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Allocating Vote:Health — 'Needs Assessment' and an Economics-Based Approach[#]

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ABSTRACT

This paper critiques 'needs assessment' as a basis for allocating public funding of health and disability services and discusses an alternative economics-based approach. In essence, the former approach ignores the effects on health outcomes of health care spending at the margin while the latter focuses explicitly on these considerations. A simple diagrammatic model is introduced that illustrates at a conceptual level the (micro)economic constraints and choices available to policy-makers. Finally, some practical steps and unresolved issues in implementing the economics approach are considered.

[#]We are grateful to Martin Richardson for his comments on this paper.

1. Introduction

This paper considers the means by which public funding of health and disability support services might be allocated, and introduces a simple diagrammatic model for analysing the implications of allocative decisions. The rationing problem which gives rise to this paper, in essence, is: Faced with a fixed amount of public money ('Vote:Health') and a range of health care and disability support services competing for funding, how much should be spent on each? The answer to the question that precedes this — How big should Vote:Health be? — is assumed given.[1] Similarly, the succeeding issue of Who should get the interventions that are purchased? is not the focus here (although the apparatus developed in this paper could easily be adapted to this question); this is currently dealt with via 'needs-based' (i.e., non-economics) approaches such as points systems.

The means by which decisions concerning the allocation of Vote:Health are reached may be categorised into *implicit* and *explicit* approaches. The former rests on politically-driven processes and ad hoc bureaucratic mechanisms; the latter describes any approach which attempts to develop rules and guidelines that enable such decisions to be made in a manner that is consistent and transparent (Devlin and Hansen 1999). Although spirited defenses of implicit approaches exist [citing the complexity, cost and disutility associated with explicit approaches — see Mechanic (1997) and Coast (1997)], the present paper proceeds on the basis that the properties of explicit allocation are desirable, since they facilitate public debate and scrutiny, as well as public sector accountability over these inevitably difficult yet unavoidable choices.

Explicit approaches to resource allocation may be further categorised into *needs*- and *economics*-based approaches. In the following section we critique both the (lack of) intellectual foundations for needs-based allocation and its failure to provide any practical guidance for decision making. We then set out a simple (micro)economics apparatus intended to illuminate the key issues, at a conceptual level, associated with allocating health care spending between different health care interventions. Finally, we consider the practical steps and some unresolved issues in implementing the economics approach to resource allocation in the health sector.

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1. Broadly-speaking, Vote:Health is determined by political processes; economics has little to contribute to this 'grand' rationing problem since a method for *explicitly* comparing the outputs of the health care sector with other sectors, for example, education or defence, hasn't been invented yet (Devlin and Hansen 1999).

2. A Critique of 'Needs Assessment'

Publicly-funded health services are so (i.e., *publicly*-funded), presumably, because of society's determination that health care services should be allocated to those who need them, rather than only to those who are willing and able to pay for them. Thus the notion that resource allocation decisions might be based on some means of assessing need has a strong intuitive appeal. However, the strength of this appeal is matched, paradoxically, by its conceptual and practical weaknesses as a guide for decision making.

There are unresolved *definitional* issues regarding need. Is need the degree of impact of disease on someone's life (independent of the extent to which services exist that can modify that impact)? Or the extent to which that impact can be alleviated by treatment? (the latter definition is synonymous with ability to benefit).

There are issues regarding the *measurement* of need. Given that needs assessment is intended to facilitate resource allocation between services, some measure is required that allows need (whether defined as the impact of a disease, or the effects of treatment) to be measured in a generic fashion across a range of areas. Examples of such generic measures of health outcomes are Quality Adjusted Life Years (QALYs), Disability Adjusted Life Years (DALYs)[2] and Healthy Year Equivalents (HYEs) — yet many of those who advocate needs-based approaches to resource allocation reject such measures (Evans and Price 1999).

More fundamentally, leaving aside problems of definition and measurement, it is not clear what advocates of this approach would do with information on need in order to inform allocation decisions; that is, there is a lack of any logical *decision rule*. For example, would resources be allocated pro rata with needs? Perhaps needs assessment could be used to provide an ordinal ranking (i.e., the disease with the greatest needs should get more resources than the disease with the next greatest needs and so on). But there is no guidance to identifying the point at which we decide: 'That is enough spending on the top need, now let us move to the next' (Mooney 1996).

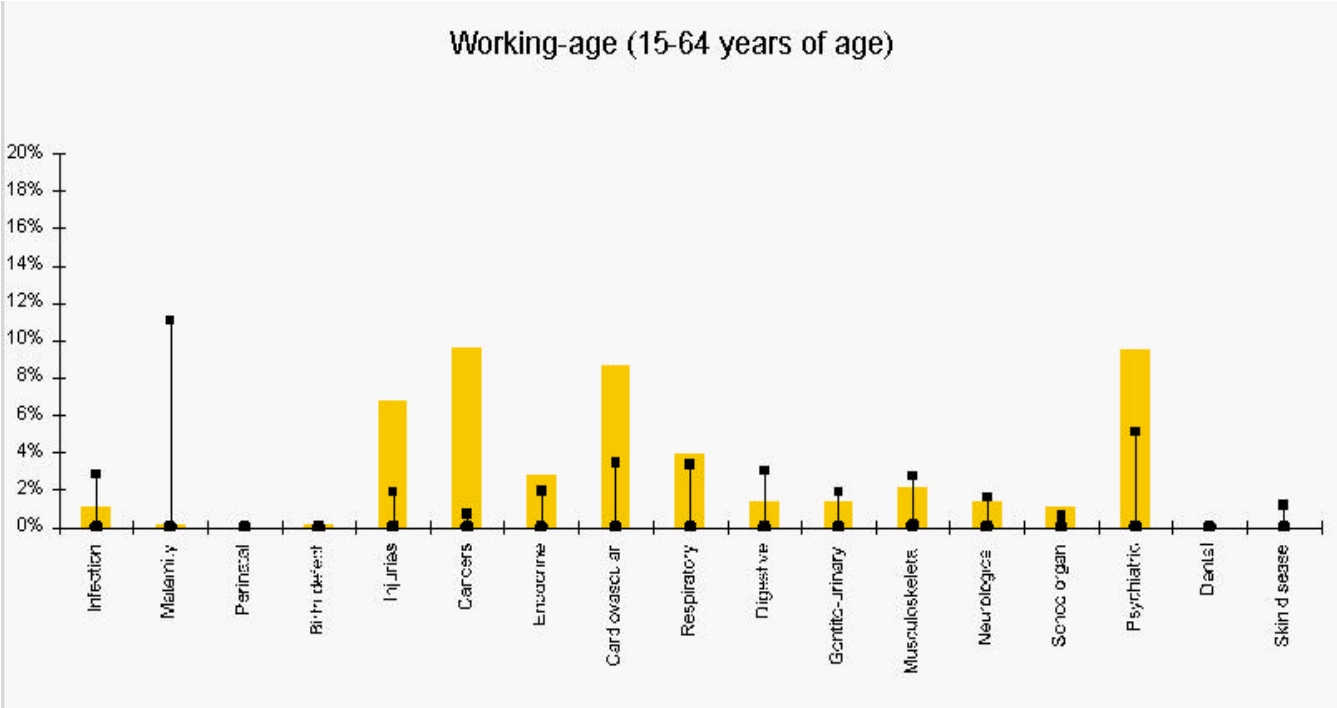
Finally, needs assessment ignores the relative costs of meeting needs. If costs are not considered to be relevant in priority setting, this would mean that, for example, the

2. QALYs and DALYs are compared in Section 5.

allocation of resources between two services would not change even if the cost of one doubled and the cost of the other halved.

Some of the problems with needs assessment may be illustrated by Treasury's distributional analysis of the burden of disease and health expenditure in New Zealand. Figure 1 below, which was included in Treasury's address last year to the WHO's International Burden of Disease Network, is reproduced from Treasury's background paper 'Health Funding'.

Figure 1: Public funding of medical and disability services, shadowed by total years of life lost



Health needs in a range of health service areas are represented by shaded bars which indicate the number of Disability Adjusted Life Years (DALYs) currently lost in each category.[3] This is shown alongside current allocations of public funds to each category, represented by lines. This appears to provide prima facie grounds for questioning the allocation of funds to, for example, maternity services (high spending, low need; the 2nd bar in the figure) and psychiatric services (high need, low spending; the 3rd–to-last bar).

Unfortunately, what this static analysis fails to show is the link between observed spending and DALYs *averted*. Observations about the current burden of disease in any one category reveal nothing about the number of DALYs averted as a result of current spending. It also conveys nothing about the incremental change in DALYs consequent upon an increase or decrease in current spending (Williams 1999).

If, for example, a given quantum of funds were reallocated from maternity to psychiatric services, the increase in ill health (DALYs) from reduced maternity care

3. The use of DALYs in this context, and their merit relative to other available measures, is somewhat controversial (Williams 1999). In the final section of this paper we discuss this and other unresolved issues regarding the measurement of health outcomes.

may exceed the reduction in ill health (DALYs) from increased psychiatric care. Figure 1 contains no information on the marginal gain in health terms from reallocating resources to psychiatric care, nor the corresponding opportunity cost of health foregone from reduced maternity services. Thus the reallocations implied by the figure and its face-value interpretation, may in fact end up *increasing* the total amount of need (DALYs) in the community!

In conclusion, we agree with Mooney (1994, p. 39): "Needs assessment is based on faulty logic — the faulty logic of the imperative of 'the size of the problem'. That faulty logic needs to be exposed — and exposed again. It is so pervasive in health care. The fact that it is pervasive, however, is no reason for believing that it is in any sense right."

In contrast, *economics*-based approaches to resource allocation decisions have a clear focus on the *effect* that resources can have in avoiding ill health and disability, and the value placed on that effect relative to the opportunity cost of those resources. The notion of 'value for money' which lies at the heart of the economic approach is often typified as seeking to maximise health outcomes from available budgets, but can readily be adapted to incorporate the value placed on other objectives (such as changing the distribution of health outcomes throughout the community). The following section develops an apparatus for modelling the constraints and choices available to policy-makers in the allocation of health care spending.

3. A Microeconomics Model of the Allocation of Vote:Health

There are many types of health care, but for the sake of building up a simple graphical model we assume there are just two:[4] HC_1 and HC_2 (e.g., knee surgery and chemotherapy). The model developed below is built up from three key components, each of which is explained in turn.

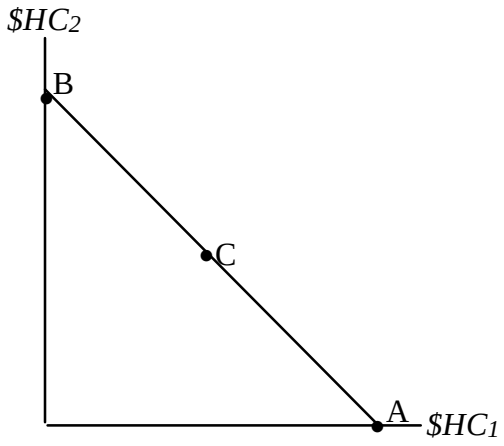
(i) The scarcity of Vote:Health — the 'budget constraint'

We start with the obvious point that, for given health care prices (p_1 and p_2), Vote:Health is divided between spending on HC_1 (i.e., $HC_1 \times p_1 = \$HC_1$) and spending on HC_2 ($HC_2 \times p_2 = \$HC_2$); that is, $\$HC_1 + \$HC_2$ = Vote:Health. This 'budget constraint' is illustrated in Figure 2, where the axes are $\$HC_1$ and $\$HC_2$, and the

4. The principles developed below extend easily to higher numbers of health care types, but they cannot be illustrated graphically (i.e., two-dimensionally).

diagonal line (the 'budget line', with slope = -1) shows all feasible divisions of Vote:Health between the two. At one extreme (see point A) all of Vote:Health could be spent on HC_1 and none on HC_2; or vice versa (point B); or half and half (point C). And so on: all combinations of $\$HC_1$ and $\$HC_2$ that lie on the budget line are feasible. (Which is the best? is the question facing policy-makers.)

Figure 2: The budget line



(ii) The effectiveness of health care — the 'health production function'

Each dollar spent on health care produces an increase in the health of the individual who receives the health care. This can be decomposed into an increase in life expectancy (i.e., the raw quantity of health) and/or an improvement in its 'quality' (e.g., less pain, disability, anxiety, etc.). (In practice, these 'outputs' could be measured as QALYs gained or DALYs avoided, suitably discounted to reflect 'time value'.) However, with each extra dollar spent on HC_1 or HC_2 the magnitude of the health increase diminishes (but remains positive), since the effectiveness of the health care is assumed to decline (but remain positive).[5]

Furthermore, health care is but one of the many determinants of an individual's health status; others include diet, exercise, genetic make-up, and a host of environmental and other lifestyle factors. In general therefore, individuals who do not consume health care have a stock of health (i.e., a life expectancy of a certain quality), which increases as a

5. The possibility of 'over-treatment' in the sense that the marginal effect on health becomes negative (e.g., due to iatrogenic illness) could easily be demonstrated in the health production function.

particular type of health care is consumed (and the other type and the other factors are held constant) but at a *decreasing* rate.

These features, in the context of *groups* of individuals, are represented by the 'production functions' in Figures 3 and 4. In each, the horizontal axis is spending on a particular health care 'input' (i.e., *HC*$_1$ or *HC*$_2$, the same as the axes in Figure 2) and the vertical axis is the *aggregate* health status of the individuals who receive it (H_1 and H_2, denominated in the same units).

Figure 3: Health production function for HC $_1$

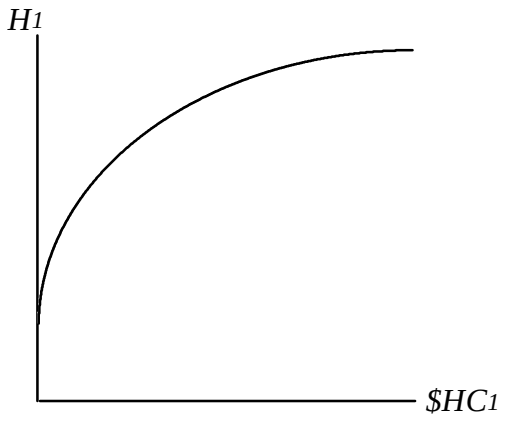
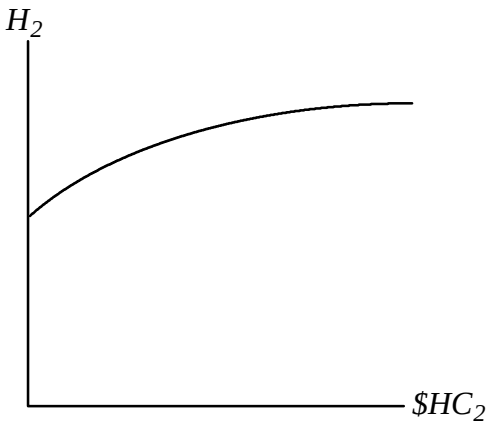


Figure 4: Health production function for HC $_2$



The health axis intercepts reflect the assumption discussed above that if no health care is consumed an individual's health stock (i.e., quality-adjusted life expectancy) is positive (but lower than if no health care is consumed), and therefore aggregate health status is positive. So that the intercepts in the figures can be meaningfully compared it is assumed that the same number of people have each ailment and therefore as many are eligible for HC_1 as for HC_2. This allows the difference in the intercepts to be interpreted as the difference in the average 'health needs' of the respective groups; thus the lower intercept in Figure 3 indicates that potential recipients of HC_1, on average, are 'sicker' (i.e., have a lower stock of health) than HC_2 recipients and are therefore deemed in this model to have 'higher need'.[6]

6. As noted in the previous section, there are definitional problems with the term 'need' and no precise or consistent use of this term in the literature. The sense in which it is used here — to indicate the stock of health — is used to distinguish between need and capacity to benefit given that recent New Zealand commentators (Price 1999 and Evans 1999) have emphasised this difference and the relevance of the former in making ethical allocative decisions.

The positive but decreasing slopes of the production functions represents the assumed positive but decreasing marginal effects on *aggregate* health status of increasing amounts of $\$HC_1$ and $\$HC_2$ respectively. At the aggregate level, this can be justified in two ways. One, each increment in spending is allocated evenly amongst the individuals with the ailment, each of whom, as discussed earlier, exhibits diminishing marginal (health care) productivity in terms of health. Or, two, individuals with the greatest capacity to benefit from the health care are treated before individuals with lesser capacities to benefit.

Either way, as well as having different intercepts, the production functions as drawn have different curvatures. Specifically, for small amounts of spending H_1's production function is steeper than H_2's, for large amounts it is flatter. This indicates that $\$HC_1$ is initially more efficacious for raising health at the margin than $\$HC_2$, reflecting a difference in the relative capacities of the individuals in the groups to 'benefit' from health care spending.

Thus Figure 3 represents a patient group with relatively high need (HN) and, initially, a high capacity to benefit (HB) at the margin from $\$HC_1$ (i.e., their profile is HN-HB), while Figure 4 is for a group with low need and low capacity to benefit (LN-LB). Logically, two other profiles are possible: low need and high capacity to benefit (LN-HB) and high need and low capacity (HN-LB). Recognising these four possible profiles permits five pairings in addition to HN-HB versus LN-LB (Figures 3 & 4). For exposition purposes we stick with the latter for now, but later raise the possibility of different implications arising from alternative pairings.

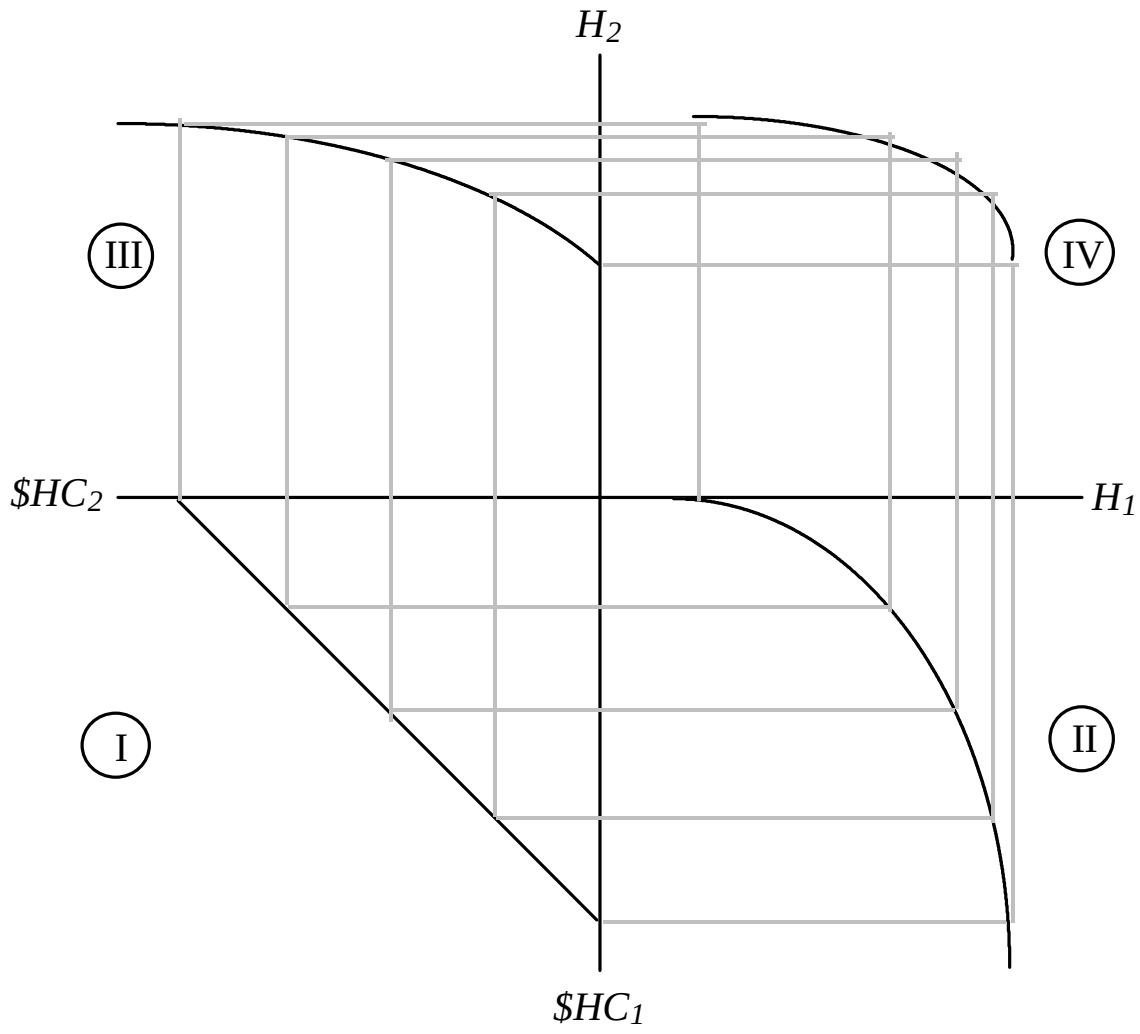
(iii) How much health from Vote:Health? — the 'health possibilities frontier'

Figure 5 combines Figures 2-4 to trace out all combinations of health, H_1 and H_2, over the two treatment groups that can be afforded with Vote:Health. The feasible divisions of Vote:Health between $\$HC_1$ and $\$HC_2$ are shown in quadrant I (the budget line). Each of these spending pairs is then transformed via the appropriate health production function in quadrants II and III into a (H_1, H_2) co-ordinate in quadrant IV, thus tracing out the 'health possibilities frontier' (five examples are shown in Figure 5). Thus the menu of affordable H_1 and H_2 pairs is revealed — from which one pair must be chosen.

Note that the shape and position of the health possibilities frontier that is derived depends on the particular health production functions assumed — distinguished by

'need' (intercept) and 'capacity to benefit' (slope), as discussed above — as well as the values of Vote:Health and health care prices p_1 and p_2 that are assumed. Any change in these parameters (discussed later) results in a new frontier.

Figure 5: the budget line (quadrant I), the health production functions (quadrants II and III), and the health possibilities frontier (quadrant IV)



Choosing the best allocation of health — a value judgement

Which point on the health possibilities frontier in Figure 5 should 'society' (i.e., policy-makers) choose? This is the translation of the question raised at the beginning of the paper, viz.: "Faced with a fixed amount of public money ('Vote:Health') and a range of health care and disability support services competing for funding, how much should be spent on each?" Once the desired point on the health possibilities frontier is pinpointed

it is a trivial matter to retrace, via the health production functions, to the corresponding point on the budget line, thereby identifying the desired spending mix (and, via p_1 and p_2, the corresponding quantities of HC_1 and HC_2).

This question is inescapably an ethical one: the answer to it depends on a value judgement. And a relatively strong value judgement at that; Pareto efficiency is not sufficient here, since all it requires (as we have already assumed) is that the allocation that is chosen is *on*, rather than *inside*, the health possibilities frontier. Pareto cannot assist us in selecting which of the points on the health possibilities frontier is 'best', since improvements in one group's health can only be achieved at the expense of a reduction in another's. Thus the particular value judgement adopted (from the infinite number possible, in theory) must identify the tradeoffs between H_1 and H_2 that are deemed acceptable — that is, allocations that are 'efficient' as more broadly defined than under the Pareto definition (or 'equitable' or 'distributionally just', as such aggregations are more commonly known).[7]

For exposition purposes we have restricted our analysis to illustrating and contrasting utilitarian (or Benthamite) and Rawlsian (or 'maximin') value judgements, since these appear often in the literature. Other less popular theories of distributive justice include: entitlement, 'the decent minimum', egalitarian and envy-free allocations — see Pereira (1993). Each can be represented by the apparatus demonstrated in Figure 6. Then, as above, from the desired point on the health possibilities frontier it is a simple matter to retrace to the corresponding values of $\$HC_1$ and $\$HC_2$.

The utilitarian value judgement dictates that the total amount of health produced from Vote:Health be maximised. In other words, H_1 and H_2 are treated as perfect substitutes (regardless of to which group they accrue) and it is simply a matter of choosing the pair from the health possibilities frontier that maximises their sum, $H_1 + H_2$. Diagrammatically, this pair is identified by the tangency of the frontier to a line (i.e., an 'isovalue curve') with slope = -1. (Along this line $H_1 + H_2$ equals some constant which, given the line must touch the frontier for the choices to be feasible, is maximised at the tangency.)

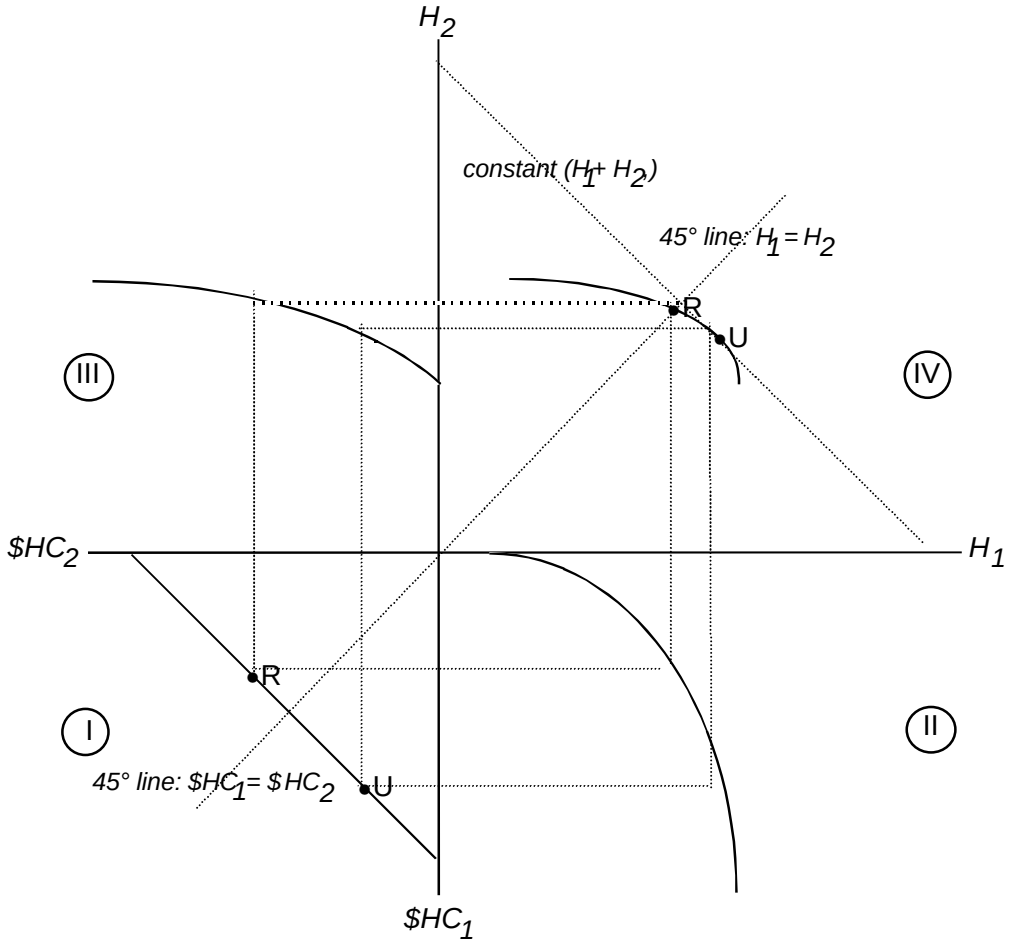
The Rawlsian value judgement, in essence, requires an equal, or as equal as possible, distribution of health between the two groups (given the allocation is on the health

7. Value judgements are usually codified in 'social welfare functions' that, in this context, aggregate H_1 and H_2 in such a fashion that their values can be chosen to maximise the function.

possibilities frontier); that is, $H_1 = H_2$, where possible. Diagrammatically, this can be found by extending a 45° line (slope = 1) from the origin.

Both of these allocations of health are identified in Figure 6, as are the corresponding divisions of Vote:Health between $\$HC_1$ and $\$HC_2$.

Figure 6: the 'best' allocation of health and health care under utilitarian (U) and Rawlsian (R) value judgements



4. Discussion of the Model

With its four quadrants, the diagram above serves to emphasise the separateness, yet relatedness, of the key components driving the allocation of health care spending and health. First, the size of Vote:Health (represented in quadrant I), as determined by political processes (see footnote 1 above), is independent of the medical/'technical'

relationships (quadrants II and III) between health care and health (with emphasis on 'need' and capacity to benefit). Yet combining these two aspects reveals the combinations of health that are *both* financially *and* medically feasible: the health possibilities frontier (quadrant IV). Finally, these health possibilities are independent of the ethical stance concerning which allocation is the best (to be guided by the democratic process, broadly speaking).

As acknowledged in the previous section, the shape of health possibilities frontier is sensitive to the particular need/benefit pairings with respect to the shapes of the health production functions that are assumed for the two groups (i.e., health care types). The frontier in Figures 5 and 6 is peculiar to a high 'need' (HN) group with a high capacity to benefit (HB) at the margin from $\$HC_1$ versus another group with low need and low capacity to benefit from $\$HC_2$ (LN-LB). Significantly different health frontiers to the one in Figure 6, with different insights and predictions as a consequence, will arise from the other five production function pairings that are possible: HN-HB versus HN-LB; HN-HB vs. LN-HB; LN-LB vs. HN-LB; LN-LB vs. LN-HB; and HN-LB vs. LN-HB.[8]

Drawing from the example in Figure 6, two valuable insights emerge. First, Rawlsian and utilitarian allocations of health are not the same. As noted above, this difference arises from the particular shape of the health possibilities frontier in quadrant IV. However, from a different pair of health production functions it *is* possible (as a special case) to derive a (different) frontier for which the optimal allocation would be the same regardless of which of these theories of distributional justice is represented.

The geometrical conditions represented in Figure 6 for the 'best' health allocations under the two value judgements are capable of practical interpretations. Utilitarianism's tangency condition is equivalent to equalising the marginal health gains per dollar of spending across the two groups/interventions.[9] This spending allocation generates the greatest sum of health. Rawlsianism's targeting of the point on the 45° line (i.e., health egalitarianism) is equivalent to devoting resources to those whose starting point is worst in health terms until equality is achieved, and then allocating further resources to maintain (health) equality. The operationalisation of these notions is considered in the following section.

8. We leave it to interested readers to design their own diagrams for these pairings.
9. The 'second-order' condition is that the health production functions exhibit diminishing marginal productivities (as they have been assumed to).

The second insight is that the Rawlsian allocation of *health* is not the same as the Rawlsian allocation of *health care* (spending); nor does Rawlsianism necessarily imply (although it could, again depending on the shape of the health possibilities frontier) that the sickest group receives all of the health care. This latter point is highlighted by the apparent 'paradox' in Figure 6 whereby the Rawlsian value judgement (R) allocated *less* health care spending to the high need group 1 than the utilitarian (U). The paradox is explained by group 1's greater relative ability to benefit (i.e., produce more health) from that spending.

This distinction between health and health care, in terms of consumer demands, is important. The former is the 'commodity' in this analysis, that is, the thing individuals derive well-being from, whereas health care is demanded only because of its effects on health and thus the demand for health care is a *derived* demand (Grossman 1972). It follows, therefore, that the distribution of health (rather than health care per se) is what public policy ought to be concerned with. (That is why society's value judgements are represented in the model above in quadrant IV and not quadrant I.)

Although the value judgements illustrated in quadrant IV (and therefore the allocation of health care in quadrant I) have been restricted to Rawlsianism and utilitarianism respectively, *any* theory of distributional justice concerning the distribution of health can be incorporated into this analysis. Hybrids of these two ethical stances are possible, such as 'Cobb-Douglas', which combines elements of substitutability (i.e., utilitarian) with complementarity (Rawlsian), allowing the health of one group to be traded off against another, while penalising extremes of health inequality. (Graphically, a Cobb-Douglas 'isovalue curve' would be 'strictly convex to the origin' in Figure 6; in other words, a curve similar to the health possibilities frontier but rotated 180 to have a C-shape.)

Finally, the model allows 'experiments' to be conducted concerning the implications of changes in any of the underlying parameters (i.e., assumptions). For example (readers are invited to try these themselves before checking the 'answers' that follow): 1. What would happen if Vote:Health were increased (ceteris paribus)? 2. What would happen if, instead, there were a medical breakthrough that increased the effectiveness of HC_1? 3. What if the price of HC_1 increased?

Answers: 1. The budget line in quadrant I would move away from the origin (without changing its slope), which would cause the health possibilities frontier in quadrant IV to

move outwards (i.e., more of H_1 and H_2 is now affordable). 2. This time the production function in quadrant II would pivot about the intercept away from the origin (the production function in quadrant III would stay put, as would the budget line), which would pivot the health possibilities frontier outwards (more of H_1 would be available than before). 3. Now the production function would pivot about the intercept towards the origin, since any given amount of expenditure purchases less care and therefore has less effect. This pivots the health possibilities frontier inwards.

5. Towards Operationalising the Economics Approach

In essence, the economics approach to allocating Vote:Health centres on comparing the health outcomes of alternative allocations of a given quantum of Vote:Health with the explicit objective of *maximising* the benefits — where the definition of 'benefits' (in terms of an aggregation of appropriately weighted health outcomes) depends on the particular value judgement that is adopted. This is an application of the 'economics-way of thinking' in general, which rests on two fundamental principles: explicit recognition of opportunity costs, and 'thinking at the margin' when comparing (opportunity) costs and their associated benefits.

As already mentioned, the purpose of this paper is *not* to advocate any particular value judgement over others, but to demonstrate that they are unavoidable when choices over alternative distributions of health are to be made, and to demonstrate the logical implications of two common ones, Rawlsianism and utilitarianism. Nonetheless, a common — but untrue[10] — criticism of the economic approach, as embodied in decision-making methodologies such as cost-utility analysis (CUA, discussed below), is that their ethical stance is strictly utilitarian (e.g., Smith 1987[11]).

In fact, CUA is consistent with the pursuit of *any* desired distribution of health gains (usually denominated in QALYs), not just simple maximisation of their sum, irrespective of to whom they accrue. Any theory of justice (or 'equity') can be incorporated by attaching appropriate weights to the health (QALY) gains. Thus the development of QALY weights to reflect a range of distributional and equity concerns (e.g. Mooney et al. 1995) is a key focus of current health economics research. This work includes attempts to develop weights for particular groups (such as disadvantaged ethnic

10. See Devlin and Hansen (1999) for a full discussion and refutation of this criticism (as well as expansion on some of the points discussed in this section of the present paper).
11. Smith asserts that "A cost-effectiveness approach [and hence CUA] to the allocation of health resources presupposes a simple utilitarian or Benthamite theory of justice."

groups) and, more generally, attempts to develop a theoretical basis for distinguishing between people or competing claims in the allocation of health care resources (Mooney 1998, Williams 1997).

In practice, a full appraisal of each and every type of health care in terms of their relative costs and (appropriately defined) benefits would likely be a prohibitively expensive undertaking. A more realistic approach is to select a sub-set of services and assess their costs and benefits at the margin. To this end, one process developed and currently used in the health services is 'Programme Budgeting Marginal Analysis' (PBMA) (Mooney 1994, Scott et al. 1999). PBMA has been trialed in the United Kingdom, Australia, and in New Zealand — for a review of these experiences and references see Ashton et al. (1999).

The key elements of PMBA involve, first, getting an idea of how resources are currently being used through *programme budgets* (the 'PB' part) and then addressing the question of whether resources should be allocated differently by undertaking *marginal analysis* (the 'MA' part). "It is simple and involves considering whether a shift in resources of, say, Z from programme, project or procedure A to programme, project or procedure B will result in an increase in total benefits from the resources available" (Mooney 1994, p. 27).

PBMA is simply a framework for decision-making; it does not stipulate the manner in which the marginal analysis ('MA') component is conducted. Any attempt at explicit resource allocation will unavoidably involve the use of some common denominator to facilitate comparisons between health services. In terms of the model in Section 3 above, this corresponds to the question: What is measured on the H_1 and H_2 axes?

A variety of economic evaluation methodologies are available for undertaking marginal analysis. CUA, generally employing the estimation of QALYs and the development of weights to reflect equity objectives (as discussed above), is arguably the pre-eminent approach. While DALYs (as illustrated in Figure 1) were developed principally to describe and monitor population health (Murray and Lopez 1996), they *could* also be used to measure incremental changes in health and thus to provide a basis for CUA: i.e., 'cost per DALY avoided' (roughly speaking, the inverse to 'cost per QALY gained').

There are, however, some important differences between these two metrics. The measurement of quality of life which DALYs incorporate does not allow the existence

of health states considered worse than death. Further, quality of life in DALYs is based upon panels of experts assessing and scoring hundreds of conditions, both treated and untreated — a procedure involving substantial judgement burden and described by one commentator as "a very complicated and roundabout route, fraught with problems" (Williams 1999, p.4). Length of life in DALYs calculations is also problematic. Years of life lost in each disease category result from comparisons of age at death from a given disease with life expectancy. However, instead of these calculations being based on actual life expectancy data for the relevant country sub-population, they are based on the life expectancy of the longest living group internationally (Japanese women). For these reasons, QALYs are generally considered to provide a superior basis for marginal analysis.

Whatever means of measuring health is chosen, there are important residual issues. These include the extent to which any generic health measure captures adequately the relevant effects of the full range of services funded from Vote:Health (including public health, disability support and personal health care services) and their inability to capture preferences about the process (as opposed to the outputs) of health care delivery.

These and other issues involved in implementing an explicit approach to resource allocation have already been widely canvassed in New Zealand. The National Health Committee has generally endorsed explicit decision making and have deliberated on the 'principles' which it considers should drive health sector priorities (viz., benefit, fairness, value for money and acceptability).

The Health Funding Authority (1998) have extended this by proposing 'principles-based' decision making approaches, incorporating the foundations of the economics approach into the assessment of services on five criteria: effectiveness, cost, Maori health and independence, equity and acceptability. Various critical commentaries on these exist (e.g., Devlin et al. 1999). Future developments in health sector resource allocation should build on the substantial progress already made, rather than attempting to 'reinvent the wheel'.

However, the crucial issue, and one that is still to be addressed is, in the language of the New Zealand proposals to date, the importance attached to the 'principles' and the tradeoffs to be made between each (Devlin et al. 1999). Simply put (as in Figure 6 above), explicit rationing requires statements about the extent to which particular distributions of health are preferred and therefore the tradeoffs between the *maximum*

health that can be enjoyed (the utilitarian position) and the pursuit of other possible objectives regarding the *distribution* of health (including, but not limited to, the Rawlsian position, as discussed above).

6. Conclusion

The central theme of this paper is that the economic approach to allocating Vote:Health does not prescribe particular value judgements concerning the optimal distribution of health but merely represents an analytical framework. In particular, this framework can readily accommodate any social objective with regard to reducing the inequality of health outcomes overall or as experienced by particular groups (such as Maori). The challenge (not to be under-estimated) facing health policy makers is to formulate and clearly articulate the basis for such social choices.

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