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Article Title: Individual Welfare and Subjective Well-Being:
Commentary Inspired by Sacks, Stevenson and Wolfers

Year of publication: 2011

Link to published article:
http://www2.warwick.ac.uk/fac/soc/economics/research/workingpapers/2011/twerp_957.pdf

Publisher statement: None

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No 957

WARWICK ECONOMIC RESEARCH PAPERS

DEPARTMENT OF ECONOMICS

THE UNIVERSITY OF
WARWICK

Individual Welfare and Subjective Well-Being: Commentary Inspired by Sacks, Stevenson and Wolfers

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2011 March 28th

Abstract

Sacks, Stevenson and Wolfers (2010) question earlier results like Easterlin's showing that long-run economic growth often fails to improve individuals' average reports of their own subjective well-being (SWB). We use *World Values Survey* data to establish that the proportion of individuals reporting happiness level h , and whose income falls below any fixed threshold, always diminishes as h increases. The implied positive association between income and reported happiness suggests that it is possible in principle to construct multi-dimensional summary statistics based on reported SWB that could be used to evaluate economic policy.

Acknowledgements

This commentary is loosely based on Peter Hammond's presentation to the ABCDE Conference of the World Bank in Stockholm 2010 during the 4th plenary session devoted to "New Ways of Measuring Welfare". Generous support for Peter Hammond's research up to March 31st 2010 from a Marie Curie Chair funded by the European Commission under contract number MEXC-CT-2006-041121 is gratefully acknowledged. So are the helpful comments of Andrew Oswald and Justin Wolfers.

1 Introduction

1.1 The Easterlin paradox

Plenty of empirical work supports the proposition that, within any given country, a person with a higher income is more likely to report a higher level of happiness or other measure of life satisfaction. Easterlin's (1974) "paradox" arose because average reported happiness seemed to increase little, if at all, with growth in national income per head, at least for "developed" countries in which most of the population has sufficient income to meet basic needs. In particular, though US income per head rose steadily between 1946 and 1970, it seems that average reported happiness showed no long-term trend and actually declined between 1960 and 1970. This suggests that, after basic needs have been met, further economic growth may fail to enhance the average of individuals' reports of their own happiness or life satisfaction. Easterlin's original appeared in a *Festschrift* for Moses Abramovitz, who devoted his career to understanding the process of economic growth in a historical context. At about the same time, the benefits of economic growth were also being questioned by scholars such as Hirsch (1977) and Scitovsky (1976).

The Easterlin paradox itself is the subject of the accompanying contribution by Sacks, Stevenson and Wolfers (2010) — henceforth SS&W — as well as of the previous extensive article by Stevenson and Wolfers (2008). Under a wide variety of circumstances, they find that an increase of personal income does increase of the average level of reported well-being. Indeed, if pressed to give a specific numerical estimate of the ratio between the increase of the average level of reported well-being (measured using their particular cardinal scale) and the increase in the logarithm of personal income, that number should probably be 0.35. This, of course, directly contradicts what the Easterlin paradox would say, if it could be applied in unmodified form to the SS&W data sets.

Already there have been several decades of continual debates over the precise circumstances under which growth leads to increased subjective well-being, when both are suitably measured. The recent survey by Clark, Frijters and Shields (2008), along with Easterlin's (2010) prize-winning volume, suggest that the debates can be expected to continue for some time yet. SS&W have done us all a great service by examining the data as carefully and in as much detail as they have.

An orthodox discussion might well quibble with some of those details. For example, it may be important that SS&W follow Deaton (2008) and

others in using proprietary data from the Gallup World Poll. Or, as Easterlin *et al.* (2010) suggest, to consider data over a time period long enough to exclude any possibility of business cycle effects. We might have been expected to discuss such details, perhaps by taking up Justin Wolfers' very kind offer to use some of this proprietary data in order to run some alternative regressions on our behalf. We did not do so because we see no particular reason to doubt the validity and robustness of SS&W's results, at least for the kind of data set they have chosen to analyze. Nor will we attempt to settle the outstanding differences between Easterlin and SS&W.

Instead, we raise the broader question of whether the debate matters. That is, we consider what significance, if any, this kind of empirical work could have for economic policy analysis. This, we believe, accords with the general theme of this plenary session, namely "New Ways of Measuring Welfare". Moreover, suppose we were to accept Easterlin's strongest empirical claims, along with the concomitant value judgement that development does nothing to enhance individual well-being. Then we would have to wonder what is left of the original *raison d'être* of the International Bank for Reconstruction and Development and the International Development Agency — two of the oldest and most prominent agencies of what has since become the World Bank Group. Clearly, much is at stake.

1.2 Separating Facts from Values

Hume (1739, book III, part I, section I, paragraph 27) includes the remark that "In every system of morality, which I have hitherto met with" there is an "imperceptible" change so that, "instead of the usual copulations of propositions, *is*, and *is not*, I meet with no proposition that is not connected with an *ought*, or an *ought not*." Thus, philosophers speak of "Hume's Law" as the claim that one cannot derive an "ought" from an "is". More precisely, the law refers to an "is-ought" or "fact-value" distinction between, on the one hand, descriptive or positive statements of fact, and on the other hand, prescriptive or normative judgements of ethical value.

Despite philosophers' criticisms of Hume's Law, one could argue that economists should be especially alert whenever the propositions put before us slip over the often unnoticed barrier between purely factual descriptions on the one hand, and the values that purport to describe our aspirations on the other. A good example of how often the barrier goes unobserved comes in the familiar phrase "measuring welfare" in the title of this session. After all, measurement by itself can only answer descriptive or positive questions, and so is definitely on the fact side of the fact-value distinction. Whereas we

take the view that the whole purpose of any attempt to measure individual economic welfare should be to provide an indicator of how effectively an economic system provides the goods, services, and public environment that benefit its different individual participants in their attempts to pursue a good life. This obviously makes welfare an inherently normative concept, on the value side of the fact–value distinction.¹

1.3 Well-Being as Evidence for Welfare?

Easterlin’s (1974) original title “Does economic growth improve the human lot?” is actually considerably more subtle than “measuring welfare”. Slightly rephrased and expanded, his title could become: “Is there any evidence that economic growth causes its presumed beneficiaries to express more satisfaction with their lives?” The rephrased question is obviously purely descriptive or positive. It acquires much more interest, however, if the objective evidence is thought to inform the answer to the prescriptive or normative question, “Should economic policy be less (or more) oriented toward growth and development?”

These thoughts lead rather naturally, however, to others more profound:

1. With Hume’s Law in mind, can *any* kind of factual evidence ever be relevant for economic policy?
2. If some kind of evidence can be relevant, what kind can be?
3. In particular, is there anything at all relevant in individuals’ responses to questions concerning their own life satisfaction?

A negative answer to the first question would deprive economic science of most of its interest for those of us who were drawn to study it in the hope of learning how the world can be made better. And the second question can be met in part by a positive answer to the third, toward which we now turn. Indeed, the rest of this commentary will consider attempts to measure subjective well-being (SWB) in ways that can indeed provide evidence related to the normative concept of individual welfare.

Specifically, Section 2 will briefly recapitulate traditional welfare measures. Some of these purport to be objective, while others depend on preferences. Thereafter, Section 3 addresses the question of what, if anything, the

¹Some authors, citing the tradition of Robbins (1932), claim that one should instead give the word “welfare” purely descriptive content. But then, at the risk of over-simplifying Little’s (1965) cogent critique in a mere metaphor, we are in danger of pursuing mirages in the arid desert of Archibald’s (1959) “essentialism”.

new subjective measures may have to add these old measures, particularly when considering their relevance to the normative concepts of individual and social welfare.

Next, Section 4 reports an empirical test, showing a strong positive association between income and subjective well-being. The final Section 5 suggests how further work could help understand better how useful measures of subjective well-being can be in providing factual evidence on which to base normative judgements of economic welfare.

2 Traditional Measures of Welfare

2.1 Real Income

A traditional and objective measure of welfare has been annual income per head. In any given year, we can compare and even add the incomes of different individuals who face identical prices for all commodities. When prices vary over time, or different individuals face different prices, incomes need correcting for price variations. This is often done simply by dividing income by a consumer price index or deflator, in order to produce a measure of real income. Provided this index is the value of an observable fixed commodity bundle or “market basket”, or even of some more sophisticated price index based on some observable aggregates such as mean expenditure shares for different kinds of good, the result is again an objective measure, as in Oulton (2008). Indeed, in principle one could even divide personal income by a different price index for each different consumer. See, for example, the discussion in Boskin *et al.* (1996, 1998) and associated articles in the *Journal of Economic Perspectives* devoted to the Boskin commission.

Only in a special case, however, do such objective measures correspond to an *exact* price index based on the individual consumer’s own preferences. As discussed by Hulten (1973) and by Samuelson and Swamy (1974), following the pioneering work of Ville (1946), the consumer’s preferences must be homothetic, which is equivalent to the very special case when the demand for every commodity has an income elasticity of exactly 1. Then a Divisia or chain price index with continuously revised quantity weights will be exact.

Even when preferences may not be homothetic, real income can still be measured by what Samuelson (1974) calls a “money metric” utility function based on Hicks’ (1956) measure equivalent variation — see, for example, Chipman and Moore (1980), Weymark (1985), and Hammond (1994). This money metric, however, is generally subjective to the extent that it depends on detailed estimates of parameters that determine the consumer’s demand

functions. It also depends on a reference price vector and, when extended to consider aspects of the public environment, also a reference level for each such aspect.

2.2 Human Development and Other Objective Measures

A self-sufficient farmer with no officially recorded income is obviously better off than somebody with no resources at all beyond a pittance in the form of an inadequate but officially recorded income. This neglect of what Sen (1977, 1981) calls “entitlements” is just one way in which a measure of real income overlooks important dimensions of human well-being. Other dimensions, including nutrition, health, functionings, capabilities and dignity, feature prominently in writings such as Sen (1980, 1981, 1987) and Dasgupta (1993). All these additional dimensions can in principle be objectively measured based on a person’s observed circumstances. Life expectancy, adult literacy, and an index of enrollment in education happen to be the three dimensions included (along with GDP per head) in the UN’s Human Development Index.

Especially in health economics and medical decisions, well-being is often measured using “quality adjusted life years” (QALYs), which are also based on medical practitioners’ observations and assessments of individual health states. Just a small part of the relevant literature can be found in Pliskin, Shepard and Weinstein (1980), Broome (1993), Wakker (1996, 2008), Bleichrodt, Wakker and Johannesson (1997), and Bleichrodt and Quiggin (1997). One interesting way of integrating QALYs into a real income measure of well-being has been proposed by Canning (2007).

3 New Measures of Well-Being

3.1 Subjective Well-Being

Psychologists’ use of individuals’ own reports of their happiness or life satisfaction goes back to at least Watson (1930), who asked subjects to provide answers on a graphical scale. An extensive review is found in Wilson (1967), who emphasizes the reliability or intrapersonal consistency of “avowed” happiness. The later surveys by Diener (1984) and by Diener *et al.* (1999) encourage us to use the term “subjective well-being” (or SWB). Easterlin’s (1974) results relied on measuring a similar concept. So does the richer interpersonal concept introduced by van Praag (1968), later explained more thoroughly in van Praag and Ferrer-i-Carbonell (2008).

One question raised by the work of van Praag (1971), Easterlin (1974), Simon (1974) and many successors is whether new ways of measuring welfare would make any difference. That is, if we measure SWB along with real income and other older objective economic indicators of welfare, is there any information at all that we could use to guide policy?

3.2 An Ordinal Objective Measure of SWB

For some specific value of n like 10, consider the question: “On a scale of 1 to n , how satisfied are you with your life in general?” Let us readily admit that we ourselves totally lack confidence in how to give this question any concrete interpretation, even before wondering what the “right” answer could possibly be in our own case. About all one can say is that this may be one relatively clear case where more should always be better. This reflects how hard it is to give the concept of life satisfaction any objective meaning. Anyway, this leads us not to attach too much significance to our own putative responses or, by extension, to those of other individuals.

Nevertheless, suppose we were to consider the results of a large survey whose respondents report not only a degree of life satisfaction or happiness h in the set $H := \{1, 2, \dots, n\}$, but also what they believe to be their current annual income $y \geq 0$. For each $x \geq 0$ and for each $h \in \{1, 2, \dots, n\}$, let $F_h(x)$ denote the proportion of individuals in the whole sample who combine reports of an annual income $y \leq x$ with a satisfaction level of h . Also, for each $h \in \{1, 2, \dots, n\}$, let P_h denotes the proportion of the overall sample who report SWB level h . By definition, note that the sum $F(x) := \sum_{h=1}^n F_h(x)$ is the overall cumulative distribution function for income. Of course $F_h(0) \geq 0$, while $F(x)$ is non-decreasing in x . Furthermore, the definition of P_h implies that

$$F_h(x) \rightarrow P_h \text{ as } x \rightarrow \infty \quad (1)$$

Now, for each $x \geq 0$ with $F(x) > 0$ and for each $h \in \{1, 2, \dots, n\}$, let

$$P_h(x) := F_h(x)/F(x) \quad (2)$$

denote the relative proportion, among all individuals with incomes $y \leq x$, who report life satisfaction level h . We note that, because $F(x) \rightarrow 1$ as $x \rightarrow \infty$, equations (1) and (2) imply that

$$P_h(x) \rightarrow P_h \text{ as } x \rightarrow \infty. \quad (3)$$

With these definitions, an objective measure of SWB among all individuals reporting incomes $y \leq x$ is given by the n -dimensional vector²

$$\mathbf{P}(x) = (P_1(x), P_2(x), P_3(x), \dots, P_n(x)). \quad (4)$$

Next, consider the n -vector of cumulative measures

$$\mathbf{Q}(x) = (Q_1(x), Q_2(x), Q_3(x), \dots, Q_n(x)). \quad (5)$$

where, for each $h \in H$, we define

$$Q_k(x) := \sum_{h=1}^k P_h(x). \quad (6)$$

This is the proportion of individuals with incomes $y \leq x$ who report satisfaction levels $h \leq k$. Obviously $Q_n(x) = 1$ for all income levels x . These cumulative measures are important because an obvious necessary and sufficient condition for SWB to rise with income is that $Q_k(x)$ falls as x increases for each $k = 1, 2, \dots, n-1$. That is, the proportion of individuals whose reported satisfaction level is low must fall as one moves further up the income distribution.

Note that, like an ordinal equivalence class of utility functions that represent the same preference ordering because all are strictly increasing transformations of each other, the n -dimensional vector $\mathbf{P}(x)$ is ordinal because its definition depends only on which happiness levels are ranked higher.

3.3 A Cardinal Objective Measure of SWB

A great deal of empirical work, including most linear regression studies, ignores much of the richness in the data by simply replacing the different components of each vector $\mathbf{P}(x)$ with the one-dimensional mean statistic

$$\bar{P}(x) = \sum_{h=1}^n P_h(x) h. \quad (7)$$

This not only discards a great deal of information, however. In addition, constructing $\bar{P}(x)$ requires that happiness be measured on a cardinal scale. Specifically, for every possible comparison such as $\bar{P}(x) > \bar{P}(x')$ to be preserved whenever the happiness scale $H := \{1, 2, \dots, n\}$ is replaced by the

²We ignore the loss of one dimension that arises because the n proportions must add up to 1.

new n -point happiness scale $H' := \{\eta_1, \eta_2, \dots, \eta_m\}$ with $\eta_1 < \eta_2 < \dots < \eta_m$, it is necessary and sufficient that there be an additive constant α and a multiplicative constant $\rho > 0$ such that

$$\eta_h = \alpha + \rho h \text{ for all } h \in H. \quad (8)$$

We note finally that virtually all existing work concerning the Easterlin paradox relies on cardinal measures of mean happiness such as $\bar{P}(x)$ defined by equation (7). We do not know if, along with different data sets, this is really significant in helping to explain apparently inconsistent empirical results. For the following discussion, however, we make a point of keeping track of all n components in the vector $\mathbf{P}(x)$ defined by equation (4), for all relevant different income levels x .

4 Could SWB Be Relevant? An Empirical Test

4.1 A Null Hypothesis

Consider the following rather extreme null hypothesis: for each $x \geq 0$, the relative proportions $P_h(x)$ of individuals with incomes $y \leq x$ who report different satisfaction levels $h \in H$ are all independent of x . Equation (3), of course, implies in this case that $P_h(x) = P_h$, independent of x .

Suppose that for all $h \in H$ and $x \geq 0$ we define

$$G_h(x) := F_h(x)/P_h \quad (9)$$

as the proportion of all interviewees reporting satisfaction level h whose income is $y \leq x$. Then each $G_h(x)$ is a cumulative income distribution function for those interviewees, which satisfies $G_h(x) \rightarrow 1$ as $x \rightarrow \infty$. Using equation (2) to substitute for $F_h(x)$ in (9) gives

$$G_h(x) = P_h(x)F(x)/P_h. \quad (10)$$

The null hypothesis that $P_h(x) = P_h$ is independent of $x \geq 0$ is therefore equivalent to having $G_h(x) = F(x)$, independent of h . Under this null hypothesis, any reports of SWB would tell us nothing at all relevant to any statements regarding the relative subjective values of different income levels $y \geq 0$.

4.2 An Alternative Hypothesis

A natural alternative to the null hypothesis that $G_h(x) = F(x)$, independent of h , is that $G_h(x)$ decreases as h increases, for each fixed $x \geq 0$. This

corresponds to the hypothesis that, among individuals reporting happiness level h , the proportion of poorer individuals with incomes $y \leq x$ decreases as h increases.

4.3 Data Sources

Two different versions of both the null and alternative hypothesis can be tested using data from the *World Values Survey* (WVS), as a particular accessible source. The data had been collected from interviews conducted in five waves between the years 1981 and 2008, for a total of 117,876 observations. In an attempt to ensure representativeness, the data we used were restricted to wave–country combinations with at least 30 observations.

Apart from happiness measured on a four-point scale, the interviewers also collected income data measured on an interval scale. In order to arrive at corresponding distributions of annual individual income measured consistently in year 2000 US dollars, the raw WVS data were transformed as follows:

- extract the lower and upper bounds of whatever income range was reported by the interviewee, then transform both bounds to measures of annual income;
- use an interval regression to estimate a probability distribution of possible incomes for each interviewee;
- adjust for both exchange rates and price changes using data taken from *World Development Indicators* (WDI) 2010.

The first version of the null hypothesis uses the income data directly. At least one version of Easterlin’s paradox, however, considers whether people become happier as the country they live in experiences growth in GDP per head. It would be interesting in future to see how our null hypothesis fares when confronted with the kind of long-run growth data whose use Easterlin advocates. For the time being, however, we have limited ourselves to a second static version of the null hypothesis, where individual income is replaced by contemporaneous GDP per head for the country in which the interviewee lives.

4.4 Results for the First Version of the Null Hypothesis

Figure 1 represents the transformed data graphically, with income x measured along the horizontal axis using a logarithmic scale. It displays the

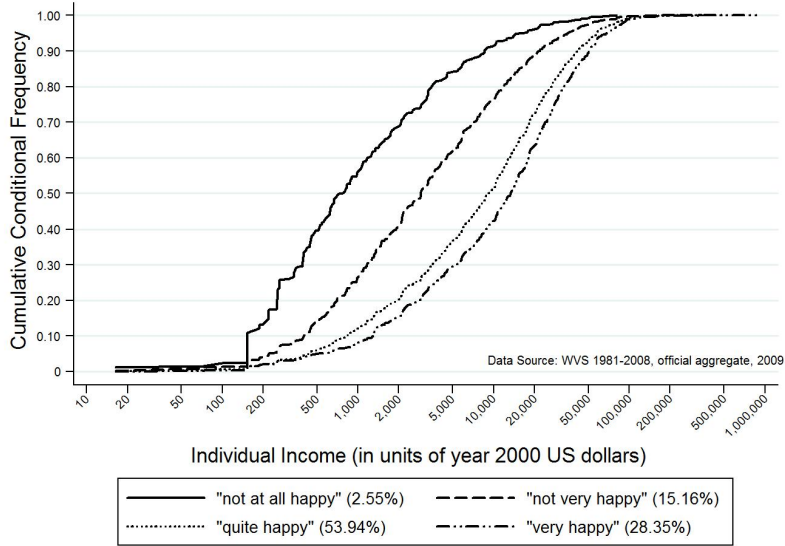


Figure 1: Four Income Distribution Functions

graphs of the four conditional cumulative income distribution functions $G_h(x)$, corresponding to each of the four different possible happiness levels $h \in \{1, 2, 3, 4\}$.

The four graphs show a very clear positive association between happiness and income, at least for the 98% of interviewees whose income levels, measured in year 2000 US dollars, lie between about 50 cents and 300 dollars per day. Indeed, the association is so strong that no two curves cross. Specifically, for every threshold income level x , among all those individuals who report the same happiness level h , the proportion $F_h(x)$ whose income is $y \leq x$ always decreases as h increases. In other words, those who report a higher h on the WVS four-point happiness scale are less likely to have low incomes, regardless of what threshold we choose to distinguish between high and low incomes.

A formal two-sample one-sided version of the Kolmogorov–Smirnov test was also applied three times to the different adjacent pairs of conditional income distributions in order to see whether each graph lies significantly above its successor, in accordance with the alternative hypothesis laid out in Section 4.2. The test was passed in every case with a p -value of 0.000.

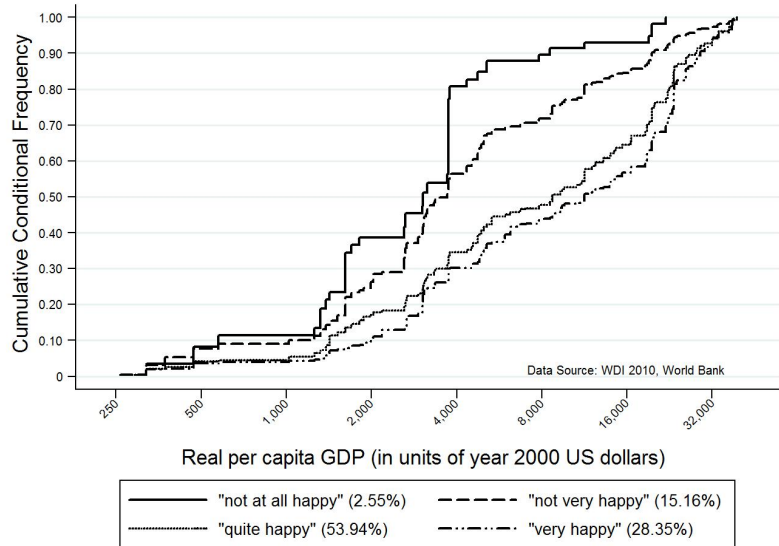


Figure 2: Four Distribution Functions Based on GDP Per Head

4.5 Results for the Second Version of the Null Hypothesis

In order to consider the second version of the null hypothesis, figure 2 replaces the absolute income levels in figure 1 with national GDP per head. The cumulative income distribution reports the proportion of interviewees living in countries whose contemporaneous GDP per head, again measured in year 2000 US dollars, was no greater than the income level marked on the horizontal axis. Not surprisingly, there are some significant jumps in the constructed distribution, reflecting how every interviewee in some quite large countries shares the same national GDP per head.

Once again the four curves are not only distinct, but clearly ordered in the same way as they were in figure 1. The same three Kolmogorov–Smirnov tests were still passed with a p -value of 0.000. Thus, reported life satisfaction is definitely positively associated with both personal income and with GDP per head. Of course, this does not contradict the version of Easterlin’s negative findings that focuses on long-run growth trends, particularly in countries that were either already developed or have recently become much more developed.

5 Should SWB Be Relevant? Ethical Values

5.1 Two Extreme Views

Establishing a positive association between happiness and income is one thing. Its relevance for policy is quite another. We have not even distinguished the hypothesis that income causes happiness from the alternative possibility that happiness causes income, perhaps even at the national as well as the individual level. Nevertheless, let us provisionally accept the hypothesis that policies which increase economic opportunities will add to measured SWB. Does that make a case for basing policy recommendations on SWB measures? In fact, on this question there is scope for two extreme opposing views, as well as no doubt many positions in between.

The first extreme is the skeptic's claim that any empirical SWB analysis is bound to lack normative significance. This is the implicit position of traditional welfare economics, based as it is on concepts like revealed preference, willingness to pay, and money metric utility. It may be reinforced by the view that individuals' expressions of their own subjective well-being constitute no more than how our County Bard chose to describe life itself: "... a tale/ Told by an idiot, full of sound and fury,/ Signifying nothing." (*Macbeth* Act 5, scene 5).

The second extreme is the "hedonometric" claim that not only is SWB relevant; in fact, only the mean of all individuals' SWB reports matters and so any other measure can be disregarded. This appears to be the position advocated by Layard, amongst others — see, for example, Layard (2005, 2010) and Dolan, Layard and Metcalfe (2011). As already discussed in Section 3.3, this extreme attacks cardinal significance to the different happiness levels.

5.2 SWB and Pareto Dominance

Between these two extremes comes the view that SWB measures are relevant to the comparisons one needs as a basis for policy recommendations.

For example, rather than base social welfare judgements on individuals' reported preferences, could we not use SWB measures instead? Then one might say that policy A has better effects for individual i than does policy B , and so gives a higher level of i 's welfare, if and only if the change from B to A would increase the estimated SWB, not necessarily of i personally in a world of unreliable reports, but of most people sufficiently like i for the comparison of SWB measures to be deemed relevant. Such personal comparisons of different policies are already enough to determine a modified

Pareto criterion, according to which policy A Pareto dominates policy B if and only if the estimated SWB for every individual under policy A is higher than it would be under B . Used in this limited way, estimated SWB may be a more reliable guide than the usual welfare measures based on concepts such as revealed preference, willingness to pay, or money metric utility.

5.3 Comparing Welfare Levels

For policy changes which are not Pareto improvements, however, some way of trading off different individuals' gains and losses is required. To see whether this is possible, we may first ask when one can say that person i has a higher welfare level than person j ?

Traditionally, the answer has been: if and only if i 's real income is higher than j 's. A fundamental difficulty, however, is the lack of any objective measure of real income.

A new answer can use objective measures of SWB. Then we can say that person i has a higher welfare level than person j if and only if people whose objective circumstances are like those of i generally report higher SWB levels than do those whose objective circumstances are like those of j .

5.4 SWB and Suppes–Sen Dominance

Once we introduce comparisons between different individuals' estimated SWB levels, there may be an appealing way to express a preference between two policies A and B even though neither Pareto dominates the other. A first idea is to use Suppes' (1966) "grading principle", as Sen (1970) discusses. Specifically, policy A will dominate policy B if and only if A would Pareto dominate a (possibly infeasible) policy alternative B' in which the different individuals' SWB measures are derived by permuting those achieved under policy B . In particular, the distribution of individuals' SWB measures under policy A should dominate that of individuals' SWB measures under policy B .

A different way of expressing the same dominance condition involves multi-dimensional cumulative distributions like the $Q_k(x)$ considered in Section 3.2. The idea is to reduce the proportion of individuals whose happiness level falls below each possible different h . For similar ideas see Dasgupta, Sen and Starrett (1973) as well as Saposnik (1983).

5.5 Progressive Transfers

Dalton (1920, p. 251), following an idea he ascribes to Pigou (1912), enunciated what has since become known as the “Pigou–Dalton principle of progressive transfers”. This is the claim that transferring income costlessly from a richer to a poorer person will reduce inequality so long as the transfer is not large enough to reverse the ranking of the two individuals’ incomes. A similar idea can be applied with measured SWB replacing income. That is, one can regard favorably a different kind of progressive income transfer from individuals with higher SWB levels to those with lower levels, as long as the transfer is not large enough to reverse the ranking of the two individuals’ SWB levels. In this way, some pairs of policies can be ranked even though neither dominates the other according to the Suppes–Sen criterion.

An extension of the same idea would be to apply the equity axiom suggested by Sen (1973), though it is often ascribed to Hammond (1976). This would regard any policy change as beneficial provided it affects only two individuals’ estimated SWB levels, and increases the minimum of the two SWB levels. Pushed all the way, this would take us to a modified “Rawlsian” maximin policy that maximizes the lowest estimated SWB level in the whole population. This will usually differ from the usual maximin policy because estimated SWB differs from individual utility, as usually measured, and also because the measure applies not just to each individual separately, but equally to a whole group of individuals who share similar objective circumstances.

5.6 Welfare Weights

We conclude with a final warning. The kind of ordinal estimated SWB measure we have been discussing cannot provide sufficient information, in general, to derive the welfare weights which are generally needed whenever policy choices force us to trade off some individuals’ welfare gains against others’ losses. Those trade offs require some form of cardinal information, or at least social marginal rates of substitution between estimated SWB measures for different groups of individuals whose objective circumstances are similar.

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