Contradictions and trade-offs

between efficiency and equity

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Summary

Efficiency implies health maximisation with given resources. Either QALYs or DALYs could serve as a measure of health. The aggregation of individual's health admit different approaches. Equity, on the other hand, is the prevailing social judgement about which inequalities are fair and which are not.

Contradictions between efficiency and equity appear some times (more equity implies less efficiency and vice versa) but not always.
The paper deals mainly with the contradiction that implies allocating heath resources - with a cost per QALY type of criteria- to the persons with a greater capactiy to benefit. In some instances, however, it's possible to increase efficiency and equity simultaneously; contradictions do not exist.

The theoretical solution to the contradictions between efficiency and equity come from a non-linear social welfare function that reflects the equity values of the majority of the population. It's a problem of empirical researchers to estimate the parameters (α, β, τ ...) required. However, resort to social welfare functions amounts to throwing in the towel on attempts to avoid politics in the assessment of public policy, for the relevant parameters of the social welfare function are inherently political and very difficult to estimate. Attention shall be paid to more practical ways of incorporating social values in order to achieve the efficiency/equity trade-off.

Three types of these practical ways, with an implicit efficiency/equity trade-off incorporated, are identified and outlined: Oregon, New Zealand and the Netherlands.

The policy implications of the paper are that much can be done in the sense of improving simultaneously efficiency (cost-effectiveness particularly useful) and equity. On this last point the main hurdle could be the lack of social awareness about the factors that make some people healthier than others.

Introduction

"The egalitarian bias destroys the incentives, distorts the information transmission mechanisms and creates irresponsible individuals". In many spheres there are contradictions between the objective of efficiency and the objective of equity; e.g. progressive taxation affects incentives to work and has a dead-weight distribution cost.

The situation with health inequalities among individuals is different because they result both of differences in capacities (age and sex for example) and of differences in decisions. The problem of incentives that creates the contradiction between efficiency and equity in many spheres has a much more limited weight in health. Especially if Sen's theory of justice, that is considered to be the most fruitful approach to equity in health (Pereira 1990), is followed. Nobody would incur in risky behaviours or became ill just because health care is free. As a society, we do no expressly strive to achieve socio-economic inequalities in health as we might, for example, in the case of inequality in income.

Despite that the contradictions between efficiency and equity in health are not so strong as in income or wealth, there are still contradictions. These contradictions between efficiency and equity can be depicted as in figure 1

Figure 1
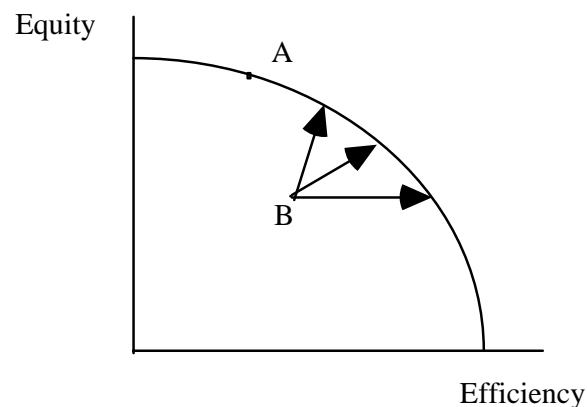
Some examples of contradictions between efficiency and equity are given by: 1/ centralized health facilities with economies of scale and a worsened geographical equity, 2/ health promotion campaigns targeted to the well educated segment of the population, 3/ the practice of selecting for treatment those with the greater capacity to

benefit, and 4/ some types of primary prevention aimed at shifting "to the left" the distribution of illness but letting unchanged the distribution shape (everybody improves).

Efficiency can be expressed either as production (in economics) or as health (in social policy). Equity can be expressed in different ways: all contain value judgements. There are many disagreements about the relative importance of efficiency and equity, and - therefore- about the nature of the trade-off. How much value should be assigned to a decrease in either efficiency or equity?

A particular society at a given moment of time is not necessarily in the efficiency-equity frontier (at point A, for example). This means that it is feasible to increase both equity and efficiency at the same time (from point B). **In fact**, cross-national comparisons of income show rather strong correlations between the degree to which national income is equitably distributed and average health status (Wilkinson 1992). In the economics literature there are also some hints about the harmful effect of inequality on growth.

Efficiency as health maximisation

The maximisation of the community's health with given resources is a suitable application of the efficiency criteria to the health care sector. The main problem is how to measure the product of health care services. Quality adjusted life years (QALYs) could offer a way of taking into account both quantity and quality of life gained by an individual. An individual's health could be measured in terms of QALY and the community's health is measured as the sum of QALYs of the different individuals.

An individual QALY score is calculated by weighting each remaining year of his life by the expected quality of life in the year in question. These scores, which are invariant across individuals in the same health state, are measured on a scale ranging from zero (dead) to one (perfect health). They are derived, using utility theory, in a experimental setting (standard gamble, time-trade off procedures). That's why QALYs are considered utility scores, and the comparison of QALYs and social costs is named "cost-utility analysis".

Though utility theory is used in the derivation of quality-of-life scores, QALYs are a measure of people's health not of the utility they derive from it: QALYs scores are common to everybody.

The fact that the QALY approach, unlike utilitarianism, is not based on individual's own valuations of their health, and instead regards a **QALY as of equal value to everybody**, allows the QALY approach to avoid what many see as an unattractive implication of utilitarianism, namely that resources ought to be distributed away from people who, for whatever reason, place a relatively low value on their health.

Health maximisation, in any case, leads to the rule that resources ought to be deployed so that the marginal cost per QALY is the same across all types of health care activity.

Some problems remain, however, with the health maximisation approach based on QALYs. Health maximisation leads to the conclusion that resources ought to be redeployed away from people who have a low capacity to benefit from treatment (older and sicker people for example, people less knowledgeable about health matters, worst nourished...) towards people with a greater capacity to benefit.

Equity in health

Since good health is necessary for an individual to flourish as a human being and insofar as health care is necessary to good health, there is an strong ethical justification for being specifically concerned with the distribution of health care.

If everyone is entitled to the same opportunity to flourish as an individual, and insofar as health is a necessary condition for flourishing, a just distribution of health care is an equal distribution of health. Equity in health care implies distributing effective health care so as to equalise health. Health is the capacity to function normally. The door remains open as to whether take into account individual's health related behaviour in the financing of health care.

The objective of health equality cannot be an absolute ethical imperative for there may be other conditions to meet with which it may conflict if individuals are to flourish equally.

Efficiency-equity trade-off in health (theory)

A contradiction between efficiency and equity would appear when more (less) efficiency implies less (more) equity and vice versa. A trade-off between two conflicting objectives -efficiency and equity- should be achieved.

The rawlsian approach does not allow for a trade-off between inequity and total social welfare since the equity criteria says that society's welfare improves only when the person in the worst position improves. In other approaches such trade-off is possible.

Wagstaff (1991) suggested a way of reconciling efficiency and equity. He proposed an isoelastic social welfare function as a means to achieve a trade-off between health maximisation (efficiency) and equality of health.

The social welfare function provides a framework within which the distributional consequences of a policy may be analysed. It specifies the increase in utility of one individual that is required to compensate for a decrease in utility of another.

The social welfare function to maximise has the form:

$$W = (\tau - 1)^{-1} \left[(\alpha h_A)^{1-\tau} + (\beta h_B)^{1-\tau} \right]$$

W denotes the level of social welfare associated with the health distribution (h_A, h_B). The parameter α indicates the weight to be attached to A's health and ß the weight to be attached to B's health. If, for example, A were a gypsy or a drug-addict (or a group of gypsies or drug-addicts) and B a non-gypsy or non drug-addict (or a group of non-gypsies or non drug-addicts), society might take the view that α should be larger than ß. The parameter τ indicates the degree of aversion to inequality in health outcomes. The case where $\tau = 0$ and $\alpha = \beta = 1$ is the case usually considered in the QALY literature (a linear utilitarian social welfare fuction).

The problem with this approach is that is very difficult to operationalize since information is required about:
- prognosis, in terms of QALYs, for every treatment
- the number of people who could benefit for every treatment
- society's aversions to inequalities in health (a value for τ)
- how the marginal cost per QALY changes as the number of cases treated changes.

At this moment very little is known about any of the four groups of information required. For example, the media has reflected many stories about society aversion to inequalities in heath. In Madrid, a little boy from a gypsy family was given low priority for liver transplant because housing conditions made him very unlikely to benefit from the transplant (more QALYs would be obtained in an alternative patient). A great

upheaval followed. The Madrid population seemed to be in complete disagreement with the establishment of priorities for liver transplantation according to capacity to benefit (at least in this occasion).

The "rule of rescue", the powerful human proclivity to provide aid to identified victims of illness or accident, is a very prevalent manifestation of society's aversion to inequality and a good example of how the efficiency criteria conflicts with what society wants. In an utilitarian or QALY sense the value to society of treating 50 to 100 patients who have temporomandibular joint disorders or dental pulp exposures is comparable to the value of a single life. Treating many patients for a painful condition could, in theory, be considered equivalent to saving one life. However, many people would disagree with these equivalences. The isoelastic welfare function proposed by Wagstaff incorporates the rule of rescue factor in τ. The Oregon Health Services Commission incorporated the rule of rescue by deleting cost in the development of priorities: Oregon's final list was not constructed using cost-effectiveness ratios as the initial criterion of priority, as posited by efficiency only considerations.

The equality of health should be conditional upon a respect for personal autonomy and upon a prohibition on reductions in current health.

Therefore, in theory the solution lies in future research that should end up proposing a more elaborate non-linear social welfare function weighting appropriately the QALYs of different people. The problem of determining the decreasing weight that must be socially given to additional QALY accruing to the same person shall be empiricallly solved; the non-linear social welfare function should reflect the equity values of the majority of the population (Calsamiglia 1995). A few trade-off questions are sufficient to elicit the preferences of policy makers; multi-attribute theory can help here. But, how much do we know about the social construction of values?

Isoelastic social welfare functions are very elegant. Resort to them, however, amounts to throwing in the towel on attempts to avoid politics in the assessment of public policy, for the relevant parameters of the social welfare functions one might use for that purpose are inherently political (Reindhart 1992).

The efficiency of redistributive policies

Society will accept than some income or health will leak out as it is transferred from "high" to "low" groups. Okun's leaky buckett ratio, c, is a measure of income or health lost in the transfer. Leaky buckett ratio would be between 0, no loss, and 1 (nothing

arrives to the "low" groups). The most efficient redistributive program or policy (the one with the lowest c) serves as an standard for comparisons.

An alternative way of measuring redistributive efficiency is computing which weight should be given to the "poor" or "low" groups (w_p) to make the sum of social benefits and social costs of a particular program greater than cero (i.e. efficient).

If, for example, the top people were forced to give up 40 milions of QALYs to raise "low" people QALYs by 30 milions of QALYs, (1-c) would be .75 and c = 0.25. One fourth of the QALYs given up by the top people leaks out in the form of economic inefficiency and never even raises "low" people QALYs. In other words "low" people should be weighted by 1.33 (w_p = 1.333) in order to make the "low" people gain at least equivalent to the top people loss (1.33 times 30 = 40).

The required weight , w_p*, that makes a policy just as efficient as the most efficient available (with a known leaky buckett ratio c) would be:

$$w_p* = 1/(1-c)$$

An Okun's leaky buckett ratio of 0.2, 0.25, 0.5 and 0.75 is equivalent to a w_p* of 1.25, 1.33, 2, and 4 respectively.

Figure 2

"Poors" required weight
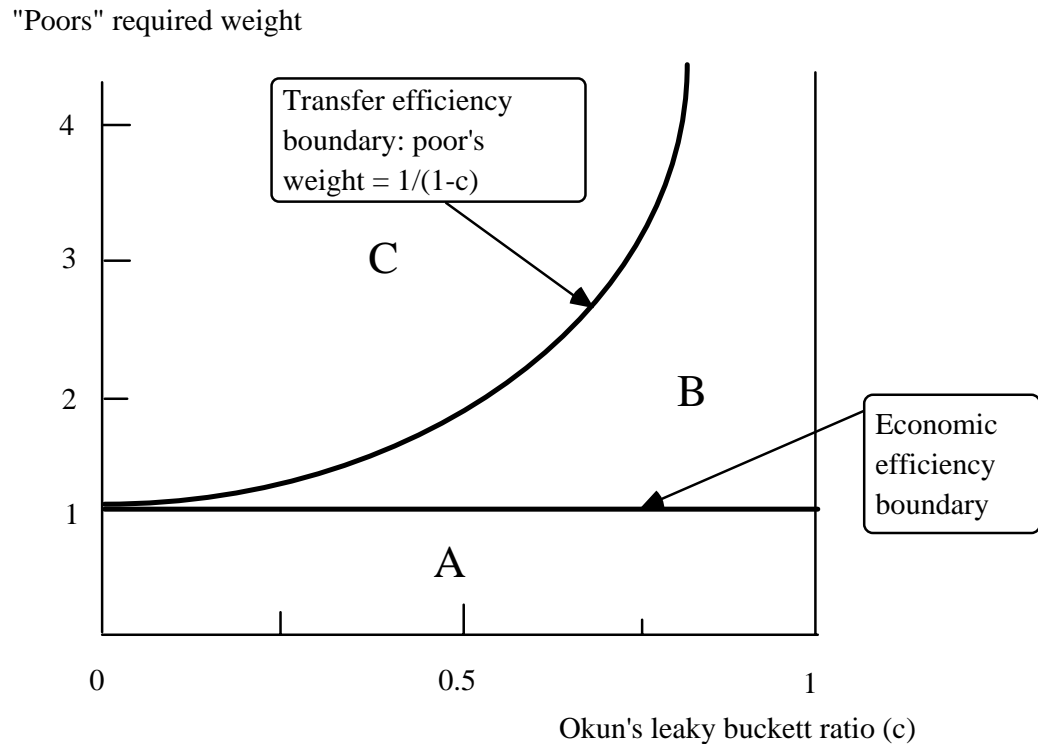
Group A policies and programs pass the economic efficiency test
Group B fail the economic efficiency but pass the redistributive efficiency test
Group C fail both the economic efficiency test and the redistributive efficiency test

Efficiency-equity trade-off in health (practice)

Health care rationing is the practical way for reconciling efficiency and equity. Rationing is the distribution of resources that are available only on limited amounts (one common method of rationing is through waiting lists, another are prices). Health care rationing tries to achieve ex-ante equality among individuals.

There are three main approaches to rationing. A mix of technical and political means would be used in any approach.

Firstly, there is what might be described as rationing by exclusion. This is the approach taken in Oregon, where the state health commission drew up a long list of condition-treatment pairs and ranked them in order of priority. With the resources available it has been possible to include 565 out of 696 treatments in the government funded Medicaid

programme. The program will not pay for anything in the bottom 131 (which include artificial insemination, plastic surgery and aggressive therapy for cancer when the chance of survival is less than five years).

The Oregon program was designed to expand access and allow significantly more residents to qualify for Medicaid. The original Oregon proposal used four levels of human judgement: community values assessed in town meeting, ratings of the desirability of health states, medical judgement of treatment efficacy and subjective reordering of the list by Oregon Health Services Commissioners. In August 1992, the Department of Health and Human Services rejected Oregon's application to proceed with the experiment, objecting to the use of one of the four types of subjective data: ratings of the desirability of health states. A revised application that eliminated this one subjective component was approved in March 1993. Kaplan (1994) demonstrates that among the four levels of judgement, the ratings of health states were supported by the most evidence of reliability and validity.

This first approach to rationing has the advantage of being very clear but the strong inconvenient of forgetting that the convenience of a health service depends upon the clinical status of the patient. Even the removal of tattoos -a clear candidate for blanket exclusion- could be indicated in some very particular circumstance.
The utility of any list is limited -in general- by its lack of specificity with regard to conditions and treatments. As Eddy (1991) noted "the description of services such as hospital care, surgical care, diagnostic tests and even prenatal care are far too broad to enable any useful estimates of benefits, harms and costs. Furthermore, for many interventions it will be necessary to narrow the target for specific indications. Carotid endarterectomy might well be considered essential for a 65-year old man with transient ischemic attacks, 80% stenosis, and a history of stroke, but not for a 50-year-old asymptomatic man with 20% stenosis".

As has already been mentioned the Oregon Health Services Commission incorporated the rule of rescue by deleting cost in the development of priorities.

The *second* approach to rationing is by guidelines. This is the approach taken in New Zealand, where a core services committee appointed by the Government decided that rationing by exclusion, Oregon style, was neither helpful nor desirable. New Zealand's approach is based on the belief that priorities are best set by ensuring that patients who can clearly benefit from treatment receive access to care, rather than by excluding whole categories of services from public funding.

To ration by guidelines implies: First, involve the public in the establishment of priorities (the problem is that many times the public believes that doctors are best placed to make decisions on rationing). Second, develop evidence-based guidelines, adapted to local conditions, and let doctors adapt guidelines to individual conditions. This implies a recognition that nowadays most choices in health care are made by the physician, in the consulting room, at the operating table, or at the bedside. 70% of all health care resources are assigned by physicians in his everyday clinical decisions (diagnostic and therapeutic). Studies have established that there are great differences in approach among doctors, nationally and internationally, indicating frequent inefficient, unnecessary, or useless actions.

Some clinical policies, by reducing otherwise complicate dilemmas to simple rules, encourage improved patient outcomes, but some are adopted without any evidence of benefit. Social rather than scientific forces play a central role in the development, diffusion and domination of clinical policies. Unless account is taken of the social forces influencing the evolution of clinical policies, exclusive reliance on scientific evidence could be self-defeating (Dixon 1990).

Evidence based guidelines are preformed recommendations issued for the purpose of influencing decisions about health interventions. Clinical policies are the central nervous system of medical practice. Guidelines are the most common type of clinical policy. Guidelines are intended to be flexible. The serve as reference points, not rigid criteria. Guidelines should be followed in most cases, but there is an understanding that, depending on the patient, the setting, the circumstances, or other factors, guidelines can and should be tailored to fit individual needs (Eddy 1990).

Some times physicians are reluctant to change their practices even when randomised trials demonstrates the effectiveness of a new treatment or the lack of effectiveness of an existing treatment. Five general methods of changing physicians' practices have been described: education, feedback, participation by physicians in efforts to bring about change, administrative rules, and financial incentives. In general combination of methods are superior to single methods of intervention.

The *third* approach to rationing mixes the two previous approaches and somehow was the approach recommended by the *Committee Choices in Health Care*, from the Netherlands. Whereas the first approach focuses on making decisions at the national level (macro-level) and the second relies mainly on choices at the level to the individual caregiver (micro-level), this third approach explicitly takes into account all the levels of choice.

A basic package was suggested using four criteria: care must be necessary, effective, efficient, and cannot be left to individual responsibility) and recommendations were given to achieve responsible and effective care at the micro-level.

The basic package is reached through a kind of funnel with four sieves. "The first sieve retains care that is unnecessary, based on a community-oriented approach. The second sieve selects on effectiveness, allowing only care confirmed and documented as effective. The third sieve selects on efficiency, which can be measured by such methods as cost-effectiveness analysis. The fourth sieve retains care that can be left to individual responsibility. The Committee feels that any care that is retained in one of the four sieves does not need to be in the basic benefit package" (Choices in Health Care, 1992).

The Committee placed the responsibility for appropriate care on the professions and their organisations. However, they must work with others in society in developing the standards for appropriate care. The health professional must be accountable for the quality of their actions, and for the financial implications there of. Efficient and independent supervision of this accountability is needed.

A framework for policy making

Health inequality matters. The least privileged can expect to die eight years sooner than the most privileged.

A more equitable distribution of resources within a Health Service would probably do little to bridge the health gap between rich and poor. The causes of the problem lie mainly elsewhere: in inequalities of income, genetic inheritance, lifestyle, diet, housing and unemployment.

To tackle the problem, the causes of inequities in health need to be considered; Dalhlgren and Whitehead (1992) focus the attention on those factors that are both avoidable and unacceptable, as illustrated in table 1.

The relevant equity criteria for policy making is the society's opinion about what differences are fair and what are not. This opinion changes along time and among societies and is reflected in opinion polls and political elections.

Most societies want an equitable distribution of heath care, and at the same time, accept that other health influencing factors with a greater effect on health -such as safe cars and good housing- are for sale to those who can and want to pay for them.

Most societies want an equitable distribution of health care and, on the other hand, are hierachircally organised in a way that the control over life of their individual members - possibly the major modifier of health among individuals- shows enormous variation.

So, perhaps the first point in the policy agenda would be to improve the social awareness about the factors that make some people healthier than others.

Table 1
Which health differences are inequitable?

Determinant of health differentials	Potentially avoidable	Commonly viewed as unacceptable
Natural, biological variation	No	No
Health damaging behaviour if freely chosen	Yes	No
Transient health advantage of groups who take up health promoting behaviour first (if other groups can easily catch up)	Yes	No
Health damaging behaviour where choice of lifestyle is restricted by socieconomic factors	Yes	Yes
Exposure to excessive health hazards in physical and social environment	Yes	Yes
Restricted access to essential health care	Yes	Yes
Health related downward social mobility (sick people move down social scale)	Low income yes	Low income yes

source: Dahlgren G, Whitehead M (1992), page 4.

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