



## Willingness to pay methods in health care: a sceptical view

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Recently, several experts in stated preference willingness to pay (WTP) methods have advocated greater use of these methods to facilitate cost–benefit analysis in health care [1–3]. The suggestion is that health economics lags behind other areas of economics that have embraced these methods, in particular environmental economics.

A small but growing number of stated preference WTP studies have been conducted in the health field [4,5]. Two main methods have been employed: the ‘contingent valuation method’ (CVM) and ‘choice experiments’ (CE) – the method formerly known as conjoint analysis. These methods have generally been used to set a monetary value on a package of health and/or non-health benefits in the context of a specific intervention.

Yet economic evaluation within the health care field remains dominated by cost-effectiveness and cost-per-QALY analysis. Health care payers have been reluctant to embrace cost–benefit analysis based on WTP methods [6,7]. And most health economists have preferred to refine the cost-effectiveness approach rather than to develop new WTP methods [8,9].

Why is this? Advocates of WTP methods suggest it may be partly due to a common but erroneous perception that WTP studies are ‘somehow supportive of policies aimed at removing the provision of state-supplied health services’ [1]. It may also be due to the fact that stated preference WTP methods suffer from two serious (and possibly related) measurement biases that render them unattractive to health care decision-makers.

First, WTP responses tend to be under-sensitive – although not necessarily totally insensitive – to the magnitude of benefit [10–12]. This includes both ‘scope effects’, involving different quantities of the same good, and ‘nesting effects’ (or ‘embedding effects’ or ‘part-whole bias’), involving one good incorporated within a larger bundle of goods. Scope effects are particularly strong in relation to health risks. Using high quality contingent valuation survey designs, and rigorous experimental methods, investigators have found that people tend to state a similar amount – roughly £50 – for any given magnitude of reduction in the risk of death or injury [13]. This has the effect of exaggerating implied monetary values for life and health for relatively small risk reductions. More generally, under-sensitivity to the magnitude of benefit tends to inflate valuations of interventions that yield relatively small benefits.

Second, WTP methods tend to inflate valuations of the specific intervention that respondents are asked about, relative to interventions that respondents are not asked about [14]. Asking respondents to focus on one specific intervention in isolation acts as a kind of magnifying glass for stated WTP. When asked to consider an intervention in isolation, people are willing to pay sums of money far in excess of what they are willing to pay when asked to consider the same intervention in relation to a range of other interventions. This is sometimes known as ‘budget constraint bias’ [15]. Unlike the rational economic man of standard economic theory, survey respondents may be unable to budget simultaneously for the entire range of possible public and private goods and

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services they require. So valuing each item in isolation can lead to sum totals of WTP in excess of the available budget.

WTP methods thus tend to be biased in favour of (1) interventions that deliver relatively small benefits, and (2) the particular intervention being evaluated, as opposed to other ones not being evaluated. These are serious flaws in a health care context, where the bulk of economic evaluation activity is directed towards informing reimbursement decisions about costly new health care technologies. These technologies tend to offer demonstrable but relatively small health benefits. Political pressures tend to favour these new health care technologies. Vested interests all line up in favour of funding the new technology – manufacturers, specialist clinicians and patients [16]. In this political context, decision-makers are keen to obtain rigorous economic evidence to counter-balance the lobbying of vested interests and facilitate a balanced assessment.

The total budget impact of National Institute for Clinical Excellence (NICE) guidance in its first two and a half years was estimated at £575 m, for about 50 technologies appraised [17]. On the basis that there are 21 million households in England and Wales [18], if the average household said they were willing to pay £50 a year for a particular technology then population WTP would be £1050 m for that technology alone. Most of this sum would represent payments for ‘caring externalities’ and ‘option values’ by the vast majority of households not currently affected by the medical condition in question. Small errors in people’s stated WTP for these complex and indirect forms of value would multiply up to yield large errors in population WTP.

By generating inflated and unreliable ‘rubber money’ valuations, use of WTP methods by bodies such as NICE could play into the hands of the pressure groups and hamper efforts at rational decision-making. It is interesting to note that this situation is reversed in the case of environmental policy. Here, the most powerful vested interest groups tend to line up against the new policy intervention under consideration – for instance, industry groups or local resident groups who stand to bear the main costs of new environmental policies that benefit the wider population. In such circumstances, a valuation method that tends to exaggerate the benefits of new policies may find favour with decision-makers faced with vested interests all lobbying in favour of the status quo.

It has been argued that WTP methods take account of opportunity costs more thoroughly than cost-effectiveness analysis [3]. Cost-effectiveness analysis takes account of opportunity costs using an incremental cost-effectiveness threshold, which represents an explicit assumption about the cost-effectiveness of a ‘typical’ alternative intervention. By contrast, WTP methods take account of opportunity costs by giving respondents the opportunity to consider all alternative interventions. However, as we have seen, respondents to WTP surveys are not capable of simultaneous budgeting for all possible interventions in all possible areas of spending. The choice is thus between representing opportunity cost using an explicit assumption, open to public scrutiny, and representing it using an unquantifiable psychological bias.

Finally, it has been suggested that QALYs are out of date [2]. It is more plausible to suggest that the WTP approach is out of date. Standard ‘welfarist’ WTP theory was developed more than a century ago and reached its current form by the 1950s. This theory is now considered outdated by most experts who have surveyed the field of ethics and economics [19–22]. For this reason, cost-per-QALY analysis is increasingly being interpreted in terms of the modern ‘extra-welfarist’ approach to normative economics [23–25].

One of the many well-known problems with standard welfare economic theory is that it assumes the existence of a well-behaved individual utility function able to serve the dual positive and normative purposes of (a) predicting individual behaviour and (b) valuing outcomes [26]. Yet people’s responses to preference elicitation questionnaires are far from ‘well-behaved’ in relation to the axioms of standard economic theory [27]. This is because, in responding to preference elicitation questionnaires – especially those asking about unfamiliar outcomes, small probabilities and long time-horizons – people tend to ‘construct’ their preferences on the spot in response to context-specific stimuli. Hence responses are vulnerable to all sorts of psychological biases and heuristics. In a health care context, it is thus highly implausible to interpret responses to WTP questions in terms of a well-behaved individual utility function of the kind required by standard welfare economic theory.

It is possible that WTP methods and cost-benefit analysis may have a useful role in the wider context of inter-sectoral resource allocation

between health care and other sectors. This is an important albeit under-developed area of economic evaluation activity, as rising spending on health care continues to pull in resources from other sectors. Given all the conceptual and empirical difficulties with WTP methods, however, 'extra-welfarist' approaches can and should also be developed and applied to address inter-sectoral issues. In particular, Sen's 'capability approach', originally developed in the context of social inequality comparisons, would seem a particularly fruitful avenue for future research in this area [24]. The essential idea here would be to perform cost-benefit analysis using a capability index as the common inter-sectoral measure of value, rather than money.

In the context of resource allocation decisions within the health care sector, however, economists and health care payers alike would be well advised to treat claims about the advantages of WTP methods and cost-benefit analysis with scepticism. One fruitful avenue for methodological research may be to harness WTP methods to the cause of cost-effectiveness analysis by helping to estimate equity weights for QALYs. This would only require *comparative* WTP for different interventions, rather than an 'absolute' monetary WTP figure, and so might help to side-step scope effects and budget constraint bias. There may also be some scope for tackling these biases head on, using techniques such as opportunities for reflection and deliberation and qualitative research methods to identify the reasons behind people's WTP responses. Given that the fundamental problem lies with the 'constructed' nature of individual preferences, these techniques may prove more fruitful than the focus during the 1990s on ever more sophisticated questionnaire design and statistical analysis.

## References

- Hanley N, Ryan M, Wright R. Estimating the monetary value of health care: lessons from environmental economics. *Health Econ* 2003; **12**: 3–16.
- Loomes G. The use of cost-effectiveness thresholds outside the health sector. In *Cost-effectiveness Thresholds: Economic and Ethical Issues*, Chapter 5, Towse A, Pritchard C, Devlin N (eds). Office of Health Economics: London, 2002.
- Oliver A, Healey A, Donaldson C. Choosing the method to match the perspective: economic assessment and its implications for health-services efficiency. *Lancet* 2002; **359**(9319): 1771–1774.
- Ryan M, Scott DA, Reeves C *et al.* Eliciting public preferences for health care: a systematic review of techniques. *Health Technol Assess* 2001; **5**(5).
- Olsen JA, Smith R. Who have been asked to value what? A review of 54 WTP-based surveys on health and health care. *Health Econ* 2001; **10**: 39–50.
- National Institute of Clinical Excellence. *Technical Guidance for Manufacturers and Sponsors on Making a Submission to a Technology Appraisal*. London, March 2001. Available from URL: <http://www.nice.org.uk/pdf/technicalguidanceformanufacturersandsponsors.pdf>
- Commonwealth of Australia. *Guidelines for the Pharmaceutical Industry on Preparation of Submissions to the Pharmaceutical Benefits Advisory Committee, Including Major Submissions Involving Economic Analysis*. Publications Production Unit: Commonwealth Department of Health and Ageing, September 2002. Available from URL: <http://www.health.gov.au/pbs/pubs/guidelines/content.htm>
- Gold RM, Siegel JE, Russell LB *et al.* *Cost-effectiveness in Health and Medicine*. Oxford University Press: Oxford, 1996.
- Drummond M, McGuire A. *Economic Evaluation in Health Care: Merging Theory with Practice*. Oxford University Press: Oxford, 2001.
- Kahneman D, Knetsch JL. Valuing public goods: the purchase of moral satisfaction. *J Environ Econ Manage* 1992; **22**: 57–70.
- Baron J, Greene J. Determinants of insensitivity to quantity on valuation of public goods: contribution, warm glow, budget constraints, availability and prominence. *J Exper Psychol: Appl* 1996; **2**: 106–125.
- Bateman I, Munro A, Rhodes B, Starmer C, Sugden R. Does part-whole bias exist? an experimental investigation. *Econ J* 1997; **107**: 322–333.
- Beattie J, Covey J, Dolan P, Hopkins L, Jones-Lee M, Loomes G, Pidgeon N, Robinson A, Spencer A. On the contingent valuation of safety and the safety of contingent valuation: part 1-caveat investigator. *J Risk Uncertainty* 1998; **17**(1): 5–26.
- Kemp MA, Maxwell C. Exploring a budget context for contingent valuation estimates. In *Contingent Valuation: a Critical Assessment*, Chapter 5. Hausman, JA (ed.) Cambridge Economics Inc: Cambridge MA, 1993; 217–265.
- Mitchell RC, Carson RT. *Using Surveys to Value Public Goods: the Contingent Valuation Method*. Washington: Resources for the Future; 1989.
- Cookson R, Maynard A, McDaid D. Wrong SIGN, NICE mess: is national guidance distorting allocation of resources? *Br Med J* 2001; **323**: 743–745.

17. Mayor S. News extra: NICE estimates that its recommendations have cost the NHS £575m. *Br Med J* 2002; **325**: 924.
18. Office for National Statistics. Census 2001, Key Statistics for Local Authorities: KS20 Household composition. ONS: London, 2001. Available from URL: [www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=6582](http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=6582)
19. Griffin J. *Well-being: its Meaning, Measurement and Moral Importance*. Clarendon Press: Oxford, 1986.
20. Broome J. *Weighing Goods*. Basil Blackwell: Oxford, 1991.
21. Hausman DM, McPherson MS. *Economic Analysis and Moral Philosophy*. Cambridge University Press: Cambridge MA, 1996.
22. Williams A, Cookson R. Equity in health. In *Handbook of Health Economics*, vol. 1B, Chapter 35. Culyer AJ, Newhouse JP (eds). Elsevier Science BV: Amsterdam, 2000; 1863–1910.
23. Culyer A. Commodities, characteristics of commodities, characteristics of people, utilities and quality of life. In *Quality of Life: Perspectives and Policies*, Baldwin S, Godfrey C, Propper C (eds). Routledge: London, 1990; 9–27.
24. Sen A. Capability and well-being. In *The Quality of Life*, Nussbaum M, Sen A (eds). Clarendon Press: Oxford, 1993; 30–54.
25. McGuire A. Theoretical concepts in the economic evaluation of health care. In *Economic Evaluation in Health Care: Merging Theory with Practice*, Chapter 1, Drummond M, McGuire A (eds). Oxford University Press: Oxford, 2001; 1–21.
26. Sen A. Rational fools: a critique of the behavioural foundations of economic theory. *Philos Public Affairs* 1977; **6**: 317–344.
27. Slovic P. The construction of preferences. *Amer Psychologist* 1995; **50**(5): 364–371.