspect of people's lives and societies as a whole. As such, it solicits increasing attention of politicians, government officials and the public alike.

This paper introduces measures of SWB and explores their applications in policy making. Specific attention is paid to the question whether indicators of SWB are meaningful in the sense that they provide important and useful information on how well people or societies as a whole are doing, and how this information can subsequently be used to shape and appraise public policy. The organisation of the paper is simple. It starts by elaborating what is meant by the term SWB in Section 2. Section 3 subsequently discusses some actual indicators of SWB and Section 4 looks at the reliability and validity of SWB measures. Some public policy uses of SWB are considered in Section 5 and to conclude Section 6 gives some final and summarizing thoughts.

2. WHAT IS SUBJECTIVE WELL-BEING?

A consensus has gradually emerged mainly from the psychological literature around a working definition of SWB. We can define SWB as 'people's positive evaluations of their lives', which, in turn, 'includes positive emotion, engagement, satisfaction, and meaning' (Diener and Seligman, 2004: p. 1). As this section shows, however, the concept is somewhat more complicated than that, but the essential feature of SWB is, of course, that it is not an objective measure:

Notably absent from definitions of SWB are necessary objective conditions such as health, comfort, virtue, or wealth. Although such conditions are seen as potential influences on SWB, they are not seen as an inherent and necessary part of it. (Diener, 1984: pp. 543-544).

Two additional hallmarks of SWB, next to its subjectivity, are that:

1. a positive rating requires not only positive experiences but also the absence of negative ones; and
2. reported scores include a global assessment of how well people think (feel) their life is going and is not limited to one or more domains or specific periods (Diener, 1994: p. 106; see also Diener, 1984).

Looking at the latter two features of SWB in more detail, we see that they suggest that subjective well-being is actually an umbrella term, comprising different elements of people's lives. The SWB literature has broken down people's judgements of their lives along the lines indicated above and into two distinctive components (cf. Andrews and Withey, 1976: p. 18; Veenhoven, 1984: p. 25). The first component is the *affective* part of overall SWB and refers to both the presence of positive affect and the absence of negative affect. This part is an evaluation guided by emotions and feelings. A *cognitive* part constitutes the second component. It is a conscious, information-based appraisal of one's life for which people judge the extent to which their life so far measures up to their expectations and resembles their envisioned 'ideal' life.

Researchers in the field often make a distinction between happiness and life satisfaction. Happiness is sometimes used to denote the affective part of SWB (which in turn must be decomposed in positive affect and negative affect), and life satisfaction as the cognitive part.⁵ This labelling is not universal, however, and people commonly use happiness and life satisfaction synonymously with SWB. While often clear from the particular context, the ambiguous use of terminology—happiness, life satisfaction and SWB—does reveal that the field does not yet agree on anyone definition for its over-arching subject matter. Subjective well-being, however, is a rather more accurate description of the broader field under discussion here and, accordingly, this paper uses the term SWB throughout, noting that it is an umbrella term that includes both satisfaction and happiness, however defined (cf. Diener, 2006; see also note 3).

Underlying the definition of SWB as a personal evaluation of one's life is the idea that it is not uncommon for people to make such affective and cognitive judgments (Diener, 1994: pp. 106-107). Stated differently, people continuously evaluate their life and aspects of it, judging which elements are valuable and desirable and which are not. The affective and the cognitive component of SWB subsequently share a common core but differ in important respects as well. 'Life satisfaction and hedonic level are likely to correlate because both are influenced by appraisals of one's life events, and activities, and circumstances' Diener (1994: p. 107) notes, but 'at the same time, life satisfaction and hedonic level are likely to diverge

⁵ See, for instance, the discussion in Lyubomirsky et al. (2005: pp. 820-822). This association is likely to have its root in the hedonic conceptualisation of happiness as pleasure and the absence of pain that can be found in the work of Jeremy Bentham but is also common in the SWB literature (e.g. Kahneman, 1999 and Layard, 2005).

because life satisfaction is a global summary of one's life as a whole, whereas hedonic level consists of ongoing reactions to events (and may also be influenced by unconscious goals and biological factors which may influence mood)'.

Recent work by Kahneman and Krueger (2006: p. 14) confirms this view. They find that net (positive minus negative) affect and reported life satisfaction are indeed positively correlated, but differ in the factors influencing them. Income, education and marital status are better predictors of life satisfaction than of affect, for instance. Likewise, data on daily activities, e.g. commuting, watching TV and cooking, seem to matter more for net affect (see also Campbell et al., 1976).

But measures of SWB need not refer to life as a whole. Rather, one can investigate separately whether someone is happy or satisfied with different domains of life, such as work, family life, financial situation or health. One would expect that someone who is satisfied with all relevant aspects of his or her life, will judge life as a whole favourable as well. For example, Andrews and Withey (1976: p. 127) find that satisfaction with family, money, amount of fun, housing, national government and so-called self-efficacy makes up half of all the variance in reported life satisfaction. The exact relation between domain satisfaction and global satisfaction is unknown, however. That is, it is not clear whether people evaluate their life by looking at specific aspects (the bottom-up approach) or whether the global judgment trickles down to lower-level appraisals (top-down) (Veenhoven, 1996: p. 23 and 1997: pp. 19-20; see also Sirgy et al., 2006: p. 426). Diener and Seligman (2004: p. 12) review evidence of lower-level satisfaction spilling over to higher-level satisfaction, but also between domains, i.e. job satisfaction spills over to marital satisfaction.

To return to the definition of SWB, it is clear that, as mentioned, the field lacks a single, comprehensive definition. Diener et al. (1999: p. 277) find that 'subjective well-being is a broad category of phenomena that includes people's emotional responses, domain satisfactions, and global judgements of life satisfaction' (cf. Diener and Seligman, 2004: p. 1). This is not a universal definition but rather a description of what SWB comprises. The absence of a clear-cut definition reflects that, as a concept, SWB has no precise theoretical basis. Indeed, the field appears largely driven by empirical work, and SWB is conceptualised through the specific indicators used, i.e. by the specific questions asked. The next section elaborates the measurement of SWB.

3. MEASURING SUBJECTIVE WELL-BEING

3.1 Single-item scales

Since the first systematic analyses of SWB some five decades ago, a large number of SWB measures have been developed. The most widespread of these are also the most straightforward. Questionnaires simply ask people to state how happy or satisfied they are (with their life as a whole). Two well-known examples of such single-item questions, used in the famous World Values Survey (European Values Study Group and World Values Survey Association, 2006), are:

Taking all things together, would you say you are ... :

1 – ‘Very happy’

2 – ‘Quite happy’

3 – ‘Not very happy’

4 – ‘Not at all happy’

and

All things considered, how satisfied are you with your life as a whole these days?

1 2 3 4 5 6 7 8 9 10

Dissatisfied

Satisfied

Other single-item questions exist, but the basic method of measuring SWB is captured by these questions. To address specific issues, such as satisfaction with a domain, the standard approach can be adapted to ask, for instance, ‘Overall, how satisfied or dissatisfied are you with your job / home life / financial situation?’

3.2 Multi-item scales

Since SWB ‘is a broad category of phenomena’ (cf. Diener et al., 1999: p. 277), one should not expect single-item questions to be able to provide an all-encompassing indicator of people’s evaluation of their lives. Indeed, it would be infeasible to have a single-item

measure capture separately the cognitive and the affective part of SWB, especially when one considers that the latter, in turn, consists of both the absence of negative affect) and the presence of positive affect. In much the same fashion, a multi-item scale can focus on a particular part of SWB, for instance the cognitive part, but its results are normally considered more reliable than those of single-item measures (see also Section 4 on reliability and validity). Accordingly, a broad array of measures exists (see, for example, Veenhoven, 1996: pp. 3-4). Here we discuss two often-used scales, though many more exist, each with their own strengths and weaknesses.

3.2.1 Positive and Negative Affect Schedule (PANAS) Scales

The Positive and Negative Affect Schedule (PANAS) scales (Watson et al., 1988) are designed specifically to measure positive and negative emotions. The PANAS can easily be tailored to include less or more feelings or be broader or narrower in its cover of time periods. It asks about the experience of certain emotional states:

This scale consists of a number of words that describe different feelings and emotions. Indicate to what extent [you felt this way during the past week]. Use the following scale to record your answers:

1 – Very slightly or not at all

2 – A little

3 – Moderately

4 – Quite a bit

5 – Extremely

___ *Interested*

___ *Distressed*

___ *Excited*

___ *Upset*

___ *Strong*

___ *Guilty*

[Et cetera]

The overall rating is obtained by aggregating the answers to the different states.

3.2.2 *Satisfaction With Life Scale (SWLS)*

The Satisfaction With Life Scale (SWLS; Diener et al., 1985; see also Pavot and Diener, 1993a) is an example of a multi-item measure of SWB that limits attention to a specific aspect of SWB, in this case life satisfaction. The questionnaire for this scale reads as follows:

Below are five statements that you may agree or disagree with. Using the 1 to 7 scale below indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

1 – Strongly disagree

2 – Disagree

3 – Slightly disagree

4 – Neither agree nor disagree

5 – Slightly agree

6 – Agree

7 – Strongly agree

___ *In most ways my life is close to my ideal*

___ *The conditions of my life are excellent*

___ *I am satisfied with my life*

___ *So far I have gotten the important things I want in life*

___ *If I could live my life over, I would change almost nothing*

The answers to these five questions are summed to obtain an overall rating:

- 5 – 9 *Extremely dissatisfied*
- 10 – 14 *Dissatisfied*
- 15 – 19 *Slightly dissatisfied*
- 20 *Neutral*
- 21 – 25 *Slightly satisfied*
- 26 – 30 *Satisfied*

- 31 – 35 *Extremely satisfied*

The construct measured by the SWLS closely resembles the one underlying the single-item life satisfaction question discussed above. The difference is that the SWLS provides a more reliable measure of life satisfaction (see Section 4), but is obviously more costly to collect both in terms of administration costs and respondent burden.

3.3 More advanced measures

This subsection discusses two other approaches to quantifying SWB that are increasingly used. The first is the Experience Sampling Method (ESM) or Ecological Momentary Assessment (EMA) (Scollon et al., 2003 and Stone et al., 1999 provide overviews), and the second, the Day Reconstruction Method (DRM), a technique recently developed by Daniel Kahneman and colleagues (Kahneman et al., 2004a, 2004b).

3.3.1 Experience Sampling Method (ESM) or Ecological Momentary Assessment (EMA)

ESM is a method to obtain self-appraisals. Individuals are asked repeatedly, often over random intervals and for a prolonged period, to make a certain assessment, which can range from filling in questionnaires like the ones just discussed, but can also involve physiological tests (e.g. blood pressure levels, heart rates). The essential features of ESM are that the questions and evaluations are made frequently, about the time period that has just elapsed and in respondents' day-to-day surroundings. It is, in fact, these qualities that drove ESM's development in the first place. As Stone et al. (1999: pp. 27-28) point out: (i) studying individuals in their typical surroundings reduces ecological distortions (i.e. has high ecological validity);⁶ (ii) on the spot evaluation avoids retrospective distortion; and (iii) high-frequency assessment allows more detailed study of developments over time and the role of changes in circumstances.

Scollon et al. (2003: p. 7) describe three types of experience sampling:

1. Interval-contingent sampling: subjects complete self-reports after a designated interval and for a stipulated amount of time (e.g. one report every other hour);

⁶ Famous is the phenomenon known as 'white-coat hypertension' in which respondents' blood pressure levels are elevated when measured by medical personnel but not when measured at home by themselves (Stone et al., 1999: pp. 27-28).

2. Event-contingent sampling: subjects file self-reports when a pre-specified event takes place or has taken place (e.g. a report after every social encounter); and
3. Signal-contingent sampling: subjects give their self-reports when prompted by a randomly-timed signal—this is the form of sampling that is typically labelled ESM.

ESM and EMA are often equated (Scollon et al., 2003: p. 7). But Stone et al. (1999) distinguish ESM from ecological momentary assessment (EMA) on the grounds that EMA also collects information about environmental circumstances while the former is only interested in respondents' self-evaluation.

ESM can be undertaken in several ways. For the self-appraisal any scale or measure of SWB will do; simply choose the one that best captures the phenomen(on)(a) of interest. The actual sampling can also be organised in many different manners (Scollon et al., 2003: p. 6). In the early days of ESM, subjects were often responsible for keeping track of intervals between questionnaires, for example. As technology advanced, electronic watches pre-programmed to beep at random intervals provided the necessary cues. Nowadays palmtops are increasingly used, and these come with important advantages. Automated questionnaires are readily available and completed reports can be analysed instantly.

Unsurprisingly, the benefits offered by ESM and EMA in terms of coverage, ecological validity and reliability come at a cost. Using these methods and obtaining regular, virtually online self-assessments is much more expensive than the use of, say, one-time questionnaires, and the final choice of survey instrument requires careful consideration.⁷

3.3.2 *Day Reconstruction Method (DRM)*

The Day Reconstruction Method (DRM) is another specific approach to collect reported SWB. It shares many of the advantages of the other methods, but appears easier to implement. The technique requires respondents to report about the preceding day and evaluate its various *episodes* (e.g. hours). Kahneman et al. (2004a) first applied his technique and their questionnaire is along these lines:

How did you feel during this episode?

⁷According to Stone et al. (1999: p. 30) ESM or EMA is particularly appropriate to measure pain and symptoms of patients.

measure it accurately). A good deal of work has been done by SWB researchers to investigate this.⁹

4.1 Reliability

The reliability of an indicator can be defined as its overall quality, i.e. its consistency and its ability to give the same results in repeated measurement. One good measure of an indicator's reliability is its test-retest correlation (Larsen and Fredrickson, 1999: p. 43).¹⁰ That is, the level of similarity obtained by making the same measurement twice, separated by some time period. It is well known that minor differences in circumstances and technical features of the specific questionnaire used can affect the reported level of SWB however defined (see Schwarz and Strack, 1999: p. 62). Correspondingly, the test-retest correlation for most single-item measures typically does not exceed 0.60 when the same question is asked twice during the same one-hour interview (*ibidem*; see also Andrews and Withey, 1976). Kahneman and Krueger (2006: p. 7) found a test-retest correlation of 0.59 in a sample of 218 respondents interviewed and re-interviewed two weeks apart. Veenhoven (1996: p. 6) discusses the effect of the lag between times of asking on test-retest correlation: if respondents are asked twice in the same interview correlations are approximately 0.70; if the lag spans a week test-retest correlation drops to about 0.60. He points out, however, that people seldom make large moves, e.g. from 'satisfied' to 'dissatisfied'. Finally, a detailed study by Ehrhardt et al. (2000) examines panel data for Germany for the period 1984-1994. They find that at the start of the sample period the year-to-year correlation was 0.45 but that, for unknown reasons, it gradually increased to 0.54. At the same time, however, the correlation between SWB reported in 1984 and that reported in 1994 was only 0.29. This suggests that the measure is reliable but is susceptible to change as well, for instance in response to changes in objective circumstances.

⁹ For surveys of much of the validation exercises, see, amongst others, Blanchflower and Oswald (2004), Di Tella and MacCulloch (2006), Diener (1984, 1994), Diener et al. (1999), Diener and Suh (1999), Frey and Stutzer (2002), Kahneman and Krueger (2006), Nettle (2005) and Layard (2005).

¹⁰ In case of multi-item measures (see discussion below), reliability can be assessed further by looking at the internal consistency or homogeneity of the specific measures, that is, by analysing the extent to which the different items of the scale indeed measure the same underlying construct (Larsen and Fredrickson, 1999: p. 43).

In general, the reliability of SWB measures as evidenced by test-retest correlation is substantially lower than that found for common microeconomic variables such as personal income (Krueger and Schkade, 2008).¹¹ It is important, however, to realise that test-retest correlation is not only substantially influenced by the lag between times of asking (for example one hour or two weeks), but also, and more fundamentally, by the specific measurement scale used. Studies show that the more advanced measures, such as multi-item questionnaires, produce more reliable SWB scores (see the overview in Krueger and Schkade, 2008). In addition, test-retest correlation is likely to be lower for indicators targeting the affective part of SWB than for indicators aiming to measure the cognitive part. Thus, measures of happiness may be more susceptible to “whimsical” circumstances—the outcome of a soccer match and the weather, whether it is rainy or sunny, are famous examples (Schwarz and Strack, 1999: p. 62)—than measures of life satisfaction (Krueger and Schkade, 2008).

4.2 Validity

Validity comes in many sizes and shapes. In its regular use, validity denotes so-called ‘construct validity’ (Larsen and Fredrickson, 1999: p. 44). A measure has construct validity if it is indeed able to capture the construct that it is intended to capture. Two important aspects that can contribute to an indicator’s overall construct validity are its convergent validity and its discriminant validity. Convergent validity refers to the correspondence between the indicator of interest and other indicators purporting to measure the same construct. If the measure of interest is to have convergent validity the results obtained should converge on the results obtained using these other measures; thus, convergent validity is high if different measures of, say, positive affect give similar results. Discriminant validity considers how well the indicator correlates (or, usually, fails to correlate) with measures that measure something different.

The SWB literature pays a lot of attention to the validity of its measures (see note 9). The conclusion of the reviews is that measures of SWB do quite well on the various dimensions of validity mentioned above. Table 1 below presents a brief overview of some commonly cited evidence on the validity of measures of SWB.

¹¹ The reliability of SWB indicators appears to be similar to that of other subjective measures such as self-reported health (see, for example, Crossley and Kennedy, 2002; Stewart et al., 1988; VanderZee et al., 1996).

Table 1: Validity of SWB measures

Study	Main findings
Andrews and Crandall (1976)	Different single-item measures of SWB give similar results, and of the total variance in single items about 64% is ‘valid variance’. ¹² Validity can be increased further using composite multi-item indicators; a five-item scale would typically have about 80% valid variance.
Costa and McCrae (1988)	Self-reported SWB scores show convergence with reports filed by spouses.
Diener et al. (1991)	Self-reported levels of SWB converge on those reported by others (e.g. by family and friends).
Ekman et al. (1990)	Subjective reports on the experience of positive emotions during an experiment correlated with the number of genuine smiles (referred to as ‘Duchenne’ smiles) that occurred during the experiment.
Kammann et al. (1984)	Factor analysis is used to show that thirteen different scales of SWB measure the same general well-being factor. In addition, the negative halves of these scales measure the same construct as scales of neuroticism, depression and so-called trait anxiety.
Larsen et al. (1985)	Validity of various SWB measures is considered. Strong negative relations are found between positive overall SWB on the one hand and neuroticism and self-reported symptoms on the other. Strong positive correlations are found between overall SWB and ratings for several life domains, such as friendship, love life and financial situation.
Pavot and Diener (1993b)	Self-reported SWB correlates highly with peer reports, the personality traits of extraversion and neuroticism but not with current mood. Context has a slight effect on reported scores when single-item measures are used but multiple-item scales appear largely immune.

¹² The valid variance is caused by the difference in SWB as actually perceived by the different respondents. Other variance results from measurement error, for instance, from respondents entertaining a different interpretation of the response categories (being ‘very happy’ does not mean the same thing to everybody) (cf. Andrews, 1984: p. 413).

Table 1, continued.

Study	Main findings
Rodgers et al. (1988)	SWB measures are evaluated by comparing scores obtained using different measures. More than 50% of total variance is found to be valid variance and directly related to the construct of interest, while only 10% is attributable to method (and one third is due to measurement error in the specific measure used).
Seidlitz and Diener (1993)	For people with higher SWB scores, memories of happy events are more accessible than for people with lower SWB, while current mood has only a modest effect on the availability of memories.
Watson and Clark (1991)	There is a strong correlation between self-reported scores on eight different negative affect and positive affect scales and ratings by peers.

Further confirmation of the validity of SWB measures comes from the large literature that has related SWB to a wide range of other variables. Researchers have found that numerous factors, both objective and subjective, correlate highly significantly with SWB (for recent surveys of the evidence see Argyle, 1999, Di Tella and MacCulloch, 2006, Diener and Suh, 1999, Diener et al., 1999, Easterlin, 2003, Frey and Stutzer, 2002, Layard, 2005, Lyubomirsky et al., 2005 and Nettle, 2005). Factors include individual circumstances such as health, personal income, employment status and social relations, but there are links with societal features too. Notably, cross-country evidence finds that such factors as political freedom, gross domestic product (GDP) per capita, environmental quality et cetera all correlate with average SWB reported by citizens from different countries. These findings, and many more like them, provide further evidence that measures of SWB appear to capture something important. That is, SWB matters.

The apparent pervasiveness of research validating measures of SWB notwithstanding, some important critical remarks have also been made. Whimsical circumstances like the outcome of a soccer match influence the level of SWB people report (Schwarz and Strack, 1999: p. 62). Such effects obviously are an important weakness of SWB measures and, in fact, other survey data (cf. Bertrand and Mullainathan, 2001). The errors generally seem to be of a random rather than a structural nature, however, working both to increase and decrease SWB scores. Consequently, the measuring instrument is unlikely to be systematically biased. Indeed, using large enough samples would go a long way in addressing possible problems

introduced by contextual factors influencing the reported level of SWB.¹³ And this is the advantage of using ESM, EMA or DRM: using repeated measures of SWB for a single individual lessens the influence of minor life events.

Another challenge SWB indicators face concerns their validity in cross-national comparisons. Here the issue is the possible impact of culture and language on SWB ratings (see Diener and Suh, 2000: pp. 5-9 for a short introduction to these issues; see also Wierzbicka, 2004). By the very nature of SWB and the way it is measured, i.e. through questionnaires, cultural and linguistic factors can affect SWB ratings. As Wierzbicka (1999: p. 31) puts it, ‘feelings represent the subjective experience of biological (physiological) events, but they can be categorized in a variety of ways, and they are categorized differently in different cultures’. SWB may thus be susceptible to influences that differ systematically over countries, meaning that measured levels of SWB can be structurally biased.

Evidence on this issue is not overwhelming, however. Language generally does not seem to pose much of a problem. Some tentative evidence comes from Inglehart (1990, pp. 28-29). He looks at average levels of self-reported life satisfaction for German-speaking, French-speaking and Italian-speaking Swiss respectively, and finds that for all Swiss average scores are higher than the scores of their linguistic counterparts, people from Germany, France and Italy respectively. More convincingly, Ouweneel and Veenhoven (1991) compare self-reports across language groups in bilingual nations and do not find a reliable language effect. In addition, they find that the percentage of ‘don’t know’ answers to SWB questions (ignorance) does not differ much between countries.

Cultural characteristics would appear to be a more important factor and possible source of bias. Uchida et al. (2004) review the available cross-cultural evidence on SWB and find cultural dissimilarities, notably in the predictors of SWB. More concretely, Scollon et al. (2004) examine three different types of global self-reports of pleasant/unpleasant emotions for people from five groups with different cultural backgrounds and find that for all measures culture is a source of response differences between the groups. Vittersø et al. (2005) find a

¹³ Boulding (1972: p. 466) describes this effect of the law of large numbers as follows: ‘Even if we cannot get very reliable measures for the individual, by the famous principle which I have sometimes called “Katona’s Law”, that the summation of ignorance produces knowledge, we may find an operation or instrument with self-cancelling random factors which will give us a much better measure for a hundred or a thousand individuals than we can get for one.’

similar result in their analysis of life satisfaction data from Norway and Greenland. Overall, no clear picture emerges, however, because, for example, Diener et al. (1995) discard a cultural explanation for particular observed differences in SWB (even with income controlled for). Specifically, humility and social desirability (where people give the answers they think others will regard favourably) do not affect reported SWB scores, leaving SWB differences between Pacific Rim countries and the U.S. unexplained. In addition, observed differences do not appear to be driven by ignorance, general lack of interest or a bias towards neutral and conforming answers.

It should further be pointed out that the simple fact that culture is a determinant of SWB or that SWB is differentially structured in terms of its predictors does not by itself mean that the measure is somehow biased. In contrast, the effect of culture may be genuine. Alesina et al. (2004), for example, report that SWB scores of Europeans suffers more from income inequality than the SWB ratings of Americans (see also Di Tella and MacCulloch, 2006: pp. 39-43). Other studies find marked heterogeneity in the predictors of SWB across countries with individualistic cultures and those with more collectivist cultures (Suh et al., 1998; Oishi et al., 1999). In this sense, cultural and linguistic factors are clearly not a source of bias in cross-country comparisons—a nuisance we may want to dispose of—but rather the role of these factors in reported SWB, by itself, is interesting and worthy of attention.

Related research has looked more directly at emotions that are either shared by, or unique to, different cultures. For instance, Ekman et al. (1987) find that there is cross-cultural agreement both on the type of emotions expressed in facial images (e.g. sadness or joy). Results from this line of research indicates that there are universal basic emotions, and despite some methodological critique (Ortony and Turner, 1990), it seems that “‘human emotions’ vary a great deal across languages and cultures’, but that ‘they also share a great deal’ (Wierzbicka, 1999: p. 34). This commonality of emotions suggests, in turn, that SWB measures do have meaning across national, linguistic and cultural borders.¹⁴

¹⁴ Some culturally rooted ‘bias’ is unavoidable in many indicators even, for example, in the comparison of national income numbers. Despite a common definition, these statistics are influenced by habits and customs regarding what activity takes place through the market (cf. Frankel, 1953). As an illustration, take Rosen’s (1996: pp 734-5) observation that: ‘[i]n Sweden a large fraction of women take care of the children of women who work in the public sector to care for the parents of the women who are looking after their children.’

4.3 More on the meaning of SWB

The findings from the SWB literature presented above support the conclusion that SWB measures are meaningful. But there is less evidence about the meaning of these measures, other than that they are capturing something important. SWB remains largely an abstract concept. Two additional lines of research tackle this issue.

First, there is a substantial body of research that relates SWB to human physiology and brain activity.¹⁵ This work tells us that SWB is not merely a construct that exists within people's minds. Rather, variations in SWB manifest themselves in observable biophysical phenomena as well as in people's self-reports. One can judge indicators of SWB meaningful because, for instance, they correlate with objective variables that have a solid biological foundation.

The second line of research goes beyond simple correlates of SWB, and looks at the causal links between levels of SWB and other outcomes. The current level of reported SWB is found to have substantial predictive power for some important aspects of well-being. For instance, Cohen et al. (1995) report that the level of SWB of healthy people measured before experimentally inducing an illness through exposure to a respiratory virus predicted

¹⁵ Levesque et al. (2003), for example, applied functional magnetic resonance imaging (fMRI) to analyse the neuroanatomical correlates of sad feelings in healthy children. Measured brain activity showed sad feelings are associated with significant bilateral activations of the midbrain, the medial prefrontal cortex, the anterior temporal pole and the right ventrolateral prefrontal. Ryff et al. (2004) present some preliminary findings showing that people with higher SWB (specifically more meaning, purposeful engagement et cetera in their lives) have lower levels of daily salivary cortisol and pro-inflammatory cytokines. In addition, for them the duration of REM sleep is longer than for those with lower levels of reported SWB. Urry et al. (2004) administered SWB questionnaires to people prior to analysing their brain activity. A higher level of reported SWB was associated with greater left than right superior frontal activation. Steptoe et al. (2005) report that positive affect is associated with reduced neuroendocrine, inflammatory and cardiovascular activity. Positive affect was also inversely related to cortisol output during the day (controlling for other factors such as age and gender) and heart rate. During mental stress testing in the laboratory people with higher positive affect had smaller plasma fibrinogen stress responses. Finally, a study by Rainville et al. (2006) shows that basic emotions are associated with distinctive patterns of cardio-respiratory activity.

subsequent complaints. In particular, higher scores on negative affect were associated with higher disease severity and the number of health complaints like a runny nose, congestion and sneezing. Koivumaa-Honkanen et al. (2000) find that being dissatisfied with life predicts higher mortality and is indicative of general health risk. In addition, low satisfaction is associated with a higher risk of suicide (Koivumaa-Honkanen et al., 2001). Danner et al.'s (2001) study of autobiographies of 180 Catholic nuns written at age 22 shows that positive emotional content has a strong positive relation with longevity six decades later. Finally, Veenhoven (2008) presents evidence that higher SWB predicts longevity in healthy populations but not in sick populations, suggesting that SWB protects against becoming ill.

Reviewing a large part of the literature, Lyubomirsky et al. (2005) establish many domains of life in which high SWB appears to foster good outcomes (see also Veenhoven, 1988 for earlier work evaluating the benefits of high levels of SWB). The time-series evidence, for instance, shows that people with higher SWB:

- go on to have higher income and better supervisory evaluations, and are less likely to suffer unemployment;
- are more likely to get married (happily) and more likely to remarry after divorce;
- have better mortality, less suicide, lower general health risk, and have a better chance of surviving conditions such as coronary heart disease;
- will be more social as shown by time spent doing volunteer work three years later;
- are judged as more creative by others later on; and
- drink less alcohol five years later (and smoke less now).

Lyubomirsky et al. (2005) also survey experimental studies and they confirm that positive affect and positive emotions that have been experimentally induced can cause good outcomes. The experiments by and large find that these feelings promote, amongst others, self-perception, sociability, conflict resolution and altruism, and this again points to a role for SWB as a causal factor in many positive outcomes.

4.4 Discussion

The evidence presented in this section suggests that many measures of SWB are meaningful and capture important information. As Diener and Suh (1999: p. 438) conclude, SWB indicators ‘... have a degree of validity and are often not as contaminated as popular lore might suggest...’. They are not without their frailties but some of the weaknesses a self-measured construct like SWB is prone to have can be overcome.

The field started with a simple question asking people to evaluate their life by putting a label on it. More complicated survey methodologies and multi-item scales have been developed and appear to have improved the measurement of SWB. Although much remains to be discovered, it seems likely that more progress will be made and one can envision a growing connection between the SWB construct on the one hand and objective biological phenomena such as patterns of brain activity on the other. Such a development would actually fit the growing trend of merging social sciences with cognitive and brain sciences; for instance, a new field in economics, called neuroeconomics, uses insights and methods from neuroscience to study decision making and hence improve economic theory (Camerer et al., 2005). Although our current understanding of the neuroanatomical correlates of SWB and the mechanism underlying the observed relations between SWB and brain activity is sketchy, knowledge in this area is advancing at great speed. Ultimately, we might actually be able to ‘calibrate’ SWB scores with a mixture of physiological phenomena giving it an objective anchor.¹⁶

However, all these possibilities have strengths and weaknesses. SWB measured with a simple single-item scale may prove to be more than adequate in terms of both reliability and validity for some purposes. For others one might want more advanced measures of SWB and more than one scale may be used to allow for cross-referencing of the findings (cf. Larsen and Frederickson, 1999). Overall, no ‘gold standard’ exists (Larsen and Frederickson, 1999: p. 56) and each research project should start with a careful deliberation to ascertain the most suitable measuring instrument.

5. PUBLIC POLICY USES OF SWB

Developments in SWB research—rapidly increasing understanding of the correlates and determinants of SWB and continuous improvement of the measures used—have sparked a

¹⁶ As a very crude illustration of what might actually be possible at some point, take a scale running from 1, dissatisfied to 10, satisfied (see Section 3). People from country X reporting a 9 on this scale may have an average ‘brain activity level’ of 100 while the average ‘brain activity level’ of people from country Y with the same score (9) is 110. Vice versa, people with a ‘brain activity level’ of 100 in country X on average report a 9 on the dissatisfied-satisfied scale while in country Y people with this ‘brain activity level’ (100) on average report an 8 on the same scale.

small literature discussing and exploring possible uses of SWB in policy making (e.g. Diener and Suh, 1997; Diener et al., 2008; Dolan and White, 2007; Layard, 2005; Veenhoven, 2002). To some extent, suggested policy uses follow quite naturally from the conclusion that measures of SWB contain meaningful information. If SWB matters, perhaps because it predicts longevity (Danner et al., 2001), appears to foster good outcomes in several areas of life (Lyubomirsky et al., 2005) or because it correlates with levels of hypertension across countries (Blanchflower and Oswald, 2008), it does not require a strong leap of faith to view promoting SWB as a legitimate policy aim.¹⁷

SWB can be usefully applied in public policy making also without it being an explicit goal (cf. Dolan and White, 2007). Because SWB matters—higher levels of SWB are generally preferred over lower levels of SWB—it has the possibility to give policy makers relevant information about the effects of their policies. Governments can assess their policies or base their decisions between alternative courses of action on the (expected) effect of their actions on the level of SWB. Prominent manifestations of this type of policy use of SWB are proposals for national indexes of SWB (Diener, 2000; Diener and Seligman, 2004; Kahneman et al., 2004a), which all aim to provide governments with relevant information not captured or not fully captured by existing (objective) statistics. On top of this, in the field several less obvious policy applications of SWB have been developed. Notably, measuring SWB can help shed light on some hidden costs such as those of environmental externalities and terrorism or help tackle some of the problems associated with the measurement of poverty (relative vs. absolute) and household equivalence scales.

Below these different policy uses—SWB as a policy goal, SWB as a complement to existing measures of well-being, SWB as a measuring rod in cost-benefit analyses and the use of SWB in the construction of poverty statistics and equivalence scales—are discussed one by one. There is no strict line dividing all possible applications of SWB in the making of public policy, but this taxonomy brings at least some order to the diverse policy uses SWB can and might have.¹⁸

¹⁷ Famously, Bhutan has declared “gross national happiness” as its overarching policy goal. In this use, happiness appears to be more about the philosophical concept and not so much about the SWB construct, however.

¹⁸ This overview is limited to application of measures of SWB and SWB research in public policy, which is often rather abstract. Many psychologists and psychiatrists are applying SWB research everyday and the same holds for many people working in medicine.

5.1 SWB as a policy goal

5.1.1 *Improving SWB: Why and how?*

To have well-being as a policy goal is hardly controversial. Shoving aside the debate of what constitutes well-being, well-being itself is good—if it were not intrinsically good, it probably would not be called well-being. To have promoting SWB as an aim for public policy is much less tautological. The basic argument in favour of SWB as a policy goal is that it captures something that, again, is intrinsically good. Who would not like to experience frequent positive emotions, a minimal amount of negative emotions, and/or lead a meaningful life? *Ceteris paribus* most people very likely would indeed prefer a life filled with positive affect over a life filled with negative affect (cf. King and Napa, 1998; Diener et al., 1998; Diener and Oishi, 2004).¹⁹

In real life, the situation is a bit more complicated, however. Firstly, there is widespread scepticism concerning the extent to which measures of SWB indeed capture something meaningful like desirable mental states. Even when we accept that certain mental states are preferred over others, some doubt that measures of SWB are able to tell us anything about these states. In first instance, such scepticism would appear to require further assessment of the validity and reliability of measures of SWB, in particular delving more deeply in SWB's biophysical and neuroanatomical correlates. Increasingly, however, SWB as a policy goal is defended on the grounds that even current indicators with their drawbacks are able to predict good outcomes. In this view, policies aiming to increase SWB make sense because they can help promote longevity, health et cetera.

Secondly, an important complicating factor is the simple practicality of how to go about increasing levels of SWB. At a general level, there are many factors associated with SWB on which governments can exert at least some influence. It goes to far to discuss all factors that might contribute to SWB or at least facilitate the achievement of higher levels, but democracy, freedom and quality of governance are all positively related to average levels of SWB (e.g. Veenhoven, 2008). These concepts are rather abstract, however, and somewhat

Developments point towards increased adoption of this research in other fields as well, notably that of public policy making.

¹⁹ The *ceteris paribus* clause deserves emphasis as the suggestion here is not that SWB is all that matters (cf. Diener et al., 1998).

detached from concrete courses of action governments can possibly take to foster SWB. The obvious example of a concrete policy is to increase expenditure on mental health care, which is logically expected to have high SWB pay-offs (though, of course, it detracts from other possible causes; see below). Within the realm of concrete government policies, the mostly hotly debated policy instrument in the SWB literature is that of taxation. Because it is so hotly debated, it serves as a useful case study to see how understanding of SWB and its determinants can help formulate policies, in particular those aimed at fostering SWB.

5.1.2 Taxation and SWB: A case study

In economics, the welfare consequences of government policies, and taxes in particular, are typically assessed by looking at how they affect people's choices—the so-called behaviourist approach. Indeed, many large macroeconomic models contain a small set of core behavioural equations on which analyses of the costs and benefits of policy alternatives are based. SWB data and research can add a valuable perspective to this standard behaviourist approach to the study of the welfare effects of a policy (cf. Holländer, 2001; Gruber and Mullainathan, 2005), not least where it concerns the welfare effects of taxation.

The interest of SWB researchers in how taxes might be used to promote SWB seems largely driven by one of the most striking and robust results in the literature on the determinants of SWB. Empirical analyses consistently show that not only the absolute level of income matters but that relative income, i.e. how one's income compares with that of others, is also an important determinant of SWB (e.g. Easterlin, 1974; Diener et al., 1993; Clark and Oswald, 1996; McBride, 2001; see Clark et al., 2008 for an overview). Simply put, SWB does not generally increase as everybody's income increases (cf. Easterlin 1995), and, what is more, income (or consumption) is associated with significant negative externalities. As Luttmer (2005) finds, SWB is negatively affected by the level of income of one's neighbours, even to the extent that a given-sized increase of a neighbour's income has the same negative effect on one's SWB as a similarly-sized decrease in one's own income.

Results like these on the importance of relative income and negative (consumption) externalities bring important new insight to the reigning understanding of the welfare consequences of taxation. In particular, authors like Layard (2005), following his earlier work on this issue (Layard, 1980), take the evidence on the effect of relative income on SWB to argue that (increased) taxation of labour income can increase welfare—whereas the common wisdom dictates that such taxation leads to deadweight losses and thereby lowers welfare.

Theoretically, the idea is that because there is an externality—much like pollution, this tax will enhance efficiency by making the polluting activity, i.e. working for an income, less attractive in favour of the non-polluting activity, which is to enjoy leisure. Rather than introduce distortions and deadweight losses, this tax will improve welfare, at least when one analyses its welfare consequences in terms of SWB.

The argument on how (carefully designed) taxes may be used to increase levels of SWB is the most clearly articulated policy suggestion arising from SWB research. But it is not something that originates strictly from SWB research. Before the use of SWB indicators to measure welfare became widespread, a large theoretical literature already scrutinised the policy implications of a utility function with relative income effects; what does it mean for optimal taxation and policies aiming to maximize welfare if people care not just about absolute but about relative income or consumption too? Boskin and Sheshinski (1978), for instance, find that the optimal level of income guarantees and marginal tax rates increases as relative consumption becomes more important in people's utility function. Similarly, Ng (1987) analyses the implications of relative income effects on the optimal level of public goods provision. Although this level need not be too low when relative income is included in the utility function, the value of public expenditures is likely underestimated as people do not take into account its benefits that are received indirectly through the lowering of private expenditures and the limiting of relative income effects.

Going beyond taxes as an SWB-promoting policy instrument, there is an important general lesson to be learned from the above discussion of taxation and its possible role in improving SWB. Of course, SWB research is very important in guiding policy makers that aim to improve levels of SWB. At the same time, the value of this research is not limited to suggesting how a concrete policy measure (such as a tax) may be used to enhance SWB scores. More indirectly, it can also add an important perspective to existing analyses and established wisdom. By showing that relative income indeed matters, SWB research has shown, for example, that theoretical analyses like those of Boskin and Sheshinski (1978) and Ng (1987) can be relevant in real-life policy situations. In this sense, SWB research can help uncover areas in which certain policies, theoretically thought to be able to affect welfare, may indeed contribute to well-being in ways not previously thought realistic or feasible.

5.2 Towards a more comprehensive account of well-being

SWB indicators are often put forward as useful complements to existing measures of how well life is going. Underlying this observation is the growing recognition that, though insightful, there likely is more to well-being than objective measures—alone or in combination—are able to capture.

A prominent example of an area in which objective indicators go only so far in giving relevant and meaningful information is the issue of trust. Whether people think they can trust their fellowman or -woman, or whether they expect to be ‘stabbed in the back’ at every possible occasion certainly is an important feature of any society. In addition, it is not clear whether objective indicators can give an accurate and meaningful account of the level of trust in a country. For instance, the number of fraud cases brought before a court per capita per year might tell us something about trust, but few would argue that this number captures the essence of the concept. What is more, a subjective indicator, cleverly asking people how much they trust others, will very likely add insight to existing objective statistics on this aspect of a society.

Concerning well-being, the central tenet of SWB research is that the study of well-being cannot get around measuring people’s cognitive and affective reactions to life as whole or specific domains thereof (Diener and Suh, 1997: p. 200; see also Diener et al., 2008 and Veenhoven, 2002). Most significantly, the argument is that SWB is able to capture’s people actual experience in a direct manner, while economic, social and environmental indicators do so only indirectly (Diener and Suh, 1997: p. 205). This matters because what is experienced does not have to coincide with objective conditions, and indeed a large deviation can often be observed. Crime rates can be low (relatively speaking) but at the same time people might be afraid to wander through the streets alone at night; or people may be well-educated, but nonetheless feel they just do not understand the world in which they live. In fact, it is often argued SWB indicators are useful complements to objective indicators precisely because there is a divergence between what people (reportedly) experience and with what is captured in the (existing) objective indicators (see, in particular, Diener and Seligman, 2004: pp. 2-3). That is, such divergence is an obvious requirement for SWB to contribute to a more comprehensive picture of well-being—if it correlated perfectly with objective indicators, it would not add anything.

Following the above reasoning, and building on the methods for measuring SWB discussed in Section 3, researchers in the field have given the idea of national SWB statistics serious consideration. To give but one example, Diener (2000: p. 40) proposes to apply

Experience Sampling to a nationally representative sample of respondents (see also Diener and Seligman, 2004; Kahneman et al., 2004a). SWB would be recorded for a cross-section comprising different age groups, geographical regions, occupational categories and income levels. To maximise the usefulness, reliability and validity of SWB thus measured, the actual survey items would target all components of SWB, the affective component (the presence of positive affect and the absence of negative affect) and the cognitive component, and could use for instance a PANAS scale. In addition, other constructs deemed to capture important aspects of the quality of life and not captured in objective measures could be included, for instance stress and trust.

At a conceptual level, a generally accepted set of guidelines for the construction of national SWB statistics is available (Diener, 2006). At a practical level, there is also agreement about the method for collecting the self-reports, ESM or DRM, quite possibly in some combination, seems the most suitable way to organise the effort (Diener, 2006: p. 402). How subsequently best to carry out the actual collection of the data is still an open issue, however. Thousands of people completing ten randomly timed questionnaires on their palmtop each day complemented with frequent blood pressure and other physiological tests may be the most rigorous approach, but does not seem feasible. In particular, it would be prohibitively expensive, and getting a representative sample to subject to this testing for a considerable amount of time (say a year) would probably be next to impossible. Hence, in the construction of a national index of SWB there is an important trade off between rigor and feasibility, and how best to deal with this issue is an important challenge for SWB-based complements to existing measures of well-being and aspects thereof.

5.3 Subjective well-being as a measuring rod

An essential aspect in formulating policy is to assess the costs and benefits of alternative courses of action (including doing nothing). Though straightforward in principle, practicalities often limit the usefulness and applicability of formal cost-benefit analyses where policy alternatives are compared in terms of a single monetary metric. In many policy areas, public goods and externalities being the ones most familiar to economists, there is just no way of putting a price tag on the relevant dimensions of the different options available. In

some cases, however, SWB can provide a way to circumvent the problem of missing prices.²⁰ The effects of public goods, externalities, policy actions or, in fact, any other valuation problem a government wants to address, are evaluated in terms of their contribution—negative or positive—to SWB. Valuation exercises that use SWB generally take two steps: first the valuation problem is reduced to its contribution to SWB, and second this contribution is compared with the role income plays in SWB.²¹ Specifically, the second step consists of calculating by how much the level of income would have to change to offset exactly the SWB-effect of the public good, the externality or the policy alternative. The four case studies discussed below all take this approach, in which money remains the ultimate ‘measuring rod’ (cf. Pigou, 1952) but where the use of SWB indicators helps extend the range of valuation problems the government is able to address by formal cost-benefit analysis.

The first example is van Praag and Baarsma’s (2005) study of the costs of noise nuisance around Amsterdam Schiphol airport. They combine a traditional approach to valuing the noise nuisance from the airport with the use of SWB data. Ordinarily, a hedonic regression analysis of house prices is used to calculate the shadow costs of noise nuisance. The hedonic approach to valuing such an intangible is prone to leave some residual costs, however, and these can be valued using SWB ratings. The method thus developed is particularly useful when for some reason, notably market imperfections, price differences do not fully capture the costs or benefits of an externality.

Welsch (2006) uses SWB data to circumvent the problem of missing prices in environmental valuation. Specifically, he uses panel data on ten European countries to analyse the effect of air pollution on SWB. Controlling for income, he finds that differences in SWB, both between countries and within countries over time can partially be attributed to environmental quality. The improvement in air quality over the period 1990-1997 is valued at roughly \$750 per capita per year in the case of nitrogen dioxide and about \$1400 per capita per year in the case of lead (averaged over all countries).

Relying on SWB data, Frey et al. (2007) are able to expand the dimensions of life to which valuation techniques have been applied and assess the costs of terrorism. The case

²⁰ Better known, contingent valuation provides a further approach to solving the problem of missing prices (see the symposium in the Fall 1994 edition of the *Journal of Economic Perspectives* for a thorough introduction).

²¹ See Kahneman and Sugden (2005) for a discussion of SWB as the direct unit of value in comparing policy alternatives.

concerns the Republic of Ireland, during the period 1970-1999. The study uses data from the Eurobarometer survey and in the analysis differences in reported life satisfaction are explained from levels of terrorism, household income and other personal characteristics. Their findings reveal that people, on average, would be willing to give up some 41% of their income to have the level of terrorism reduced to the level prevailing in more peaceful parts of the country.

Finally, Oswald and Powdthavee (2007) propose a method of using SWB data to calculate compensatory claims in tort cases, notably bereavement. The idea is that the emotional damage the perpetrator inflicted on the victim will be exactly offset by the positive well-being effect of a monetary settlement.²² A typical amount for such hedonic compensation is calculated at £100,000 or roughly \$200,000.

5.4 Poverty measures and household equivalence scales

Though much discussed, poverty is actually quite difficult to measure and many different approaches exist (cf. Citro and Michael, 1995; see also Foster, 1998). Particularly challenging is that poverty appears to have an important relative component. Notably Adam Smith (1776: p. 1103) already observed that:

A linen shirt, for example, is, strictly speaking, not a necessary of life. The Greeks and Romans lived, I suppose, very comfortably though they had no linen. But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty which, it is presumed, nobody can well fall into without extreme bad conduct. Custom, in the same manner, has rendered leather shoes a necessary of life in England. The poorest creditable person, of either sex, would be ashamed to appear in public without them.

The relative elements of poverty can be taken into account with SWB data in an approach pioneered over 30 years ago by Bernard van Praag and subsequent collaborators (see van Praag and Frijters, 1999 for an overview). For his approach, van Praag used the subjective, survey-based approach to measure what is referred to as the ‘utility of income’ (van Praag

²² The corresponding legal principle is called ‘restitutio in integrum’, which literally means ‘restoration to original condition’ (Oswald and Powdthavee, 2007: p. 1).

and Frijters, 1999: p. 417). Many variations are possible, but at the basic level he asked (p. 418):

While keeping prices constant, what after-tax total monthly income would you consider for your family to be:

<i>Very bad</i>	\$ _____
<i>Bad</i>	\$ _____
<i>Insufficient</i>	\$ _____
<i>Sufficient</i>	\$ _____
<i>Good</i>	\$ _____
<i>Very good</i>	\$ _____

This is the so-called ‘Income Evaluation Question’ or ‘IEQ’. Use and analysis of the IEQ has produced two main findings. First, the utility function of income is found to differ over people. Second, subsequent testing showed that the observed differences are related to objectively observable characteristics of respondents. In particular, income actually earned is a very significant factor in the utility function of income. Simply put, a person earning \$40,000 typically thinks \$100,000 is a very good income, while a person actually earning \$100,000 thinks \$200,000 would qualify as a very good income; and the opposite holds as well, someone with a \$40,000 income usually thinks a \$20,000 income is worse than does a person actually earning \$20,000 (van Praag and Frijters, 1999: p. 423).

A government, or in fact, anybody who might be interested in defining poverty in a (partially) relative way can follow the approach captured in the IEQ. The poverty line could be drawn at the average income deemed very bad by the median household, for instance, but countless definitions are imaginable. The interesting and very useful feature of such a definition is that no (frequent) redefinition is needed and that the relative aspects of poverty are automatically accounted for. What is considered a very bad income evolves with the development of average earnings of, say, the median household. Changes therein—increases in times of economic growth and decreases during economic downturns—are directly reflected in the poverty line, and ultimately the poverty statistics.

Uses of the IEQ in public policy do not stop at measures of (relative) poverty, but straightforwardly extend to the construction of household cost functions and/or equivalence

scales (see van Praag and van der Sar, 1988). How the needs of households change with their size, i.e. the number of household members, is a long-standing question in economics and an important policy issue. The idea is that the total costs of needs increase with each additional member, but not in a proportional way; there are economies of scale so that the need for housing space, electricity, et cetera will not be twice as high for a two-person household as it is for a single-person household. In terms of the IEQ, besides income, household size is a second important factor in observed utility functions of income. Keeping other personal circumstances constant, larger households are less satisfied with any given level of income. Knowing the size of the dissatisfaction for households of different sizes subsequently gives an idea of the extent to which households' needs increase with their size, aiding the construction of suitable equivalence scales.

6. SUMMARIZING REMARKS

Happiness, pleasure, joy, the good life and related notions have been and continue to be the subject of much debate. Starting in the second half of the 20th century, this long-standing debate has received an important impetus. At that point, psychologists, traditionally concerned with negative emotions and feelings, slowly became interested in positive aspects of life, for instance in people feeling happy rather than miserable or being satisfied with their life rather than dissatisfied. This research programme was highly empirical and developed new indicators to measure how well individuals themselves feel their life is going. The general construct that came out of their efforts is best referred to as subjective well-being (SWB). SWB, in turn, refers to a broad set of phenomena that includes positive emotion, engagement, satisfaction and meaning. The key feature of measures of SWB is that they rely entirely on inherently subjective self-appraisals and make no referral to objective circumstances.

SWB is a survey-based measure obtained by simply asking people to answer certain questions, and therefore is susceptible to the problems survey data can typically have. Indeed, a common finding is that contextual factors, ranging from the order of questions to weather conditions, affect reported SWB levels. On these and other grounds, the validity and reliability of indicators of SWB, or more general their ability to convey information that is meaningful, is much challenged. For SWB this appears to hold even more than for most other variables measured through the use of questionnaires. After all, it is not evident what one is

measuring when asking somebody ‘taking all things together, would you say you are’ and then giving four response categories to choose from (‘very happy, quite happy, not very happy or not at all happy’). At the core, this question simply asks people to put a label on their life. There is no rationale for asking this question with these specific response categories other than the expectation that the resulting measure will be meaningful. This is an outstanding feature of the concept of SWB: it appears largely conceptualised through the specific indicators used to measure it, i.e. by the specific questions asked.

Considering all this, it might be surprising to find that measures of SWB are actually quite able to capture something important and useful. As the review in this paper shows, amidst all their weaknesses, indicators of SWB do provide important and useful information on how well people or a society as a whole are doing. Even if the measured level of SWB indeed is just a simple label people put on their life when asked upon, it appears to matter for a broad class of phenomena. It correlates with many factors generally considered important for well-being, e.g. health, income and good relationships, and predicts good outcomes in many of these areas. In addition, it has biological correlates, notably SWB is associated with patterns of brain activity and blood pressure levels.

Interestingly, measurement in the field of SWB is advancing rapidly. Single-item scales do reasonably well in terms of reliability and validity but multi-item scales already lead to much improvement. Recently developed measurement techniques such as the Experience Sampling Method (ESM) or the Day Reconstruction Method (DRM) hold great promise for leading to ever more meaningful measures. Though several of the problems with SWB measures—or subjective indicators in general—seem insoluble, it is clear the indicators can be improved upon. Already an interesting and meaningful indicator, reported levels of SWB will increasingly be able to give important insight on how well people and societies as a whole are doing.

With reliability and validity established, application of SWB data and SWB research in policy making follows quite naturally. Many different applications seem possible but most prominently SWB, i.e. increasing its level, can itself be a policy goal, not least because high levels of SWB appear to predict good outcomes such as longevity. Beyond the goal of improving SWB, indicators of SWB can be used more generally in formulating and evaluating policy. In particular, SWB data can give public policy makers relevant information about the costs and benefits of their policies and be used to assess the effects of alternative courses of action. An interesting application is the use of SWB indicators in the valuation of

environmental externalities such as noise nuisance and air pollution. Although SWB is not widely applied in shaping and appraising policy, it is clear that policy makers may find measuring SWB useful. What is more, as SWB research advances, not least in terms of the methods by which the SWB construct is given empirical content, its usefulness for public policy making is set to improve further.

As with all societal indicators, important caveats apply to SWB indicators and their use in formulating public policy as well, and one of these deserves explicit mentioning. SWB research or measures of SWB do not provide a policy recipe. Although we are unaware of any indicator for which changes, up, down or lack thereof, do come with straight-cut policy advice, this point is well emphasised. Thus the SWB literature may ultimately have an effect on what governments do or do not do, and how they do it, but the field itself only hands the tools and insights, not a roadmap.

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