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Valuation of Health and Well-Being**

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**INTRODUCING A “DIFFERENT LIVES” APPROACH TO
THE VALUATION OF HEALTH AND WELL-BEING**

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Abstract

We introduce a new “different lives” survey format, which asks respondents to rank hypothetical lives described in terms of longevity, health, happiness, income, and other elements of the quality of life. In this short paper, we show that the format is of policy relevance whether a mental state, preference satisfaction or extra-welfarist account of well-being is adopted and discuss some of the advantages the format has over standard formats, such as contingent valuation surveys and QALY-type methods. An exploratory survey indicates that the format is feasible and that health and happiness might be more important than income and life expectancy. *(100 words)*

Key words: QALYs, preferences, well-being, utility, welfarism, extra-welfarism

JEL classification: D60, I10

1. INTRODUCTION

Scholars have developed various ways to value the health and well-being consequences of public policies and interventions. Two prominent approaches are “compensating variations” that measure how much individuals are willing to pay or accept in exchange for a policy (Just et al., 2004, pp. 123-82) and a focus on health using quality-adjusted life years (QALYs) (Dolan, 2000). We propose a new approach in which respondents are asked to rank or rate “different lives”, characterised in terms of different dimensions of overall quality of life, such as longevity, health, happiness, and income. Basically, respondents are asked to decide which combination of levels of the dimensions they would prefer, e.g. a longer life in poorer health with higher happiness and lower income as compared to a shorter life in better health with lower happiness and higher income. From responses to these questions, it is possible to determine the relative weights attached to dimensions that make up our lives. In one sense, this approach can be seen as an extension of the QALY approach by incorporating dimensions of value beyond health.

In the next section of this short paper, we set out the intellectual backdrop for this new “different lives” survey format and show how it is relevant whatever account of well-being or quality of life is adopted (including extra-welfarism which has attracted attention in health economics). In section three, we show the format can be used in a number of applications, including economic evaluation and in generating a social welfare function, and we show how it compares to other more widely used survey formats in these contexts. In section four, we report on the results of a pilot study of students in the US

and UK to test the feasibility of the approach. The results are only indicative but suggest that health and happiness are more important than longevity and income, especially in the UK. In the concluding section, we suggest that the different lives survey format has the potential to inform policy decisions in health and elsewhere and we recommend future studies to generate results from more representative samples using different levels and definitions of the dimensions.

2. DIFFERENT LIVES SURVEYS AND ACCOUNTS OF WELL-BEING

Health economists have debated whether “welfarist” or “extra-welfarist” approaches to health policy are appropriate (Culyer, 1990; Brouwer and Koopmanschap, 2000; Birch and Donaldson, 2003; Brouwer et al., 2007). In general terms, welfarism is seen to focus on well-being, understood in terms of preference-satisfaction or happiness, while extra-welfarism is seen to adopt a broader conception of the quality of life that may include elements such as health, social relations, and the realisation of other “capabilities.” A debate is also taking place between preference-based approaches to policy and “happiness-based” approaches (Kelman, 2005; Adler and Posner, 2007; Dolan and Kahneman, 2008). A preference-based approach allows an individual’s utility function to contain mental states and also arguments that may be distinct from mental states, such as health and income. Some happiness-based approaches limit the arguments in the utility function to the mental states associated with different kinds of affect (pleasure, pain and the like) whilst others allow for more evaluative judgements of overall happiness, which may include cognitive assessments of how well life is going generally.

So, whilst virtually everyone accepts that improving the quality of individual lives should be the goal of policy, there are different conceptions of the quality of an individual life. Whilst there are no right or consensus definitions of terms like “extra-welfarism,” “welfarism” and “happiness”, we suggest that the following definitions help to clarify the debate: *extra-welfarism* allows the quality of an individual life to be something more than the satisfaction of preferences and more than a matter of mental states, *preference-based welfarism* says that the quality of an individual life is a matter of preference-satisfaction and *mental-state welfarism* says that the quality of an individual life is a matter of the quality of the individual’s mental states.

What, then, is the relevance of different lives surveys to extra-welfarism? These surveys provide information about preferences and might therefore appear to be of little relevance to extra-welfarists. However, an important question for extra-welfarists concerns the source of value judgments about the quality of life. Extra-welfarists often suggest that a deliberative process, involving policy-makers and citizens, is the appropriate body for judging the quality of outcomes and individuals’ lives. (Brouwer et al 2007).

Whatever the precise mechanisms, it would be rather odd to suggest that those engaged in this valuation process should wholly ignore utility information. Therefore, “different lives” surveys can serve as one input into the valuation process.

Such surveys can also illustrate the extent of the divergence between preference welfarism and extra-welfarism. The good of health illustrates this point. Many extra-

welfarists emphasize the importance of health to the quality of individual lives, independent of individual utility. Now, it is an empirical question whether health has a large or small role in the utility function. If it has a larger role, preference welfarism and health-based extra-welfarism will have more closely convergent recommendations for health policy. If it has a smaller role, preference-welfarism and an extra-welfarist approach that places a large weight on health will end up with more divergent recommendations for health policy.

The role of different lives surveys to a preference-based welfarist approach is more substantial. Whilst much of the economics literature focuses on income as the main (and sometimes only) arguments in the utility function, any argument, including mental states and health, is relevant provided individuals have a preference or desire towards it (Adler and Posner, 2007). The problem then becomes determining the relative weights attached to those arguments. A different lives survey, asking each respondent to rank the different possible lives she might lead, should be an appealing survey format to determine the weights attached to different arguments in the utility function.

Different lives surveys may appear to be less relevant to mental state welfarists since they have already decided that it is only mental states that are important for well-being.

However, a survey asking for trade-offs between happiness and non-mental state dimensions can illustrate the extent of the divergence between preference welfarism and mental-state welfarism. If happiness is the most significant argument in the utility function, then preference welfarism and mental state welfarism will tend to converge in

their policy recommendations. If individuals have strong preferences for dimensions other than mental states, then preference welfarism and mental state welfarism will tend to diverge in their recommendations.

Moreover, different lives surveys asking for trade-offs between happiness and non-mental state dimensions can help answer an important question about individual behavior which is much discussed in the happiness literature. There is evidence that individuals often fail, in practice, to maximise their own happiness (see Layard, 2005, for an extended argument that individuals could be much happier). One hypothesis to explain this behavior is that individuals ultimately care mainly about happiness but are vulnerable to “affective forecasting” errors and other biases that prevent them from successfully maximising happiness (Wilson and Gilbert, 2003). A competing hypothesis is that individuals ultimately care about a variety of non-mental state dimensions, such as health or income, in addition to happiness. Different lives surveys can help answer the question about the relative merits of these competing reasons for why individuals fail to maximise their own happiness. Indeed, the survey format was developed partly out of on-going discussion between the two authors about the relative merits of these two possibilities.

In sum, a different lives survey format should be relevant whichever account of well-being or quality of life is adopted: extra welfarism, preference welfarism, or mental-state welfarism. How the format compares to existing survey instruments designed to value health and well-being, and how it might be used in shaping policy choice, are questions to which we now turn.

3. DIFFERENT LIVES SURVEYS AND ENHANCING POLICY MEASURES

One policy-analysis tool, traditionally favoured by preference welfarists, is cost-benefit analysis (CBA) (Just et al., 2004; Adler and Posner 2006). CBA evaluates policies by summing “compensating variations” (CVs) which reflect the amount of money necessary to hold utility constant given a change in some non-income dimension. CVs for market goods are typically estimated through “revealed preference” methodologies, but it is often difficult to use revealed preference methodologies to estimate CVs for non-market goods. As a result, “contingent valuation” surveys are often used to estimate CVs (Bateman et al., 2002). If individuals answer such questions by expressing their preferences, then – in principle – the answers can be used to estimate utility as a function both of income and of other attributes.

However, there are various difficulties in using contingent valuation questions to estimate a utility function, such as insensitivity to the size of the good being valued (scope effects) (Venkatchalam 2004), and the propensity of respondents to answer by expressing attitudes rather than preferences (Kahneman and Sugden, 2005). In addition, some preference-relevant attributes of possible lives are not directly impacted by government e.g. policies may change income (by levying taxes) fairly directly but will have a less direct effect on happiness. Using contingent valuation studies to estimate the relative contribution of happiness and income to individual utility is therefore difficult. Against this background, different lives surveys can usefully supplement revealed and stated

preference evidence by calibrating a utility function which can be used to calculate CVs in much the same way as happiness data are now being used to calculate income compensations (van Praag and Baarsma, 2005; Oswald and Powdthavee, 2008).

In health care, of course, cost-utility analysis (CUA) using QALYs is now commonplace and owes much to an extra-welfarist perspective. An important issue in CUA is where to set the cost-per-QALY cutoff ratio. Extra-welfarists should, presumably, set that ratio with an eye to the relative importance of health and non-health characteristics to quality of life, and different lives surveys can help inform that judgment of relative importance. One standard format in the calculation of QALYs assigns values to health states through a time trade-off (TTO) or standard gamble (SG) question. The TTO and SG questions elicit respondents' preferences over health and longevity but do not elicit preferences over other characteristics that individuals or policy-makers may care about, such as happiness.

Another standard survey format is happiness or life-satisfaction questions. The main problem with these measures is that they do not adopt a lifetime perspective (Williams, 1997). Many existing measures of health and well-being adopt a time-slice or, at best, a prospective assessment of the quality of life when arguably a lifetime perspective is the most appropriate for policy purposes. By asking respondents to consider their lifetime prospects across a range of dimensions, a more complete picture of the quality of life is developed.

Some preference welfarists believe that a social welfare function (SWF) rather than CBA should be employed to evaluate policies. (Blackorby et al, 2005; Adler and Sanchirico, 2006) The rationale is that a SWF can correct for diminishing marginal utility of income and can also reflect a concern for equalising well-being itself. A utility function u is used to transform each outcome into a vector of utilities, one for each individual in the population; a SWF w then maps that vector onto a scalar, representing how good the outcome is as compared to others. In other words, $u(o) = (u_1 \dots u_I)$, where u_i is the utility of individual i in outcome o , there are I individuals in the population, and $w(u(o)) > w(u(o^*))$ means that o is a better outcome than o^* . Different lives surveys can be employed to calibrate u .

Although the origins of the SWF approach lies in preference welfarism, the approach could also be employed within extra-welfarism with health, rather than utility, as inputs (Wagstaff, 1991; Dolan, 1998). Presumably this approach is too narrow, because even extra-welfarists should acknowledge that the quality of individual life depends on more than health. A better approach, conceptually, is to use a value function $v(\cdot)$ that assigns a number to each life as a function of both health and non-health characteristics, and then to apply the social welfare function w to the vector $(v_1 \dots v_I)$ (See List, 2004, discussing SWFs defined on multiple dimensions of individual well-being). Different lives surveys asking for tradeoffs between health and other characteristics could be one useful source of information in constructing the value function v .

Both preference welfarists and extra-welfarists could endorse the use of different lives surveys to help refine multi-dimensional quality-of-life metrics. The World Health Organization Quality of Life Instrument (“WHOQOL”), for example, consists of 6 overall domains, divided into 24 dimensions such as pain and discomfort, positive feelings, mobility, personal relationships, physical security and safety, financial resources, and physical environment (The WHOQOL Group 1998; Bonomi et al., 2000). Typically, these quality-of-life scales have been based in scholarly discussion rather than survey research and so different lives surveys can help determine what the different dimensions of a quality-of-life metric should be.

4. SURVEY

To test the feasibility of the different lives format, we conducted a study of 40 students in a university in London and 32 students in a university in Philadelphia. In some ways, the basic structure of the questionnaire is similar to that developed by Holmes (1997), in which she asked respondents to rank person-types, characterized in terms of occupation, gender, family status, and health state, and then to perform a TTO task across types. However, the person-types were not described as having different income or happiness levels, and the design was focused on estimating health state values rather than comparing different lives in the more general sense used here.

There were two levels of each of the four dimensions of well-being. Life expectancy was 65 or 75; health was specified as being ‘able to move around freely’ or ‘hard to move

around without assistance'; and happiness was expressed 95% or 80% of the time in a good mood. Income in the UK was £45,000 or £30,000, whilst in the US it was \$300,000 or \$100,000. The numbers were different because of different expected earnings of the students and the relativities were different to test whether the results were sensitive to this. This generates 16 different lives. The study design asked individuals to rank two pages of eight scenarios. We excluded the logically best and worst scenarios so that two scenarios could be placed on both pages. This enabled us to infer a ranking for all possible lives.

From these data, we run a rank-ordered logistic regression model, where an individual's utility function is given by:

$$U(.) = V(Y, H, HS, LE) + \varepsilon = \beta_1 Y + \beta_2 H + \beta_3 HS + \beta_4 LE + \varepsilon$$

Assuming that each individual knows their own preferences, the random part, ε , accounts for the fact that we cannot observe the individual's true utility function. The table below summarises the results.

	UK (n=40)	US (n=32)	UK and US
Income	0.566	1.095	0.777
Health	2.758	3.726	3.109
Happiness	1.633	1.816	1.672
Life Exp	0.334	1.202	0.684
Log likelihood	-651.4387	-478.1733	-1145.141

It is worth noting that all the coefficients are significant at the 1% level, which means that the differences in the levels of these dimensions were all seen as being important to respondents. In both the UK and US samples, the coefficient on health was largest, followed by the coefficient on happiness. Income and life expectancy were less important in the UK sample than in the U.S. Of course, the size of the coefficients on the four dimensions is sensitive to the high-low endpoints for health, happiness, income, and life expectancy used to generate the 16 different lives. For example, if the two possible life expectancies had been 50 and 75 rather than 65 and 75, the coefficient on life expectancy would presumably have been larger in both samples. We must reiterate the exploratory nature of this study but it is encouraging that the number of responses where a logically worse state was preferred to a logically better state was less than 10% in the UK and less than 5% in the US. We would not wish to draw any real conclusions from these data beyond their general face validity.

4. DISCUSSION

We suggest that the different lives survey format has the potential to inform policy decisions regardless of whether the underlying normative framework is extra-welfarism, preference-welfarism, or mental-state welfarism. The survey format also has some advantages over existing ways of valuing health and well-being. A small study of students suggests that the method is a feasible one. Our preliminary results suggest that happiness is not the sole determinant of utility. Such a finding, if confirmed in subsequent

studies, would suggest that the debate between preference welfarists and mental-state welfarists has real significance for policy choice. It might also suggest that the failure of individuals to maximize their own happiness may be due, not merely to “affective forecasting” errors, but to a fundamental preference for items other than happiness, although it does still leave open the possibility that these items are seen to contribute to mental states of some kind or another.

Also of interest is the fact that, in both samples, health was the most important dimension. If this is not merely an artifact of small samples or the definition of the 16 different lives in our study, it suggests that extra-welfarist and preference welfarist approaches to policy making could be less divergent than the literature suggests. We now recommend additional studies to generate results from more representative samples using different levels and definitions of the dimensions.

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