

Debate

Clarifying the role of values in cost-effectiveness

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The cost of health care is a continual worry for policy makers, but economists frequently argue that policy makers should focus on the value of health care, not its cost (Cutler *et al.*, 2007). Cost-effectiveness analysis (CEA) is one of the tools used to assess the value of additional health care spending, but it often misunderstood. In his article, ‘Cost-effectiveness thresholds in health care: a bookshelf guide to their meaning and use’, Anthony Culyer helps to correct for this with a clear, helpful explanation of CEA and its application to health care. In doing so, he highlights the role of values, but he also illustrates why it is important to examine the assumptions of welfare economics critically and highlights a practical limitation of CEA.

The development of cost-effectiveness analysis and other formal decision tools were developed precisely as a means to ensure that the assessment of outcomes is not biased by the interests of any special in-power group but would instead reflect the broader interests of the public (Brown and Gusmano, 2013). These methods therefore aim for analytic clarity and repeatability, achieved through the employment of quantitative models – what Deborah Stone calls the ‘rationality project (Stone, 2011)’. Criticisms of these tools include concerns about the plausibility of an objective, analytic method for assessing potential outcomes. CEA has been charged with focusing on outcomes that can be measured easily, which may not adequately reflect what people care about most. Frequently, CEA represents individuals’ values as a single unit of measure, as reflected in monetized market choices, which critics hold tends to distort individuals’ values (MacLean, 1998). CEA has also been charged with failing to account adequately for benefits and costs that will not surface for many years or that may affect only distant people or nonhuman forms of life (Mandel and Gathii, 2006). Even when there is

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agreement about the relevant benefits and costs, there may be disagreement about the evidence required to attribute gains in health to a particular intervention (Maschke and Gusmano, 2016). Each of these decisions depends on value judgments and may be shaped by the availability of information.

Culyer's explication of CEA helps to make these judgments explicit. He focuses on the criteria for selecting a 'benchmark or threshold ratio of health gain to expenditure' to 'identify the least effective intervention that should be included in a public insurance plan' (Culyer, 2016: 1). Health economists often attempt to deduce appropriate CEA thresholds by estimating a population's 'willingness to pay' for reductions in the risk of morbidity or mortality (Viscusi and Aldy, 2003). When people weigh safety against the cost of safety equipment, for example, people are implicitly putting a price on their risk of mortality. Under one way of understanding the weighing process, for example, if an individual is willing to forego €200 to reduce the risk of mortality by 1/1000, this trade-off gives a value of life of €200,000 (Schelling, 1968). Many studies infer willingness to pay for small changes in mortality risk from observed choices in the labor markets and in markets for safety-related products (e.g. smoke detectors). Other studies ask people directly what they would be willing to pay for a change in risk using surveys. There is a sizeable variation in the estimates obtained from different studies, as well as large confidence intervals around the point estimates obtained from any single willingness-to-pay study (Robinson, 1986; Viscusi, 1993; Viscusi and Aldy, 2003; Becker *et al.*, 2007).

Culyer argues that the collective 'willingness to pay for health' – and therefore the appropriate threshold for a particular country – is reflected by the size of its health care budget. He assumes, like many health economists, that the goal of health policy is to maximize health and that interventions must be compared using a common measure, like the commonly used quality adjusted life year (QALY). He argues that policy makers should pay for health care interventions that maximize the amount of health that can be attained within a given budget. If a threshold is set too high and a country agrees to pay for expensive interventions that fall within this threshold, it may 'leave many much more cost-effective interventions, with much more impact on the country's health status per dollar, unfunded. Of course, as Culyer acknowledges, even if we set a threshold that aligns with the budget the assumption that high productivity interventions will replace the least productive interventions in the insured bundle is almost certainly false. First, those who benefit from low productivity interventions (patients, manufacturers and others) will fight to keep them in the insured bundle. Second, it is highly unlikely that society has evaluated most of the health care technologies that are already in use (Maschke and Gusmano, 2016), so we may simply not know whether the current system is, in Culyer's terms, 'internally efficient'.

Despite these limitations, the clarity with which Culyer articulates the assumptions of his approach is extraordinarily helpful because it allows decision makers to understand the opportunity costs associated with decisions. For

example, when considering the case of orphan drugs, he acknowledges that the goal of distributive fairness may compete with efficiency in universal health care systems. He argues that although funding for orphan drugs may be justified, it is helpful to understand what must be given up to accommodate this goal.

Culyer is particularly concerned with the use of high thresholds in low and middle income countries – and with political pressures, in all countries, to invest in high-cost interventions that drive out interventions that are more cost-effective. His examples suggest that high CEA thresholds, coupled with lobbying by pharmaceutical companies, crowd out inexpensive, highly productive interventions with very expensive, low productivity interventions, resulting in an inefficient health care system that misses opportunities to produce more health for the same level of spending. It is important to note that not all expensive new technology has low productivity. Recent studies indicate that ‘some new drugs to treat hepatitis C infection have favorable cost-effectiveness ratios of less than \$100,000 per quality-adjusted life-year in certain populations despite the expense of the treatments’ (Ubel, 2015). Even in these cases, Culyer would argue that it is likely that including such drugs in a public insurance package would be inefficient.

In all of these cases, his argument fits with a long-standing vision of politics, not as a process for debating competing visions of the good society, but as a force that interferes with the ‘rationality project’. Although politics often involves interest group and partisan struggles focused on shorter-term electoral goals, politics is also the process by which we make collective decisions about society goals. While Culyer acknowledges, particularly in his discussion of orphan drugs, that his assumptions about the goals of health policy are subject to dispute, he is clearly in favor of efficient health maximization as the appropriate goal for society. Early in the essay he argues that people’s health has ‘a moral worth that usually trumps that of non-health objectives of health care systems’. In defending efficient health maximization as a policy goal, Culyer’s argument enjoys all of the strengths but many of the traditional weaknesses associated with welfare economics.

Welfare economics values a particular form of efficiency and ignores distribution and liberty. Pareto efficiency is change that that leaves no one worse off, and at least one person better off. X is pareto superior to Y if and only if at least one person prefers X to Y and no one prefers Y to X. Paretian efficiency is adopted by welfare economists and public policy analysts because they focus our attention on the welfare of individuals in the society. The assumption behind the paretian criteria is that the welfare of society depends on the welfare of the individuals that make up that society (Stokey and Zeckhauser, 1978). The focus on individual welfare implicit in the use of pareto has a long tradition in political economy and political theory. Virtually all democratic theorists, including Locke, Rousseau and Madison, express concern for the welfare of individuals within society. A fundamental criticism of the paretian criteria, however, is their inability to provide a complete ranking of all social states. They do not, for example, differentiate among pareto optimal outcomes. Similarly, the paretian criteria is also incapable

of making comparisons among many suboptimal alternatives. As Stokey and Zeckhauser point out, ‘the Pareto criterion will not help us when some individuals are better off in one state and some another’ (Stokey and Zeckhauser, 1978; p. 272). This criticism of Pareto hints at its major shortcoming – it is focused exclusively on maximizing individual welfare and it is indifferent to the distribution of societal resources. As Amartya Sen explained, some states of Pareto optimality are ‘perfectly disgusting’ because these decision rules would allow all of societal resources to go to a small number of people as long as aggregate individual welfare is increasing and resources are not being taken away from anyone (Sen, 1970a).

Critics attack the implicit assumption that greater economic efficiency is the only goal of society. In addition to the fact that some Pareto efficient solutions may be highly inequitable, under certain circumstances, there may also be tradeoffs between the goals of liberty and efficiency. The dilemma of the so-called Paretian liberal was discovered by Sen during his attempt to ‘get around’ Arrow’s general impossibility theorem by allowing each individual in society to be a dictator over at least one decision. Sen demonstrates that a social choice rule that allows each individual in the society to be decisive for one pair of alternatives, combined with unrestricted domain and the Pareto principle, causes a cycle in which no solution is stable (Sen, 1970b). The liberal paradox turns on the question of ‘meddlesome preferences’ (Sen, 1970b).

Sen shows that if individuals have nosy preferences, and are sufficiently concerned about the behavior of others, liberalism is inconsistent with the Pareto principle. When individuals have meddlesome preferences and the liberal principle is enforced, Pareto optimality is overturned. The Pareto principle cannot be used exclusively to evaluate alternate social states if we care about liberty as well as efficiency. Sen argues the liberal paradox should be solved by placing greater weight on liberal values (Sen, 1970b), but it is not clear that it is appropriate, desirable, or even possible to impose a universal criterion on all issues and across all societies. The extent to which either liberal rights or Pareto efficiency concerns should triumph is, fundamentally, a political question.

The liberal paradox highlights the importance of the most central constitutional question faced by every political system: What choices should be left to the individual and what choices should be made collectively? As a society, we may place a high value on liberty and wish to secure a fairly large sphere in which liberal values triumph over meddlesome preferences and the Pareto principle.

A related and final objection to the Pareto efficiency is offered by both Karol Soltan and Stephen Elkin. These authors criticize Pareto because it is a strictly consequentialist criterion (Elkin, 1982; Soltan, 1987). They argue that institutions should not be judged only on their consequences. Some institutions and policies ought to be preferred because they have intrinsic value. The right to self-government, for example, may be preferred regardless of its consequences for the distribution of income or its ability to reach decisions quickly, etc. If we

acknowledge the intrinsic value of political institutions, the process by which we reach agreement about an appropriate threshold for CEA may be more important than the QALY per pound ratio used to assess new health technologies.

References

- Becker, G., K. Murphy and T. Philipson (2007), 'The value of life near its end and terminal care'. NBER Working Paper, <http://www.nber.org/papers/w13333>.
- Brown, L. D. and M. K. Gusmano (2013), 'Evaluation in analytic theory and political practice', *Journal of Health Politics Policy and Law*, 38(6): 1073–1081.
- Cutler, D. M., G. Long, E. R. Berndt, J. Royer, A. Fournier, A. Sasser and P. Cremieux (2007), 'The value of antihypertensive drugs: a perspective on medical innovation', *Health Affairs*, 26(1): 97–110.
- Elkin, S. (1982), 'Review: market and politics in liberal democracy', *Ethics*, 92(4): 720–732.
- MacLean, D. (1998), 'The Ethics of Cost-Benefit Analysis: Incommensurable, Incompatible, and Incomparable Values', in M. M. Carrow, R. P. Churchill and J. J. Cores (eds), *Democracy, Social Values, and Public Policy*, Westport, CT: Praeger, 107–122.
- Mandel, G. N. and T. Gathii (2006), 'Cost-benefit analysis versus the precautionary principle: beyond Cass Sunstein's laws of fear', *University of Illinois Law Review*, 2006(5): 1037–1080.
- Maschke, K. and M. K. Gusmano (2016), 'Politics, values, and access to untested medical interventions: the case of stem cell treatments', *Journal of Health Politics, Policy and Law*, 41(5): forthcoming.
- Robinson, J. C. (1986), 'Philosophical origins of the economic valuation of life', *Milbank Quarterly*, 64(1): 133–155.
- Schelling, T. C. (1968), 'The Life You Save May be Your Own', in S. B. Chaase (ed.), *Problems in Public Expenditure Analysis*, Washington, DC: Brookings Institution, 127–176.
- Sen, A. (1970a), *Collective Choice and Social Welfare*, San Francisco, CA: Holden-Day.
- Sen, A. (1970b), 'The impossibility of a paretian liberal', *Journal of Political Economy*, 78: 152–157.
- Soltan, K. E. (1987), *The Causal Theory of Justice*, Berkeley, CA: University of California Press.
- Stokey, E. and R. Zeckhauser (1978), *A Primer for Policy Analysis*, New York, NY: W.W. Norton & Company.
- Stone, D. (2011), *Policy Paradox: The Art of Political Reason*, 3rd edn, New York, NY: W. W. Norton and Company.
- Ubel, P. A. (2015), 'The importance of symmetry'. *JAMA*, 315(2): 133–134.
- Viscusi, W. K. (1993), 'The value of risks to life and health', *Journal of Economic Literature*, 31: 1912–1946.
- Viscusi, W. K. and J. E. Aldy (2003), 'The value of a statistical life: a critical review of market estimates throughout the world', *Journal of Risk and Uncertainty*, 27(1): 5–76.