

**Economic Theory and the Monetary
Valuation of Health Care**

**An Overview of the Issues as Applied
to the Economic Evaluation of
Health Care Programs**

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April, 1999

ISSN 1325 0663

ISBN 1 875677 94 1

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ACKNOWLEDGMENTS

The Health Economics Unit of the CHPE is supported by Monash University.

The Program Evaluation Unit of the CHPE is supported by The University of Melbourne.

Both units obtain supplementary funding through national competitive grants and contract research.

The research described in this paper is made possible through the support of these bodies.

AUTHOR ACKNOWLEDGMENTS

This paper forms part of a literature review commissioned by the Australian Department of Health and Aged Care to promote informed discussion of the measurement and valuation of health outcomes. It falls within the consultative process of revising the November 1995 edition of The Guidelines for the Pharmaceutical Industry on Preparation of Submissions to the Pharmaceutical Benefits Advisory Committee: including major submissions involving economic analyses. The views expressed in the paper are not necessarily those of the Department, the Pharmaceutical Benefits Advisory Committee or its Sub-Committees and do not necessarily reflect the final outcome of this aspect of the next edition of these Guidelines.

ABSTRACT

Cost-effectiveness, and cost-utility, analyses have historically been the most widely used techniques of economic evaluation applied to the evaluation of health care programs. However, in recent years there has been renewed interest in the use of cost-benefit analysis, which requires the assessment of programme benefits in monetary terms.

This paper provides a brief review of the economic basis for willingness to pay, and monetary valuation more widely, used in the conduct of cost-benefit analysis. This theoretical background is placed within the framework of the evaluation of health care programs, and in particular the context of priority-setting and the concurrent use of cost-effectiveness and cost-utility analyses.

It is concluded that cost-benefit analysis does have a strong conceptual basis in welfare economics, whereas other techniques of economic evaluation do not. The advantage of this being that it provides cost-benefit analysis with a logical structure for guidance on issues such as what costs and benefits should be included, and how they should be measured. However, it is clear that when deciding whether to adopt CBA as a desirable technique on which to base resource allocation decisions, a number of considerations at the theoretical level are to be made, prior to consideration of methodological issues.

Fundamentally, this means considering whether the maximisation of 'social welfare' (as defined in welfare economics), rather than 'health outcomes', is the basis on which decisions should be made. That is, should health (care) services be responsive to individual stated preference for programs, or concerned with maximizing the health status of the population? Furthermore, there are also considerations to be made to allow for the difference in ranking which will result from CBA, CEA and CUA, and decision-criteria developed to account for this in the decision-making process.

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Economic Theory and the Monetary Valuation of Health Care

An Overview of the Issues as Applied to the Economic Evaluation of Health Care Programs

1 Introduction

Due to the scarcity of available healthcare resources, an essential aspect of setting priorities between health care programs is the comparison of the costs and benefits incurred by each. The rationale for undertaking the economic evaluation of health care programs is therefore to aid decision makers in setting such priorities among programs competing for these scarce resources. The literature distinguishes between three main types of economic evaluations, all of which express costs in monetary terms. Their key difference lies in the unit by which benefits are measured and valued (Drummond et al, 1997).

Cost-effectiveness analyses (CEA) express the benefits in physical units, e.g. fractures avoided, tumors detected. These analyses have a narrow application in that comparisons can only be made when the unit of outcome is **exactly** the same. In other words, CEA operates with an *incommensurable* benefit unit which cannot be applied across different diagnoses, e.g. is the benefit from an avoided fracture any less than from a detected tumor? The purpose of cost-utility analyses (CUA) is to assist in making such comparisons. The idea behind the development of this method was to offer a *commensurable unit of health outcomes*, which is most commonly referred to in terms of quality-adjusted-life-years (QALYs). However, while CUAs enable wider comparisons than CEAs, the benefit unit is still restricted to *health*.

Cost-benefit analyses (CBA) express the benefits in monetary units. In so doing, benefits from a health care programme become commensurable with the benefits from any other public (or private) sector programme. These analyses, in theory, can thereby assist in answering two very important questions: (i) are the benefits from a health care programme any higher than the benefits which could be obtained had the same resources been used in any other sector of the economy, e.g. education?; and (ii) are the benefits of the programme in question any higher than its costs? A type of analysis which claim to provide answers to these two questions is clearly a powerful one (Drummond et al, 1997).

In the absence of a market, whereby society's valuation of a health care programme could be expressed, the problem is: *how do we measure benefits in monetary terms?* Of the different methods which exist, the most widely used is willingness-to-pay (WTP), which has gained increasing popularity in recent health economics literature (Diener et al, 1997). It is argued that WTP is superior to QALYs in the assessment of health outcomes for three reasons. First, WTP is the 'theoretically correct' approach, because of its foundation in welfare economics. Second, WTP imposes no restrictions as to which attributes of a programme people are allowed to value, as opposed to QALYs where only *health (status)* is being valued. This allows comparability across **all** public programs. Third, benefits are valued in the same unit as costs which is required for advising decision makers on improvements in *allocative* efficiency.

The aim of this paper is to assess the theoretical underpinnings of cost benefit analysis in health care in the context of the alternative techniques currently in more common use. Subsequent papers consider in more detail the practical application of theory and methodological issues concerned in operationalising WTP as a measurement technique (Olsen & Smith, 1999; Smith et al, 1999a; 1999b, 1999c, 1999d).

2 Background and Theoretical Basis

WTP is founded on what has been termed 'new welfare economics' (Boadway, 1974). Within this paradigm individual preferences are explained by how consumers are assumed to behave in a 'free', and perfectly, competitive market. The consumer is assumed to have his own subjective 'taste', and to allocate his budget across all commodities in such a way that his utility (overall well-being) is maximized. Importantly, individuals are assumed to be the best judge of their own welfare; the notion of 'consumer sovereignty'. Social welfare is assumed to be simply a function of these individual utilities, such that when one individual's utility increases, *ceteris paribus*, social welfare increases. One important condition for maximizing social welfare is that all commodities for which individuals are prepared to pay the *social* costs are available in the market (Boadway & Bruce, 1984).

2.1 Cost Benefit Analysis

Unfortunately, neither are all goods 'marketable', nor are all the goods which are available in the market offered in the socially optimal quantities. In such cases, economists talk about 'market failure'. Goods where the market is deemed to have 'failed' are usually controlled by government intervention in funding and/or provision. However, in the absence of consumer price signals of the relative value of these goods, the problem facing government is how to determine the socially optimal level of provision of the good. Among the first uses of CBA were large scale public investment programs in defence, water projects, the third London airport and other transportation programs (Carson et al, 1993).

A CBA could be viewed as a sophisticated investment appraisal with a societal focus. It compares the present value of all future benefits with the present value of all future costs. If the Net Present Value (NPV) of these streams is positive (i.e. $B > C$), the gainers can *potentially* compensate the losers, and hence society will experience an overall increase in welfare. While the estimation of social costs are not an easy task, still, it is the estimation of benefits which have attracted the most academic interest. Until fairly recently the most common approach to assigning a monetary value to benefits from health care was to use the increased value of production as measured by workers' wages (the so called 'human capital' approach). This has been recognised for a number of years as having little basis in conventional welfare economics, as it does not measure the value placed on morbidity or mortality avoided (Mishan 1979, Jones-Lee 1976). The alternative approach is based on assessing individual preferences for – or valuations of – health care programs.

While cost effectiveness analysis has dominated economic evaluation in health care for more than twenty years, there has always been some disquiet both with the theoretical underpinnings and the ambiguity of the decision rule associated with cost effectiveness analysis. Cost effectiveness analysis is clear where divisible health programs operate within a fixed budget and the maximand is health outcome. Once we move beyond that simple scenario the recommendations of a cost effectiveness analysis become unclear. If we have to maximise health for a given budget then listing projects in order by C/E ratio, and choosing those projects until the budget is exhausted,

will maximise health within the budget. Once the budget becomes open and we can choose to allocate resources from other sectors of the economy or government cost effectiveness can never determine whether a programme is worth doing. The only option in this case is to specify a 'cut off', or 'threshold', value for the C/E ratio beyond which the decision maker is not prepared to go and use that as the shadow price of benefits to determine which projects should be accepted and which rejected. One source of this cut off value is past decisions on health programs. This is a form of revealed preference for health care programs, but unlike the wage-risk studies it is not based on individual preferences for health programs. Rather it is based on past decisions such as court awards, injury compensation or health programme funding decisions.

As Mooney (1986) and Drummond (1997) point out, these past decisions may not be based on principles consistent with economic evaluation. For example court compensation payments may be made on the basis of human capital. Past funding decisions may also have not have been based on an accurate assessment of the costs and benefits of projects. Nevertheless if past decisions have been made using a consistent set of guidelines on economic evaluation with a rational process there is some ground for believing that they do represent at least a group view of the value of health gains. They may represent the minimum, or range, of values that society (or its elected representatives) is willing to pay for health gains. This is especially true if those decisions are made within a broader political process.

Cost benefit analysis in health care requires the monetary valuation of health outcomes. As Drummond et al 1997 (p209) summarize, there are three general approaches to the monetary valuation of health outcomes: (i) human capital (ii) revealed preferences and (iii) stated preferences of willingness to pay (contingent valuation). The human capital approach has been used for many years, particularly in the estimation of the total cost of illness associated with a disease. It is an approach to the value of a health programme based on a model of health investment. An individual is seen as investing in future health by using health care resources and at least part of the return on that investment in future healthy time is the increased productive capacity of the individual measured by the value of future earnings. There are at least three critical issues with this approach. First is whether the value of time is an appropriate measure of the outcome of a health programme. Second is whether the general value of time is the same as the value of healthy time. Third is whether the market wage is a good proxy for the money value of time for those in, and not in, the paid work force. Leaving aside the practical problems in estimating the shadow price of time, there remains the question as to whether there is such a thing as the 'value of time' *per se*, and if not what is the appropriate value of healthy time.

The conventional welfare economics approach to the question of the measurement of gains from economic activity is based on individual willingness to sacrifice resources to make those gains. In the context of health care this means that the appropriate value of health gains is the individual willingness to pay for those gains, either explicitly stated or as revealed by choices in the market place. In the context of much of health care the opportunity for the individual to express such an informed preference is severely limited. Nevertheless there are circumstances where individuals can reveal a preference for health over other goods. There is a substantial literature, for example, on the trade-off between risk at work and wages (e.g. Marin & Psacharopoulos, 1982). The

argument is that in a perfectly competitive market for labour excess risk would be expressed in wage premia. The riskier the job the more an individual would need to be compensated for the risk. This is consistent with conventional welfare economics as it is based on the revealed preferences of individuals and uses wages differences, not as a value of the opportunity cost of time, but rather as the value of risk. However to make such an approach operational it requires statistical techniques to disentangle the components of demand and supply in the labour market. That is, to separate out the differences in wages caused by differences in safety from other differences in job and background market characteristics. In practice the estimates of the value of life have been wide and seem to be context specific making generalisation to other causes of premature survival or injury or illness problematic.

In summary, two methods are available for estimating individual WTP. These are variously termed revealed (implicit or hedonic) preference and contingent (or survey) valuation. Revealed preference involves the use of a 'proxy' value for the benefits which can be observed in the market place. Analysis is then performed which tries to isolate the component of this proxy which is specific to the commodity under investigation. Examples of this method can be found in the environmental literature, where much of the initial development of the approach was made (e.g. Melinek, 1974). Studies have also been conducted using this method to place a value on human life, which involves identification of situations in which people trade-off wealth and risk in an observable market. This has mostly been in the labour market, where riskier jobs can be expected to pay a wage premium as compensation for that risk. The majority of implicit valuation studies have been in this area, and are often termed 'compensating wage differential' studies, although other markets have been used (Carson et al, 1993; Beattie et al, 1997).

The major problem with the revealed preference method is controlling for the influence of confounding variables. Although it has the advantage of being based upon real, rather than hypothetical, choices, the compensating wage approach, for example, has the disadvantage that wage rates depend upon many other factors besides risk. It is therefore necessary to control for these factors in order to isolate the pure wealth-risk trade-off. Clearly the reliability of any estimate derived in this way depends upon the quality of regression analysis and the nature of workers' *perceptions* of job risk. Another drawback is the production of highly aggregated results and the inherent incapability of generating estimates at the individual level. With respect to health care programs, the other major drawback is that there is likely to be no suitable proxy market to observe in most instances.

Contingent valuation (CV), in contrast, involves asking individuals directly in a hypothetical survey the *maximum* amount they are willing-to-pay (WTP) to have the commodity in question, or the *minimum* amount they would be willing-to-accept (WTA) in compensation to be deprived of it. Among the various theoretical measures which exists (see O'Brien and Gafni 1996 for an overview of these measures), WTP is the most widely applied.

2.2 WTP and Health

It appears that the environmental economics literature has been the arena for the most important methodological developments of the WTP method over the last two decades. The dissemination of WTP to health economics has passed through the sub-discipline of environmental economics, but also from the economics of risk and uncertainty (Johansson, 1995).

The WTP method is primarily used for valuing public goods, i.e. goods for which rationing is neither *feasible* nor *desirable*. Rationing is undesirable when there is no rivalry in consumption, and infeasible when those who do not pay cannot be excluded from consumption. Environmental goods, such as clean air, typically have these characteristics. Most types of health care, though, are different from environmental goods in that it certainly is feasible to ration their use. That is done in every country, either by price or quantity rationing. Price rationing is done through the market by out of pocket payments or to those who have taken out insurance. Quantity rationing is done through, for example, medical need or waiting time. In countries where health services are not rationed through market prices, it is primarily because this rationing device is thought to be *undesirable* for health policy reasons.

3 On the Theoretical Advantages of CBA Over CEA and CUA

In contrast to CUA, CBA (using WTP as the means to value benefits) does accord with standard welfare economic theory, in particular, the 'Potential Pareto Improvement' (PPI) principle (also termed the Kaldor-Hicks criterion, or the compensation test). Only under very restrictive conditions will CEA, or its variant CUA, rank programs in the same way as CBA (Johannesson, 1996). Simply stated, a PPI is said to exist where the sum of benefits to those benefiting from a programme is sufficient in principle to at least fully compensate the losers' losses from the programme. A simple example would be to imagine passing a hat around to each member of society, with those who would gain from the programme putting into the hat the maximum amount of money they would be willing to pay for the programme, and those who would lose taking from the hat the amount that would be just enough to compensate them for their losses. So long as there is an amount left in the hat at the end of this exercise, the programme would result in a Pareto improvement in social welfare. This conclusion is subject to the caveat (usually ignored in practice) that the project does not substantially change the distribution of income. If it does then the so called compensation test can fail to be decisive. In general a money measure of individual willingness to pay provides us with only part of the information necessary to undertake a social cost benefit analysis. What is needed in addition is a rule to aggregate those money values into a social value. In other words an "ethical rule for weighting gains and losses accruing to (different groups of) individuals in society"(Johannson, 1995). The simple rule of summing up all individual WTP to evaluate a change in social welfare is only valid if everyone has the same value of marginal income. In other words only if a dollar can buy the same gain in welfare for everyone can we assume that a positive sum of all WTP across individuals represents a positive change in social welfare. As Johannson (1995) puts it:

"The only case in which one can really be sure that one's monetary measures provide the correct information is when welfare distribution is optimal and the project is so small that it leaves the marginal social utilities of income unchanged."

While most medical treatments will have a very small impact on the distribution of income and so will not affect the marginal welfare of income *per se*, as we discuss below it is not so obvious that the distribution of health and welfare is socially optimal or that society has at its disposal the means to make unlimited and costless redistributions of that welfare. In the absence of established ethical judgements on the relative value of health to different groups of individuals some pragmatic choice of aggregation method is necessary. These might include among other approaches: ignoring the issue altogether (a common approach) or sensitivity analysis around distributional weights for social groups (for example by income, ethnicity, gender, or illness category).

Virtually all economists would accept that CBA has its foundation in neoclassical welfare economics. They also would recognise that individual income compensation or WTP for health gains is the approach most consistent with that body of theory. However, it is one thing to acknowledge that WTP has this theoretical basis, and in that sense is 'theoretically correct', but it is another to use that as an argument *per se* for applying it to health and health care. A technique

either does, or does not, accord with the principles outlined within a theory. In this sense, as judged from whether being based on neoclassical welfare economics, WTP is indeed superior to QALYs. However, the argument for the superiority of WTP in this context has been made more on the 'normative' grounds that it is *right* because it holds to the *right* theoretical foundation, i.e. neoclassical welfare economics. As Johannson (1995) states

"The theoretical basis for the measurement of benefits in cost-benefit analysis is economic welfare theory and the concept of consumer surplus. Willingness to pay (WTP) and willingness to accept (WTA) is the theoretically correct benefit measure in welfare theory and cost benefit analysis ... With the CV method equivalent or compensating variation is measured. The method is therefore consistent with utility theory and welfare economics." (p7-8).

Some such as Pauly (1995) appears to go even further in holding that WTP represents the **only** benefit measure with a basis in economic theory. In fact the debate on whether individual values or socially determined preferences is the appropriate basis for economic evaluation is not a new one. While the 'welfarist' or 'Paretian' approach to economic evaluation has been the dominant theoretical basis for CBA, there has never been unanimity on the appropriate theoretical basis for economic evaluation. The classic textbook Paretian approach (e.g. Ng, 1979; Boadway, 1974) contrasts with the so-called decision making approach of Sugden and Williams (1978). The strength of the Paretian approach – its consistent framework which allows clear definition of appropriate costs and benefits in the measurement of efficiency – is balanced by its blindness to social priorities other than the maximization of individual welfare. At a practical level, since most decisions are made in health between competing resources in the context of a fixed budget, cost-effectiveness analysis may be all that is required. If the budget constraint is known, the shadow price of health gains are implicit in decisions. This is often taken as an illustration of the fact that CEA is limited by an inability to choose between interventions without some additional decision criterion being introduced. Either a limited budget or a willingness to pay for health gain can be used as a decision criterion. Since maximum health, subject to a defined budget constraint, implies a willingness to pay at the margin, the criteria are mirror images.

The choice between whether to explicitly estimate individual WTP and aggregate to social monetary value of health gains, or whether to choose projects which maximize health subject to a given budget constraint is seen by some as merely a question of practicality. Johannson (1995), for example, argues that the informational requirements of determining the cost and benefits of all programs subject to a single budget constraint has too high an informational requirement. Therefore, they argue, defining willingness to pay for a life year has the advantages that it will always be an absolute decision criterion even if the costs and benefits of all alternative interventions are unknown. This is misleading since the welfare economic foundation of the significance of willingness to pay for health is premised on fully informed consumer weighing up marginal expenditure across the full range of alternative expenditures, not just in health, but across all consumption and investment. It is a moot point which has the greater informational requirement.

Thus while it is true that if we know what the individual (and community) is willing to pay for a life year we can use that in a CBA to determine the efficiency of an intervention, we need to be clear that the WTP value is based on an aggregation of knowledge of the costs and benefits of all alternative courses of action. This hardly seems less onerous than estimating the costs and benefits of all interventions from a given budget. In addition, if we explicitly limit the analysis to a single (health) budget the calculation becomes less onerous. The objection to such a process is that it may produce inconsistent valuations of welfare gains across sectors. This is only a problem if we regard such consistency as important. For example the context of saving a life year in transport may be quite different from saving a life year in health care and we may not be concerned to have a consistent value of life used across those two sectors. In short, there is no reason why decision makers may not take account of extra welfarist considerations. That is to say they may reject a social welfare function based solely on the simple aggregation of individual preferences. Using CBA, or widening the scope of QALY's to cover non-health outcomes, may be ways of comparing the value of health expenditure relative to other public expenditures, but it requires both an acceptance that programs have the same objective across sectors and that the practical manner of measurement are solved. In the end the choice between CBA and CEA in health care may come down to: (i) issues about the relative importance of efficiency and equity in health care; and (ii) views on the practicality of estimating the value of health outcomes in a way comparable to other programme outcomes in the public sector.

To hold that something is right because it accords with a theory is more religious than scientific. However, it is surprising to experience - in texts as well as in discussions - how frequently many economists justify the appropriateness of WTP as a model by reference to its link to welfare economics. The rightness of an evaluation approach is not to be judged from its disciplinary basis (economics), nor from its theoretical foundation (neoclassical welfare economics). Rather, it is to be judged on the basis that its premises and value judgements correspond with wide commonsense; a method is 'correct' if society wants to use it as a basis for allocating health care.

While sometimes acknowledged, most economists would have been taught that this theory of welfare economics is normative. The crucial issue then is the extent to which the value judgements correspond with those of the institutions whose decision makers WTP surveys are supposed to aid. In a private insurance market, or in patient payment markets where health care is distributed according to how individual preferences are expressed through WTP, there seems to be no clash of values. In cases of market failures, WTP would be used as a way of 'constructing a market'. Interestingly, in the areas where WTP studies were initially applied, the method sought to *construct* markets for goods which had never been offered in a market. Yet, health care is different in that markets have been deliberately *deconstructed* in many countries for equity *and* efficiency reasons. The background for public health services is to distribute health care according to *need*. Is then WTP a potentially appropriate measure of need? If not, there is a clash of values between welfare economics and public health policy.

Although CBA, and WTP, is therefore a 'theoretically correct' technique for evaluating the 'worth' of programs, it has not been well used in the realm of health, largely because of sensitivity to the expression of health benefits in monetary terms. "It is thus the dependence of CBA on the

monetary valuation of health benefit and the method for obtaining this estimate that have motivated the reliance on CEA in the field of health and medicine.” (Gold et al, 1996, p28).

3.1 ‘To Each According to Need’ or ‘To Each According to Utility’

The inferral of individual values to public policies has two dimensions. First, it is assumed that *all* preferences which are signaled through WTP are relevant in the given social context. No inquiry is made into the social importance of the source of the utility, i.e. the distinction between needs and desires. If a stated WTP for a particular intervention reflects an individual's desire for pleasant amenities and appealing process of care, that is to be dealt with as an equally legitimate source of utility as if the same WTP were to reflect the value of a health improvement. Of course, if the health service aims to respond to individual preferences, there is no clash of values. However, if the health service aims to meet people's ‘health needs’, WTP may not be an appropriate way of signaling individual variations in intensities of need, because *not all preferences are relevant in terms of being related to health needs*. It is a fundamental philosophical issue to question whether all individual preferences should be counted unfiltered in a social context. Which preferences are there for the health service to meet? Should the government fund in proportion with *utility*, or in proportion with *need*? While these questions clash with the concept of consumer sovereignty, it is still the case that most publicly funded health services are rooted in *needs* rather than *preferences*.

Secondly, it is assumed that all relevant preferences are signaled through one's WTP. No distinction is made between the individual as consumer and the individual as citizen. The CBA method seeks subjective personal preferences (‘how much are *you* WTP?') and *not* ethical preferences related to the person's view on what should be the basis for priority setting in the public health service. The individual is implicitly assumed to have *no* preferences of relevance for this decision making beyond those which he signals through his WTP. There is evidence that the priority setting implied from individuals' WTP figures differ from what is expressed when doing explicit ranking of the same programs (see e.g. Olsen 1997).

3.2 On the Consistency of Ranking Programs using CBA, CEA and CUA

Over the last two or three decades there have been thousands of cost-effectiveness and cost-utility analyses undertaken. Many of these have been used in process of priority-setting, in ‘league table’ approaches or in other ways (such as the ‘Oregon experiment’) (Coast et al, 1996). Within Australia, the Pharmaceutical Benefits Advisory Committee has considered a substantial body of evidence on the cost effectiveness of drugs in the last seven years or so. There is some evidence that the process has produced decisions broadly consistent with a notion of maximising health subject to an implicit budget constraint, at least for life extending drugs. That is to say there has been a relationship between decisions to list a drug on the PBS and the estimated cost per life year saved of that drug. It is therefore natural to ask the question: “would the introduction of WTP as an outcome measure within a cost benefit analysis be consistent with either past decisions or contemporaneous decisions based on cost effectiveness analysis?”.

For the reasons outlined above the short answer is that there is no *a priori* reason to expect that a ranking of drugs by cost effectiveness ratio would give the same ranking as that produced by a ranking based on cost benefit ratio. Nor would all drugs which would be listed on the basis of health maximisation subject to a defined cut off value or explicit budget constraint be similarly listed on the basis of a positive net present value. The primary reasons for this are straightforward. First, a cost benefit analysis will likely include considerations additional to those in the “health only” outcome measure used in a cost effectiveness or cost utility analysis. Second, a preference based on willingness to pay will be influenced by ability to pay and the value of money in other uses. The latter will not be constant across individuals and will likely vary with income. Therefore even if cost utility analysis did capture preferences and consumer welfare it would not weight those preferences by a (non constant) value of money. Thus, only under very restrictive and unlikely circumstances would cost benefit analysis give the same ranking of programs to cost effectiveness analysis.

This issue is discussed in detail in Johannesson (1996), for cases where a constant WTP per QALY may hold, and where it does not. It is clear from Johannesson’s analysis that if such constant WTP is reflective of actual WTP then CUA *could* yield results the same as CBA. However, where WTP per QALY differs across individuals and across the size of the QALY change (more realistic, and following the law of diminishing marginal utility) then CUA and CBA will be predicted not to give the same results, in terms of programs which would be recommended. It is particularly important to assess whether this WTP will decrease the more QALY’s are gained (diminishing returns), which is more likely in practice than constant WTP per unit of health outcome gained. However, this requires additional assumptions, such that the health units are homogenous, and WTP is therefore not, for example, effected by the age of recipients, type of disease or other characteristics of the ‘contingent market’, and that such health effects have a predictable, generally constant, WTP per unit. Both of these are highly unlikely in our view. Consider the imputed values of life that have been estimated over the years (e.g. see Jones-Lee, 1989) - there is a huge variance in values, which demonstrates, in our view, that the values, even for something one might view as homogenous as ‘life’, are highly context specific. This has implications, of course, for the use of CUA studies in ‘league tables’ but there is not sufficient space to consider that issue in detail here.

The conclusion from this, however, is that CBA and CUA are unlikely (at best) to provide comparable results in terms of the ranking of programs, and we would therefore not recommend any comparative assessment be undertaken. Furthermore, it also cast doubt upon the validity of attempting to derive an estimation for the community’s WTP for a QALY gained; the resultant values will be too context specific, involving the requirement to ‘price’ a great variety of QALYs according to age, initial health status etc. This is clearly not impossible, but would be difficult task.

4 Conclusion

Cost benefit analysis has a strong basis in a branch of economic theory called 'welfare economics'. Other techniques of economic evaluation are not grounded in that body of theory, to advantage of which is that it provides a logical structure for guidance on issues such as what costs and benefits should be included in an economic evaluation, and how they should be measured.

However, when deciding whether to adopt CBA as a desirable technique on which to base resource allocation decisions, a number of considerations at the theoretical level are to be made, prior to consideration of methodological issues. Fundamentally, this means considering whether the maximisation of social welfare (as defined in welfare economics), rather than 'health outcomes', is the basis on which decisions should be made. That is, should health (care) services be responsive to individual stated preference for programs, or concerned with maximizing the health status of the population? Furthermore, there are also considerations to be made to allow for the difference in ranking which will result from CBA, CEA and CUA, and decision-criteria developed to account for this in the decision-making process.

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