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Equity and Equality

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Abstract:
Is horizontal equity (HE) the « most widely accepted principle of equity » ? Or does it stand in « opposition to the advancement of human welfare » ? This paper argues that the case for the HE principle is not as straightforward as is usually thought and that it requires advanced notions of justice and well-being. The most likely ethical basis for HE appears to combine a Rawlsian maximin principle and a view of well-being that allows for relative local comparison effects. The paper also explores some of the dimensions of equality and well-being along which the HE principle can be applied and presents a number of examples showing how HE considerations can provide an important input into policy analysis.

1 Introduction

Two broad redistributive principles govern the analysis of the impact of government policies. The first — vertical equity (VE) – serves to assess the equity of that impact on individuals with differing initial levels of "wellbeing"; the second — horizontal equity (HE) — helps evaluate the equity of the impact across individuals who are equal in all "relevant respects". This paper's primary objective is to enquire into the foundations of the HE principle and to address in the process the appropriate meaning of the phrases *well-being* and *relevant respects*.

In the narrower context of the redistribution of "standards of living" (which, for short, we will denote here as income), VE usually requires that the net fiscal burden (which can be negative) should increase with individuals' capacity to pay, a capacity which is usually captured by pre-tax income. HE, in turn, is typically understood as demanding that individuals with equal capacities to pay should be treated equally by the net tax system[1]. Out of these two redistributive principles, it is that of HE which has generally received the least attention in the literature. Some have argued that this is because HE is the less controversial of the two principles:

> "Perhaps the most widely accepted principle of equity in taxation is that people in equal positions should be treated equally". (Musgrave 1959, p. 160)

It is further claimed that, depending on one's attitude towards vertical fairness and inequality, the implications in terms of VE can vary considerably, but those of the HE principle appear to remain essentially invariant across analysts[2].

A closer look at the literature reveals, however, that the view that HE is both broadly accepted and equally understood meets with some criticism. Take for instance the skepticism of Kaplow (2000) that "Horizontal Equity should not be measured and new measures of social welfare should not be deployed until we know what we are trying to measure and why" (p. 22), or the view that "From Musgrave (1959) on, there is a general agreement that horizontal equity is important, but little agreement on quite what it is."[3]

The main objective of this paper is thus to explore possible foundations for the HE principle. It first describes in more details the concepts of vertical and horizontal equity and suggests some normative and positive justifications for them.

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[1] See among many others Musgrave (1959, 1990) and Lambert (2001).
[2] See for instance Musgrave (1990).
[3] Auerbach and Hassett (1999), p.1.

A negative result is that the usual formulations of the two main theories that underlie much of the modern formulation of distributive justice do not lend direct support to HE as a normative principle of fairness. A more positive result is that an ethical basis for HE can be provided by combining relative well-being effects and a Rawlsian-type veil of ignorance, and that HE can and can often usefully be applied to dimensions of well-being other than income. The paper also discusses some of the senses that can be attributed to the term "equals" in the definition of HE and points to some of the dimensions of wellbeing on which the HE principle can and should be applied. The paper further categorises and presents a number of real-life policy examples in which concerns for HE arise naturally.

The link between this paper and the work of Harold Adams Innis, whom this Innis lecture honours, might seem tenuous at first sight. Although Innis is more widely known for his contributions as the "father" of Canadian economic history, and in particular for his staple theory of Canadian economic development, he was, however, also intrigued by how prevalent modes of thinking, social network effects and media influence were able to shape both the nature of economics and the economics profession[4]. It was clear to Innis that the ethical values of elites (including those of academics) directly influenced government economic policy. It is in this spirit and to such "elites" that this paper is directed, hoping modestly that it can help sharpen views on what I believe to be important ethical issues.

2 Foundations of vertical equity

We start by describing briefly two classes of foundations for VE. The first will be normative and argumentative, and the second will be positive and utilitarian. They will prove useful when we consider the case for HE in Section 3.

2.1 Ethical foundations

Since the 1970s, the modern formulation of VE has been shaped by the writings of a number of influential thinkers, of whom the most well-known are probably John Rawls and Amartya Sen. This modern formulation discards the emphasis placed by utilitarians on the space of utilities in favour of a focus on a space of *real freedoms* or *capabilities*, distinguishing in the process that latter space from the space of *resources*. This formulation of VE also emphasizes the importance

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[4]See for instance Neill, Robin. "Harold Adams Innis". EH.Net Encyclopedia, edited by Robert Whaples. January 10, 2005; http://eh.net/encyclopedia/article/Neill.Innis

of individual preferences and *freedom of choice* in the movement from the space of real freedoms to a vector of actual *functionings*.

In order to understand this relatively "advanced" conception of equity, it is first useful to distinguish between two definitions of freedom: *formal* freedom and *real* freedom. Formal freedom consists in a formal/legal right to be or to have X, say. It only constitutes a necessary, but not a sufficient, condition for real freedom, which is the actual capacity to be or to do X. Broadly speaking, the set of real freedoms to which someone has access is a function both of formal freedoms and of the resources and socio-economic conditions required to act on them.

Given this, the principal obstacle encountered by any attempt to universalize the definition of VE in the space of resources or of capabilities is the heterogeneity of individual points of view on the matter. Owing to the diversity of acquired and innate preferences and of socio-economic interests, individuals can indeed display widely differing opinions on the importance of welfare redistribution in a society. Thus, it is usually impossible to generate a consensus on the definition of equity from the individual points of view that are observed in an actual society.

Drawing on the *veil of ignorance* argument advanced by Harsanyi (1955), an influential modern foundation of VE derives from a definition that all members of a society would, it is argued, defend if they were behind that veil — *i.e.* if they were in a situation of total ignorance regarding the position they will occupy in society and also regarding the preferences they will initially possess or acquire in their specific socio-economic milieu. For Rawls (1971), this leads to a definition of equity in terms of the allocation of certain types of *primary goods* (or capabilities — see Sen 1985a). Those primary goods are things "which it is supposed a rational man wants whatever else he wants" and which, regardless of what an individual's preferences and actual choices may be, "he would prefer more of rather than less" (Rawls 1971, p. 92). Rawls' general conception of justice is then that

> "All social primary goods — liberty and opportunity, income and wealth, and the bases of self-respect — are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored." (Rawls 1971, p. 303)

This is the well-known "maxi-min" rawlsian rule in the space of capabilities.

In addition to the plurality of redistributive views in the absence of a veil of ignorance, there can also be an heterogeneity of needs and handicaps across individuals that must be accounted for in sizing capabilities. Sen (1985a) stresses indeed that different people might have different "conversion factors" from resources to capacities. It might also seem reasonable to consider inputs such as

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"talents", "productivity", or "intelligence" as determinants of the capabilities to which one has access since these inputs are primarily bequeathed to individuals by nature or inculcated by its environment. For Sen, the concept over which to define equity is the *capability set* from which a person might be able to choose. Sen (1985a) thus opts to construe Rawls' primary goods as capabilities, and thus to define equity in a capability space, from which individuals can subsequently freely choose their actual functionings — or actual *chosen* outcomes.

To illustrate this construct, consider Figure 1, which shows in four quadrants the links between income (or resources, or Sen's *command over commodities*), consumption of two commodities A and B, and the functionings F_A and F_B associated to the consumption of each of these two commodities. The northeast quadrant shows a typical budget set for the two commodities and for a budget constraint $Y1$. The curve $U1$ shows the usual indifference curve along which the person chooses his preferred commodity bundle, which is here located at point α.

The northwestern and the southeastern quadrants then transform the consumption of goods A and B into associated functionings F_A and F_B. This is done through the functioning Transformation Curves TC_A and TC_B, for transformation of consumption of A and B, respectively[5]. These curves thus transform the space of commodities into the southwestern space of functionings. Because of potentially different transformation curves (in the presence of handicaps, say), two persons with the same commodity budget set can thus face different capability sets. Using the budget set limited by $Y1$, we can then draw a frontier $S1$ in the space of functionings to which the person has access — this defines the capability set. Since the person chooses point α in the space of commodities, he enjoys β's combination of functionings.

Assuming that the greatest possible set of formal freedoms has been guaranteed to everyone, Rawls' conception of justice requires the maximisation of the smallest capability set, regardless of the actual choice of functionings that will be made by individuals. While recognizing the role of individual responsibility and preferences in the choice of final outcomes/functionings, this formulation of vertical distributive justice thus calls for reducing inequality in capabilities[6]. There is therefore a fundamental distinction between equity in the distribution of capabilities and equality in the distribution of resources and of functionings, owing to the heterogeneity in needs and in preferences.

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[5]Sen (1985a) defines these curves as "personal utilization functions".

[6]Or *opportunities* — see World Bank (2005) for a recent influential use of that formulation of equity.

2.2 Utilitarian foundations for VE

2.2.1 Social cohesion

Vertical equity in resource distribution has long been considered an important condition for social cohesion, stability, and even survival. This is apparent in Plato's expression of the following concern:

> "We maintain that if a state is to avoid the greatest plague of all—I mean civil war, though civil disintegration would be a better term—extreme poverty and wealth must not be allowed to arise in any section of the citizen-body, because both lead to both these disasters. That is why the legislator must now announce the acceptable limits of wealth and poverty. The lower limit of poverty must be the value of the holding. The legislator will use the holding as his unit of measure and allow a man to possess twice, thrice, and up to four times its value." (*The Laws*, Book V, quoted in Cowell 1995, p. 21–22)

More egalitarian societies thus presumably have a greater likelihood of establishing a better social and political balance. More than two thousand years later, the same message is essentially carried out in the modern economics literature, where it is often argued and reported that equality improves the functioning of economic and political institutions, increases security and social capital, and reduces the adverse effects of capital market imperfections on behavior and growth.[7]

2.2.2 Altruism and envy

An alternative utilitarian conception of social justice argues that individuals are not only altruistic and concerned about the welfare of others, but they have difficulty dealing with feelings of envy, relative deprivation and exclusion. The purpose of VE is then to correct inequality in the distribution of welfare so as to reduce the incidence on individuals' welfare of the negative externality generated by this inequality. Such an externality can also be detrimental to the good functioning of markets and institutions. To quote Plato again,

> "The community which has neither poverty nor riches will always have the noblest principles; in it there is no insolence

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[7]For a review of the main arguments, see World Bank (2005). See also Esteban and Ray (2006) for an example of how political economy considerations and inequality can lead to inefficient institutions and policy choices and can therefore hinder growth and welfare.

or injustice, nor, again, are there any contentions or envy-ings." (*The Laws*, Book III, translated by Benjamin Jowett; http://philosophy.eserver.org/plato/laws.txt)

Such a source of concern for VE is also compatible with the unease with regard to inequality reported by Alesina, Di Tellab, and MacCulloch (2004), who find that "[i]ndividuals have a lower tendency to report themselves happy when inequality is high, even after controlling for individual income, a large set of personal characteristics, and year and country (...) dummies" (p. 2009). Indeed, according to Wilkinson (1996) and several others in a relatively unsettled literature, it is not so much a matter of being poor (in terms of *absolute* standards of living) that impacts on one's health, but it is rather one's socio-economic status *relative* to other members of the society. Socio-economic inequalities tend to foster anxiety, stress, frustration, hostility, fear, and insecurity among people living in unequal environments.

An additional source of support for the externality correcting role of VE is provided by observations suggesting that individuals' behaviour is not as selfish as standard economic theory generally postulates. The recent experimental literature (bolstered by experiments of the "ultimatum" or "dictatorial" game type) generally rejects the hypothesis that individuals are exclusively bent on their own egocentric interest. On the contrary, that literature reports that they would be prepared to partially forgo this interest in order to promote altruistic and social values[8].

2.2.3 Zero-sum distribution of consumption utilities

Another utilitarian reason for promoting equality of capabilities and outcomes is that, once a basic standard of living has been exceeded, inequality may give rise to an inefficient zero-sum competitive consumerism. Surveys on the subject of happiness and health tend indeed to suggest that the consumption of "unnecessary" goods essentially represents a consumption for "positioning" vis-à-vis others. This consumption improves the individual's position relative to others but, in and of itself, yields little or no increase in welfare. According to this argument, positioning consumption causes nearly as much deprivation and damage to others as it creates satisfaction and wellbeing for its beneficiaries. It also undermines the less monetized, the less visible, and the less private spheres of human activity. One ardent advocate of this point of view is Frank (2000):

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[8]See for instance Fehr and Fischbacher (2003).

"All of us — rich and poor alike, but especially the rich — are spending more time at the office and taking shorter vacations; we are spending less time with our families and friends; and we have less time for sleep, exercise, travel, reading and other activities that help maintain body and soul. Because of the decline in our savings rate, our economic growth rate has slowed, and a rising number of families feel apprehensive about their ability to maintain their living standards during retirement. At a time when our spending on luxury goods is growing four times as fast as overall spending, our highways, bridges, water supply systems, and other parts of our public infrastructure are deteriorating, placing lives in danger." (p. 5)

According to this view, inequality thus encourages the allocation of resources in an inefficient zero-sum consumption game and leads individual choices away from the social optimum.

3 Foundations of horizontal equity

As seen in the introduction, the principle of horizontal equity (HE) stipulates that individuals who are equal in all relevant respects must be treated equally by the government. This is the *classical* formulation of the principle of horizontal equity. A usual corollary is that government intervention should not reverse the ranking of individuals in the distribution of well-being[9]. This is the alternative *reranking* formulation of the HE principle.

3.1 Utilitarian foundations

Many of the utilitarian justifications for the VE principle mentioned in Section 2.2.1 can be invoked to support the HE principle. The main difference is that HE deals with local inequality, whereas VE concerns global inequality.

3.1.1 Relative well-being and relative local comparisons

Government policies that discriminate between ethically comparable individuals give rise to resentment and insecurity amongst them and can also lead to social

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[9]See, for instance, Feldstein (1976), p. 87, for an influential contribution along those lines, and Duclos, Jalbert, and Araar (2003) for a discussion of the equivalence between these two formulations.

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and political unrest. Exclusion and discrimination can have an impact both on individual welfare and on feelings of social cohesion; this is particularly true for policies that discriminate among those that are alike since individuals often specifically compare their treatment with that of others who enjoy a similar standard of living or display similar characteristics.

For example, the theory of relative deprivation (which is well documented in the socio-psychological literature) suggests that people often specifically compare their relative individual fortune with that of others in similar or close circumstances. In a discussion of the post-war British welfare state, Runciman (1966) notes for instance that

> "the reference groups of the recipients of welfare were virtually bound to remain within the broadly delimited area of potential fellow-beneficiaries. It was anomalies within this area which were the focus of successive grievances, not the relative prosperity of people not obviously comparable."(p.71)

Similarly, in his theory of social comparison processes, Festinger (1954) argues that "given a range of possible persons for comparison, someone close to one's own ability or opinion will be chosen for comparison" (p.121). Frank and Cook (1995) observe the same phenomenon of horizontal comparisons amongst workers and consumers:

> "People tend to be more concerned about how their salaries compare with those of closely associated coworkers than with those of people who work outside their organizations." (p. 58)

According to Frank (2005), the roots of this phenomenon may even be found in evolutionary theory, by which it is necessary to outpace one's nearest rivals to maximize one's survival chances, since "[i]n evolutionary terms, falling behind one's local rivals can be lethal, whereas comparisons with others who are distant in time or space are typically irrelevant." (p. 138) Frank (2005) also reports evidence from the neuro sciences that the effect of local "races" and concerns can even be monitored physiologically in the human brain:

> "For example, local rank appears to affect, and be affected by, concentrations of the neurotransmitter serotonin, which regulates moods and behavior. Within limits, elevated serotonin concentrations are associated with enhanced feelings of well-being." (p.138)

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Comparisons with others also seem to affect a number of behavioral dimensions, such as financial market behavior, criminal activity, labor market behavior, migration, job choices, employee effort — see Clark, Masclet, and Villeval (2006) for a useful review. Clark, Masclet, and Villeval (2006) also find with their own data that individual effort depends not only on one's own incomes but also on one's income relative to others, and that rank in the local income distribution seems to matter even more in that respect than the level of relative income.

3.1.2 Loss aversion and process utility

One upshot of HI is to introduce absolute and relative gains and losses whose impacts on individuals' welfare can be asymmetric. This asymmetry arises arguably from the fact that negative aspects of discrimination are not experienced in the same way as the positive effects of this same discrimination. In other words, an equivalent loss or gain of status will be perceived differently. Smith (1759, (1982)) had long ago already hinted to this:

> "Pain (...) is, in almost all cases, a more pungent sensation than the opposite and correspondent pleasure. The one almost always depresses us much more below the ordinary, or what may be called the natural state of our happiness, than the other ever raises us above it." (quoted in Ashraf and Loewenstein 2005, pp. 132–133)

Results from the neuro sciences in recent years have, incidentally, provided a physiological foundation for this asymmetry, in that pain and pleasure are generated separately and differently by our brain[10]:

> "Brain imaging technology has shown that losses and gains are processed in different regions of the brain (O'Doherty, Kringelbach, Rolls, Hornak, and Andrews 2001), suggesting that gains and losses may be processed in qualitatively different ways." (Ashraf and Loewenstein 2005, p. 133)

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[10]If indeed "pain is a more pungent sensation than the opposite and correspondent pleasure", then we also have an explanation for the media bias of "reporting bad news more often than good news" that many of us believe to exist. Since an important goal of the mass media is to attract attention and consumers through the generation of sentiments, a preference for reporting bad news makes economic sense. In that respect, Harold Innis would certainly have enjoyed investigating the impact, on individual and collective *senses* of well-being, of modern technological developments, greater informational abundance, and fiercer competition in the market for media.

This leads us quite directly to an explanation for an observation that is now well established in experimental economics, to wit that individuals appear more inclined to seek to retain what they have than to acquire things they do not have — a phenomenon known alternatively as "loss aversion" or as the "endowment effect". Losses loom larger than gains. One consequence is the "status quo effect": the status quo is seen as a safe alternative, and consumers are observed to be reluctant to trade away from an initial position:

> "In general, people seem willing to pay more to keep something already in their possession (endowment) than to acquire the same item had they not already owned it." (Thaler 1982, p. 179)

The above suggests that pain and pleasure originate both from absolute changes in welfare and from changes *relative* to others, and that is worse to fall behind than to move ahead others — this being manifested among other things in the consumption of status goods. This provides a utilitarian foundation for HE as well as the basis for a possible ethical foundation for the HE principle — as we will discuss later.

Finally, experimental evidence (from, *e.g.*, "ultimatum", "dictator" and "public good" games) and common intuition suggest that utility is affected by processes, not just outcomes, and that the usual presumption in economics that people's preferences are "self-regarding" and "outcome oriented" may thus be misleading:

> "There is much evidence, both from within economics, and from other disciplines, that (...) people care both about other people, and about how social transactions occur — not just the outcomes". (Henrich, Boyd, Bowles, Camerer, Fehr, and Gintis 2004, p.1)

Again, such effects can help justify a concern for HE on utilitarian grounds.

3.2   Ethical foundations

Although HE may be defendable on utilitarian grounds, it would appear that HE does not receive support from the two most prominent modern theories of justice, at least as they are usually exposed.

3.2.1   HE and VE

A popular claim is that a desire for HE can simply derive from an aversion to inequality, without invoking a separate normative basis for HE, since HI pulls

equals apart and thus increases global vertical inequality. In his early consideration of HE, Robert Musgrave, an influential contributor to the development of the HE principle, went even further, arguing that HE meant little in the absence of a definition of VE:

> "Without a scheme of vertical equity, the requirement of horizontal equity at best becomes a safeguard against capricious discrimination(...). To mean more than this, the principle of horizontal equity must be seen against the backdrop of an explicit view of vertical equity." (Musgrave 1959, p. 160)

VE and HE are, however, two different principles, and in a second-best world it does not follow that VE is necessarily maximized by minimizing HI. Said differently, of two feasible redistributive policies, one can very well lead to greater VE but at a cost of greater HI, and there will therefore usually be a trade-off in the application of the two principles. This has led several authors (including Stiglitz 1982, Balcer and Sadka 1986 and Hettich 1983) to argue that HE needs an ethical treatment that is separate from that of VE. But what ethical basis there is for an independent HE principle is not entirely clear in the literature, an issue to which we now turn.

3.2.2 Procedural fairness

One attempt at providing an independent ethical basis for HE is to argue that justice requires the avoidance of all forms of arbitrary discrimination in the government's treatment of citizens. Individuals of equal worth should be valued and treated equally by the government. Such a rationale for HE is then primarily borne of a concern for procedural fairness — unlike for VE, for which it is the *end-result* that is of concern. This can be supported *a priori* by drawing on the 17th-century social contract theories of Hobbes and Locke, which have been sharpened in the influential work of Nozick (1974).

According to these theories, the state of nature in which individuals were living before the formation of the State has granted individuals legitimate rights and *entitlements* that only allow for the existence of a *minimal State*, "limited to the narrow functions of protection against force, theft, fraud, enforcement of contracts, and so on"; and "that any more extensive state will violate persons' rights not to be forced to do certain things, and is unjustified (...)." (Nozick 1974, p. ix) In particular, forced governmental redistribution from rich to poor is unjust in that ethical framework. Nozick stresses that outcomes are the result of a series of

processes and argues that the correct focus for a theory of justice should be on the fairness of the processes that lead to the end-result. If a particular allocation departs from a fair initial state (an important caveat of course) through a fair process, then the outcome should be judged fair. Nozick summarises thus the difference between this principle of justice and the "time-slice" (or "end-result") principles of justice:

> "The entitlement theory of justice in distribution is *historical*; whether a distribution is just depends upon how it came about. In contrast, *current time-slice principles* of justice hold that the justice of a distribution is determined by how things are distributed (who has what) as judged by some *structural* principle(s) of just distribution. (...) Welfare economics is the theory of current time-slice principles of justice." (Nozick 1974, pp. 153–154)

This being said, such entitlement theories of justice are consistent neither with the Pareto principle nor with the HE principle. It may well be that the formation of a minimal state can be expected to generate a Pareto improvement, but the feasibility of further such paretian improvements can in no way be invoked to justify a larger-than-minimal state. Again, it is not the end result that matters, but the fairness of the process; individuals "may not be used in certain ways by others as means or tools or instruments or resources" (Nozick 1974, pp. 333–334) just because of the feasibility of a Pareto improvement.

Nor would an entitlement theory of justice deem HE to be a necessary or a sufficient component of a general principle of procedural fairness. In fact, the formation of Nozick's minimal state will produce HI if state-of-nature equals become unequal in welfare in the minimal state. This can arise whenever the benefits of the protection of the state are distributed unevenly, due for instance to heterogeneity in initial conditions. That should not prevent the formation of the minimal state. And given that any explicit redistributive scheme is unjust, the principle of HE would seem to be far too weak to uphold the minimal state view. For entitlement theories of the state, the HE principle may at best only provide an external constraint to limit explicit redistributive schemes, without HE itself featuring in the objective function of the state.

3.2.3 Entitlements, anonymity and mobility

Entitlement theories of justice do not impose anonymity in making social welfare judgements, unlike the Rawlsian theory of Section 2.1 and standard measures of

inequality and social welfare which are unaffected by re-orderings of incomes. End-result principles are unaffected by this kind of churning, although the individuals involved in such re-orderings may not be so indifferent to them.

The recent literature indeed provides a number of attempts at making distributive judgements less anonymous and more concerned with redistributive processes. One such example is found in the literature on the "pro-poorness of growth". Imposing distributive anonymity makes it impossible to take into account mobility in welfare. Grimm (2005) argues that because investigations of whether growth is pro-poor should check whether it was beneficial to the initially poor, "postulating anonymity, when assessing pro-poor growth, can lead to misleading conclusions." In addressing the same issue, Glewwe and Dang (2006) argues for instance that one should "compare the poorest 20% in 1992-93 with the same households in 1997-98, some of whom are no longer among the poorest 20% of the population". This, they argue, is better than comparing quintiles of anonymous and different individuals across years because it forces analysts to be more concerned with redistributive processes — this removal of the anonymity axiom is clearly analogous to what HE also demands.

A similar issue arises in the context of assessing the impact of reforms. Take for instance Chen and Ravallion (2004), which studies the welfare impacts of the changes caused by China's accession to the World Trade Organization and reports a significant variance in "local" impacts across households at a given income level — with rural families tending to lose, and urban households tending to gain. An analogous result is found in Ravallion and Lokshin (2004) where the increased Moroccan consumption inequality generated by trade reform is entirely attributed to the reform's impact on "horizontal inequality". This raises *inter alia* the issue of the feasibility and acceptability of reforms:

> "The pro-globalization side has tended to focus on aggregate measures of inequality or poverty, while the anti-globalization side has pointed to the losers amongst the poor and those vulnerable to poverty (...). Extreme horizontal inequalities raise concerns about social and political stability; the protests from the losers can be loud, even when the aggregate net gains are positive." (Ravallion 2004)

3.2.4   HE and the Pareto principle

A possible objection to the HE principle is that the usual forms of utilitarianism justify the unequal treatment of equals, and that HE is furthermore inconsistent

Table 1: Two hypothetical distributions: A to B, with reranking and HE

Movement	individual 1	individual 2	individual 3	individual 4
from A	10	10	15	15
to B	10	10	15	16

with the Pareto principle. This is well argued by Kaplow (2000)[11]:

> "When one carefully examines the concept of HE and what its pursuit entails, one discovers (...) [that] it conflicts with the basic foundations of welfare economics. HE stands in opposition to the advancement of human welfare. Indeed consistent pursuit of HE can conflict with the Pareto principle." (p.1)

Consider for instance distributions A and B in Table 1, with four individuals each. The movement from distribution A to distribution B will be deemed Pareto improving by most observers, but it clearly involves HI, and hence may not be deemed desirable by HI-concerned analysts.

One way to circumvent the above Paretian line of argument against HE is to adopt an entitlement stand, such as in King (1983), where Kaplow's above implication is seen as a flaw of strict utilitarianism since it ignores the fairness of the redistributive process. Recall, however, that Nozick's entitlement theory of justice does not generate an independent ethical basis for HE.

Another avenue is to question the usefulness and/or the validity of the Pareto principle. Despite its wide acceptance, the Pareto principle has indeed no empirical power since no distributive changes effectively leave no one worse off in any large population. It must therefore be strengthened by adding in other principles that will inevitably sometimes clash with it. Even on purely theoretical bases using small populations, the experimental evidence is typically critical of the Pareto principle. For instance, Beckman, Formby, Smith, and Zheng (2002) report that

> "envy and malice take on important roles in decisions involving Pareto improvements. (...) [Our results] support Mui's (1995) observation that envy and malice may represent major obstacles to market reform in transition economies. (...) [F]ailure to create support runs

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[11]See also Kaplow (1989, 1995) as well as Stiglitz (1982): "Indeed, there are potentially important economic situations where Pareto optimality and horizontal equity are inconsistent (in both an ex ante and ex post sense)." (p. 29)

Table 2: VE and HE: 'Would you favor the status quo A or a movement from A to B?'

Distributions	Favor A (Pareto)	Favor B (Non Pareto)	$A \simeq B$ Indifferent
$A = (10, 50, 100, 200)$ $B = (10, 50, 100, 150)$	19/33	12/33	2/33

Distributions	Favor A (HE-Pareto)	Favor B (Non HE-Pareto)	$A \simeq B$ Indifferent
$A = (10, 50, 100, 200)$ $B = (200, 100, 50, 10)$	26/33	2/33	5/33

the risk of broad opposition from a large segment of the population, opposition that may politically block Pareto improvements." (p. 366)

One may of course make a case that behind a veil of ignorance, envy may not (or *should not*) be a relevant factor; but, once entitlements are known, envy clearly emerges as an issue and HE can then legitimately conflict with the Pareto principle. Note that the occurrence of such a conflict depends *inter alia* on the dissemination and availability of inter-personal information, availability which is presumably larger now than before in most modern societies.

I have also asked 33 randomly chosen students in my Fall 2005 Introductory Macroeconomics course their opinion on the matter. The question I put to them was:

"A country consists of four individuals that are identical in every respect other than their incomes. They have incomes initially given by $A = (10, 50, 100, 200)$. A tax/transfer policy is being considered for implementation next year. Please state whether you would prefer the status quo by circling A or the outcome under the tax/transfer policy by circling B."

The results appear on Table 2. The upper panel of the Table indicates that slightly more than one third (12 out of 33) of the students did not abide by the Pareto principle. The lower panel of Table 2 suggests the existence of a concern for

HE among these students — confronted with an admittedly extreme case of HI, since the movement from A to B involves a complete re-ordering of the individual incomes. A large majority (26 out of 33) indeed favor the status quo, presumably because of entitlement, procedural, positional or non-anonymity concerns. Had anonymity been the sole principle used by the students, we would have expected most of them to declare themselves indifferent between A and B.

3.2.5 HE and the veil of ignorance

An important question then is whether Rawls' theory of justice can provide an ethical basis for HE. Although this is not explicitly stated in Rawls' work, one could presume that HE should be considered as a fairness principle only if does not conflict with Rawls' own two principles of justice. HE could then (at best) only be ranked lexicographically *after* Rawls' two fundamental principles of justice. Indeed, in the usual understanding of Rawls' "original position", people have neither rights, nor entitlements nor *status quo* positions, and therefore HI would appear to make little sense. In Nozick's words,

> "no historical principle, it seems, could be agreed to in the first instance by the participants in Rawls' original position. For people meeting together behind a veil of ignorance to decide who gets what, knowing nothing about special entitlements people may have, will treat anything to be distributed as manna from heaven." (Nozick 1974, p. 199)

To derive a foundation for HE using Rawls' original position could, however, be done by enriching further his approach to consider both absolute and relative outcomes as determinants of well-being. In such a modified original position, members of the society would in particular be mindful of the role of relative *local* outcomes in the determination of well-being. These relative local outcomes are generated at some common level of *initial entitlements*. Members of the society would ponder both the distribution of absolute vertical outcomes and that of relative horizontal outcomes because the latter outcomes can affect well-being just as importantly as the former ones. Individuals behind a veil of ignorance would then be asked to decide on an optimal complete distribution of outcomes, which would be complete both *vertically* and *horizontally*.

Given this view of well-being — *i.e.*, that subjective well-being is at least partly determined by the distribution of relative horizontal outcomes — one would

then use Rawls' reasoning to contend that the Rawlsian maxi-min rule should apply to the distribution of both absolute and relative positional deprivation. Individuals behind a veil of ignorance would then agree to a third principle of justice, *that local equals be treated equally*. Given that well-being is jointly determined by absolute and relative considerations, this third principle — the HE principle — would naturally *compete* with the traditional interpretation of Rawls' general conception of justice (see page 4) — a VE principle. It would neither replace it nor be secondary to it. The HE principle would be particularly relevant in modern social environments and for advanced conceptions of justice, for which relative positions in local income distributions and absence of discrimination can claim significant and increasing importance both in terms of utilitarian well-being and ethical salience.

Figure 2 illustrates how this extension of the maxi-min rule would affect policy analysis. The northeast quadrant shows the distribution of income before entitlements have been distributed — everyone is bunched inside the black circle "a". The northwest quadrant indicates the effect of a bimodal distribution of initial entitlements: after the allocation of talents, initial wealth, social environments, and chance, half the population is bunched at "b" and the other half, more fortunate, at "c". At each level of such vertical entitlements, policy generates the horizontal distribution displayed in the southwest quadrant. A behind-the-veil-of-ignorance observer would in the usual Rawlsian context focus on the set α of individuals, those are absolutely the worst off in terms of outcomes. An objective observer that also cared about horizontal discrimination and relative outcomes at a given vertical level of entitlements would also be concerned with the extended β set of individuals in the southeast quadrant. The β set incorporates the two absolutely worst off individuals in vector "e" as well as the two relatively worst off in vectors "d" and "e" — "d" and "e" being represented as "f" and "g" in the southeast quadrant.

A "modern" view of well-being would thus expand the Rawlsian set from α of β. This then raises the issue of which relative weight to give to one *versus* the other set of individuals. There is clearly a trade-off here between absolute and relative outcomes, and between vertical and horizontal equity. Violations of HE will often be inevitable, although still regrettable, such as when some forms of behavior ought to be encouraged for economic efficiency or for VE reasons. Hence, while both VE and HE simultaneously enter into play in any arbitrage between competing government policies, it follows that most of the government's optimal policy choices will create a certain degree of horizontal inequity, though this will be less than if the HE principle did not appear independently in the government's

objective function.

3.3   Who are the equals?

Assuming that we then define HE as requiring *that local equals be treated equally*, a natural question is certainly: "*who should those local equals be?*". One of the key issues in the design of tax policy is indeed that of what ethical criteria may be used to distinguish between individuals. To quote Atkinson and Stiglitz (1980):

> "The implementation of this [HE] principle raises several issues. (...) The spirit of the principle can be illustrated by examples where agreement is clear; e.g., taxes should not be discriminatory according to hair colour or religion." (Atkinson and Stiglitz, 1980, p. 353).

A first qualification would seem to be that the HE principle must apply over *ethically* equal individuals, since the HE principle is at its core a principle to be used for ethical purposes. "Ethically equal" would also seem to imply "having the same level of well-being", since as seen above it can be ethically justified for governments to distinguish vertically between poorer and richer individuals. The HE principle then becomes: *Two individuals who are ethically equal (and whose initial levels of well-being are thus the same) should also be treated equally by the state*.

The next qualification concerns the dimensions along which it would be ethically justified to distinguish individuals. Consider the following examples involving two individuals, A and B:

E1: A imposes a cost on society (*e.g.*, is a smoker), B does not (*e.g.*, is a non-smoker): is a cigarette tax horizontally equitable?

E2: A likes to take risk, B does not: is a lower tax on capital income than on other sources of income horizontally equitable?

E3: A lives in Nova Scotia, B lives in Manitoba: is a clause that favors citizens from Nova Scotia (*e.g.*, an exemption of oil revenues in a federal equalization formula) horizontally equitable?

E4: A lives in Canada, B in Ethiopia; are residence-based social assistance programmes horizontally equitable?

Examples **E1** and **E2** raise the issue of whether we want to confuse well-being and behavior in an assessment of HE: my view is that we should not. Using a HE criterion to assess tax policy involves focussing on the impact's policy on well-being — *is the smoker better off than the non-smoker?* Using an efficiency criterion to assess tax policy focusses primarily on behavioral impacts — *not correcting externalities may lead to excessive smoking*, or *encouraging investment may lead to a socially more efficient level of growth and innovation*. The two HE and efficiency criteria are separate, and policy choice will usually weight the two, but they should not be confused.

Examples **E3** and **E4** provide examples of constraints put on the application of the HE criterion. The constraints usually take the form of various discriminatory frontiers erected artificially across the domain of who can be considered equals. For instance, although Roman law in Antiquity laid the foundations for some of the principles of equality of treatment that still underlie modern legal principles, that law did discriminate severely against slaves. Only a few generations ago, after a bill to abolish the slave trade was introduced in 1787 in the British Parliament, Sir Rose Price, a baronet, argued that slavery "was God's will for black men".[12] Various other forms of discrimination by gender, age, race, language, religion, and ethnicity continue to prevail nowadays in our world. Perhaps the most harmful form of current discrimination is that based on geography (**E3**) or citizenship (**E4**). Future generations will possibly judge severely the way in which artificial political frontiers are currently hampering human solidarity.

To be sure, consensuses are continuously evolving on what criteria should be used to distinguish ethically between individuals[13]. An example of this comes from the Canadian Charter of rights and freedoms:

> "Every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability." [14]

An interesting example of how removal of geographical barriers can extend the HE principle is found in the recent plea of McGill University's Principal, Mrs. Munroe-Blum, to put an end to an "inequitable" system of exemption of foreign

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[12]Quoted in http://www.headleypark.bristol.sch.uk/slavery/beyond/endofslavery.htm

[13]See for instance Osberg and Smeeding (2006) for cross-country comparisons of attitudes towards income differentials.

[14]Article 15.1, Canadian Charter of rights and freedoms, Part I of 1982 Constitution Act.

fees for university students. This system restricts such exemptions only to a select and apparently randomly chosen forty countries, such as Mexico, Vietnam, Korea, Italy and Peru. These substantial exemptions benefit only 38,4 % of Quebec's foreign students:

> "In modern Quebec which opens large its door to the international community, why should we arbitrarily dictate that students from a few countries should pay nothing more than Canadians, whereas, for the remainder of planet, they should pay much more?" (*Le Devoir*, 22 April 2006, p. a1)

Another important example is the removal of temporal frontiers for the applicability of the HE principle. This is usually what is meant by "intergenerational equity" — two individuals equal except for the generation to which they belong should be treated equally by the state. Failure to enforce this can indeed lead to feelings of temporal discrimination and unfairness:

> "I admit it: I belong to generation X, the 25–40 year olds, (...) they had the bad luck of following the baby boomers. The government has nothing concrete to offer them: They have to pay to fix thousands of kilometres of crumbling roads, to rebuild schools that are falling apart, to restore insalubrious hospitals, to honour entrenched terms of compensation to bureaucrats. They will have to pay double to have decent healthcare services." (Martine Rioux, "Je suis une X," *Carrefour de Québec*, 2004)

3.4 Equality of treatment — in what dimensions?

The VE and HE principles are generally applied to the monetary dimension of the government's impact. Material welfare being, however, only one of the dimensions well-being, they should also be applied to dimensions other than simply income. Considering these other dimensions may, in fact, be decisive in comparisons of the benefits and drawbacks associated with various government policies[15]. Dimensions which are closely associated to Rawls' primary goods and Sen's capabilities include:

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[15]Feldstein (1976) hinted to this three decades ago in the context of VE: the social welfare "function could be defined with several different equality variables for different types of consumption. Recent discussion of the distribution of health care and education suggest the importance of such measures of 'categorical equity'" (p. 84).

1. formal freedoms;

2. capacity to escape from material poverty;

3. capacity to participate in social and public life;

4. capacity to achieve self-respect, peace and security;

5. freedom of choice of production, consumption and lifestyle.

In such a multidimensional context, HE could thus be further refined as requiring *that individuals who are ethically equal in each dimension of well-being should also be treated equally by the state in each of these dimensions*. This, of course, raises several issues, of which one of the most difficult is certainly how to measure these multiple dimensions of well-being.

One recent example of HI in a non-monetary dimension of well-being concerned the capability of Iraqis living in Canada to exercise their political right to vote in the 2005 Iraqi elections:

> "Beginning Monday, Iraqis across Canada will register to vote in their native country's first election since former dictator Saddam Hussein was ousted two years ago. But (...) [t]here are only five voting stations for the country's estimated 25,000 eligible Iraqi voters - three in Toronto, one in Ottawa and one in Calgary. (...) Voters must also register in person, meaning two separate trips to the polls. 'It is not a perfect operation by any means and Canada in particular obviously has large issues with geography,' said Ian Smith, head of the Canadian branch of the International Organization for Migration's (IOM) out-of-country voting program." (*The Canadian Press National News*, January 16, 2005)

Protection against fraud thus seems to have motivated an electoral process that was inequitable to those Iraqis living outside three Canadian cities.

Another example is discrimination in the dimension of the ability to achieve security:

> "Individuals and firms affected by torrential rains in Estrie, Mauricie, and the Outaouais were subject to different criteria than those in the Saguenay, Charlevoix and Côte-Nord regions.

A family having suffered damages of \$50,000 or \$100,000 to property in La Baie has been harmed no more than another having incurred similar damages in La Patrie or Aylmer. Why does the latter not have a right to an equivalent amount of compensation? Is this not a question of equity? (...) The government must be fair to all, that's the least that can be expected. " (Gilles Lesage, "Équité pour les sinistrés — Gare aux privilèges dans l'aide gouvernementale," *Le Devoir*, 16 August 1996, p. A8)

A more tragic example involves Christian Royer, whose son Nicolas disappeared in Peru and could not be found despite a \$180,000 search involving two rescue teams. Royer had held hope that the Canadian government would cooperate and/or reimburse some of the expenses incurred in the search for his son:

"If Nicolas had been lost in the Rockies, the government would have participated in the search, so I don't understand why they refuse simply because he was lost in Peru. He's still a Canadian citizen."(*Le Devoir*, 14 December 2004, p. A8.)

Both instances show geographically-based HI in the dimension of the capacity to achieve security, the first, within Canadian borders, and the second, outside them.

4   HI in practice

This last section discusses three major sources of HI and presents examples of how they arise in practice.

4.1   HI in control over resources

The first most common source of HI comes from discrimination in control over resources, exerted arbitrarily and/or randomly across individual socio-demographic characteristics. The immediate causes may be informational problems, administrative errors, incomplete take-up, tax evasion, randomness in the effect of programs and policies, or outright or implicit discriminatory behavior by the government.

To see how this introduces HI, consider Figure 3. It is similar to Figure 1 with quadrants liking the northeast space of resources to the southwest space of capabilities and functionings. The northeast quadrant shows two budget constraints.

The first, denoted by Y1 and Y2, is the pre-intervention budget constraint of both individuals 1 and 2. The two individuals also have the same transformation curves, TC_A and TC_B, and thus face initially the same capability constraints, S1 and S2. But the government discriminates against 2, and his budget and capability constraints thus move to Y2' and S2' respectively.

4.1.1 Open discrimination

Such instances of discrimination are common in societies with weak public governance, as illustrated by Narayan and Petesch (2002):

> "Despite official rules that make discrimination illegal, behavior by state, market, and civic institutions reflects prejudice against poor people, women, and excluded social groups. (...) In several places people said that service providers first look at their face, name, or address and then decide whether they deserve any attention." (pp. 479–480)

Recent studies also suggest that inter-regional and intra-regional allocations of funds are often biased by more or less official political and socio-demographic discrimination. In China for instance, Park, Wang, and Wu (2002)

> "find that political factors have influenced the selection of poor countries. (...) Initial designations favored minority and revolutionary base areas, were not equitable across provinces, and were affected by lobbying efforts" (p. 125).

Jalan and Ravallion (1998) also report that in the late 1980's about half of the poor in four Southern provinces did not live in the regions officially designated poor by the Chinese government.

4.1.2 Affirmative action

Affirmative action is another example of open discrimination. Consider for instance the following criticism of Antonio Villaraigosa's (mayor of Los Angeles) "posturing" support for affirmative action:

> "In a state as gloriously miscegenated as California, doling out university places and building contracts according to varieties of skin is dangerous. It is far better to target help on the basis of people's

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income (something which, in places like Los Angeles, would mean helping Latinos anyway)." (*The Economist*, May 21st, 2005 p. 15–16)

However disguised, affirmative action is thus a clear source of HI. Despite of this, and despite of clause 15.1 (quoted on page 20) on "equality before and under law and equal protection and benefit of law", the Canadian Charter of rights and freedoms does allow for such HI-producing affirmative action programs:

> "Subsection (1) does not preclude any law, program or activity that has as its object the amelioration of conditions of disadvantaged individuals or groups including those that are disadvantaged because of race, national or ethnic origin, colour, religion, sex, age or mental or physical disability." [16]

Other sources of resource-discrimination HI can be more subtle. Imperfect targeting is one. Take for instance the case of differentiated indirect taxation (such as foodstuff subsidization) and socio-demographic targeting schemes (such as income support schemes based on observable socio-demographic characteristics). Using Tunisian data, Bibi and Duclos (forthcoming) find that although differentiated indirect taxation may generate less vertical redistribution, it could be preferable to socio-demographic targeting since it leads to far less HI.

4.1.3 Decentralisation

Decentralisation has arguably many advantages, but one of its costs is certainly to be a frequent source of HI. One example that will be of interest to Canadian academics is decentralised pay scales:

> "The study 'Salary and salary scales of full-time teaching staff at Canadian universities, 2003/04' (Statistics Canada) sheds light on the relatively inferior terms of employment of professors at Quebec universities relative to those of their colleagues in the rest of Canada. While mean salaries of a full professor outside of Quebec hover above the $100,000 mark, nearly half of the 12 institutions referred to in this study did not attain that limit." (Marie-Andrée Chouinard, "L'équité

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[16] Article 15.2, Canadian Charter of rights and freedoms, Part I of 1982 Constitution Act.

salariale n'est pas acquise chez les universitaires," *Le Devoir* , 4 July 2005, p. A1)[17]

Unless either prices or academic productivity are higher in the rest of Canada than in Quebec, such provincially decentralised salary scales presumably generate HI.

Decentralisation also raises the issue of whether citizens should have a "right" to the same services, wherever they live:

> "We need to establish a national consensus in order to ensure that the territory of Quebec remains occupied in its entirety. Citizens are equal, regardless of where they live, and they have the right to the same services." (Michel Belzil, president of the Fédération québécoise des municipalités, *Le Devoir*, 8 May 2004, p. H6)

This argument can of course be made at any government level, local, regional, provincial, or national. It is reminiscent of the equalisation debate in Canada, and, more particularly, of the existence of a so-called *vertical* fiscal imbalance between the federal and provincial governments. As politically sensitive as this issue currently seems to be, it is easily settled when one realises that

> "In order to say that there is a 'structural' economic problem relating to fiscal imbalance, it must be argued that one of the levels of government does not have access to the revenues required to fulfill its obligations. (...) The mere existence of deficits at one level of government does not indicate the existence of such a structural imbalance nor does it mean that such deficits have to be rectified at the expense of another level of government. (The Economic Council of Canada, quoted in Ontario's 1982 budget and in Department of Finance, Government of Canada, http://www.fin.gc.ca/purl/fiscbal-e.html)

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[17]The same reference suggests that more "local" comparison are even more discomforting for academics at Université Laval:

> "In Quebec, the École des hautes études commerciales is in the lead, with a mean salary of nearly $116,000 for a full professor, followed by McGill at $112,000, Polytechnique ($106,000), Concordia ($104,000), Institut national de la recherche scientifique ($101,400), Université de Montréal ($101,000), École de technologie supérieure ($100,000) and Université du Québec à Montréal ($100,000).

> Below the $100,000 mark for this category of professor, we find Université du Québec en Outaouais ($99,000), Université de Sherbrooke ($97,700), Université Laval ($93,000), (...)".

Since both the federal and the provincial governments have full access to all of the major sources of revenue, they therefore dispose of all of the fiscal latitude that they need to fulfill their respective responsibilities and to the extent that they desire. This certainly invalidates the concept of a vertical fiscal imbalance in Canada.

Be that as it may, a *horizontal* imbalance in fiscal capacity certainly exists between provinces — an imbalance that justifies compensating transfers from the federal government to the provinces in an equalisation framework and (to a lesser extent) in the form of equal *per capita* transfers (often nominally for specific expenses such as health care and education). In the absence of such transfers, there would be HI between Canadians, since heterogeneity in provincial fiscal *capacity* would create divergences in the *capacity* of provinces to provide a similar level of services at a similar tax burden.

4.2   Heterogeneity in needs

The second common source of HI is that public policy often does not sufficiently allow for differences in "needs" and, more broadly, in "transformation curves" in defining policy parameters. To see this, consider Figure 4 with again four quadrants liking a northeast space of resources to a southwest space of capabilities and functionings. Note here that individuals 1 and 2 differ initially in two ways, first by their initial budget constraints Y1 and Y2, second by their transformation curves, TC_A^1 and TC_A^2. These differences net out in terms of capabilities, and 1's and 2's initial capability frontiers are equal at S1 and S2. The government may, however, fail to notice this equality if it fails to observe the differences in needs captured by the difference in the functions that transform resources into capabilities. So, motivated by the differences in resources, it can be tempted to treat 1 differently from 2 and bring 1's budget constraint to Y1'. That would break the equality of the two individuals in the capability space and would therefore lead to HI.

One of the most important examples of this is the failure of family income taxation to take into account the presence of children. For the last decade or so, middle and high income Canadians have indeed been facing the same income tax structure regardless of the child-raising costs that they face. Instead of the universal child tax credit once available to all families, the federal income tax system now provides child tax benefits only to lower income families. The rationale for this has been to target resources to more "deserving" families. Such a failure to account for the presence of children obviously introduces HI across tax units with

different child raising responsibilities; because of its welfare-assessment imperfections, it also hampers the ability of the tax system to exert VE.

To illustrate why, we have used 2003 family market incomes (the $mtinc27$ variable, denoted as X below) from Statistics Canada's Survey of Labour and Income Dynamics to simulate how a tax system that takes into account the costs of children differ from one that does not. A basic personal amount equal to A is fixed along with a "full equivalence scale" of $E_N = (1 + 0.7(N_A - 1) + 0.5N_C)$ and a partial (adult-only) equivalence scale equal of $E_A = 1 + 0.7(N_A - 1)$, where N_A is the number of adults and N_C is the number of children in the family. Two taxes are then compared:

T_N: a HE tax equal to $t_N(X - E_N A)$ with marginal tax rate $t_N = 0.5$ and basic personal amount A set to the 2006 federal level of \$9039;

T_A: a HI tax system equal to $t_A(X - E_A A^*)$ with marginal tax rate t_A also equal to 0.5 and basic personal amount A^* set such that the total tax revenue from T_N equals that from T_A.

The results are shown in Figure 5 in the form of differences between T_A/E_N and T_N/E_N at different levels of X/E_N (adult-equivalent income). The scatter plot shows that T_A introduces significant variability of taxes at the same family welfare level. Moreover, and perhaps more surprisingly, T_A appears to produce less VE than T_N for the same marginal tax rate and overall tax revenue. This is because the tax basis for T_A is a noisy measure of true welfare, and this makes it more difficult for T_A to redistribute welfare vertically. Relatively to T_N, T_A thus appears to fail both vertically and horizontally.

This can be made more precise by resorting to a decomposition of total redistribution into vertical and horizontal components suggested by Atkinson (1979) and Pfahler (1987) and shown in Table 3[18]. The decomposition expresses the difference between the Gini index of pre-tax (G_X) and post-tax (G_N) adult equivalent incomes as the difference between an index of vertical equity (V) and an index of horizontal inequity (R, for reranking), both of which being function of Gini and concentration indices for pre-tax and post-tax incomes. As expected, not

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[18]Decompositions of redistribution into VE and "classical" HI along the lines of Duclos and Lambert (2000) and Duclos, Jalbert, and Araar (2003) give essentially the same results. Very similar results are also obtained when the tax system T_A is one that uses a different marginal tax rate but for the same basic personal amount and total tax revenue as T_N, as well as a T_A system that uses a different total tax revenue but with the same marginal tax rate and basic personal amount as T_N. More details are available from the author upon request.

Table 3: Equity and equality with and without child tax allowances
Gini-based indices expressed in %; pre-tax Gini=45.46

Tax system	Post-tax Gini G_N	Redistribution $G_X - G_N$	VE index V	HI index R
HE tax system	31.37	14.09	14.09	0
Adult allowance only	32.22	13.24	13.53	0.27

only does the HE tax system produce no reranking and no HI, but it also leads to greater VE and therefore also to more redistribution.

4.3   Heterogeneity in preferences

The last source of HI arises when public policy uses preferences to discriminate among individuals. When the impact of the redistributive process depends on production and consumption preferences, two individuals with the same initial set of opportunities can be treated differently by the State. Such discrimination will generate HI in the passage from resources/capabilities to functionings. In the words of Feldstein (1976),

> "Why should an individual who receives interest on municipal bonds pay less tax than an individual with equal income who receives his interest on a bank deposit? Why should homeowners be allowed deductions for housing expenses when renters are denied those opportunities?" (p. 87)

This effect is illustrated on Figure 6, where individuals 1 and 2 face initially the same resource and capability frontiers Y and S but end up choosing different vectors of commodities $\alpha 1$ and $\alpha 2$ because they have different preferences U1 and U2. The introduction of a tax on commodity A moves the budget and capability constraints to Y' and S' for both individuals. But because of his preferences, individual 1 is more penalised than individual 2 and sees his level of functionings $\beta 1$ pushed in further inside his initial capability set than 2's. The tax thus "preference-discriminates" the movement from initial capabilities to final functionings. Most judgements of well-being would conclude that 1 is more penalized than 2 by such a tax and that it therefore introduces HI.

4.3.1 Freedom to choose

One objection to the above line of reasoning is: "Why does individual 1 not adjust his preferences in line to those of 2? That would move him to 2's choice and would eliminate HI." Or, in the context of Feldstein's above example, "why do depositors and renters simply not change their behavior to take advantage of the government's tax distorsions?" To accept this objection would, however, trample on an important dimension of well-being, which is that of *freedom to choose*.

This is illustrated on Figure 7, where "freedom to choose" appears on the horizontal axis and "distance of functionings from initial capability set" appears on the vertical one. If both 1 and 2 opt to maximise their utility and thus to follow freely their preferences, individual 1 is drawn farther from his initial capability frontier. At the other extreme, both individuals could move back to that initial frontier by refraining to consume any of commodity A on Figure 6 and thus by sacrificing completely their freedom to choose. That sacrifice would nevertheless be more costly for individual 1. Indeed, the two lines of Figure 7 show that individual 1 is more penalized than 2 whatever level of freedom of choice he selects.

To expect individuals simply to disregard their preferences in order to adjust to some government's discriminatory practice seems indeed to downplay the importance of freedom of choice as an important dimension of well-being. In Sen's words,

> "the 'good life' is partly a life of genuine choice, and not one in which the person is forced into a particular life — however rich it might be in other respects." (Sen 1985b, pp.69–70)

The same view is also shared by Nozick (1974):

> "The minimal state treats us (...) with respect by respecting our rights, it allows us, individually or with whom we choose, to choose our life and to realize our ends and our conceptions of ourselves." (pp. 333–334)

To be treated "with respect" and to lead a "good life" thus requires that we not be forced into lifestyle choices that are against our "conceptions of ourselves".

4.3.2 Negative income tax schemes

An example of the role that the dimension of freedom to choose can play in policy analysis is the desirability of negative income tax (NIT) schemes. As is well-known, these schemes do not necessarily generate more VE than other possibly

more discriminatory and coercitive income support schemes. But NIT schemes are generally more vertically and horizontally equitable in terms of freedoms to choose one lifestyle, including labour supply, savings, family composition and human capital investment decisions.

Figures 8 and 9 illustrate the impact of the introduction of such a NIT in Quebec using simulation results detailed in Araar, Duclos, and Blais (2005). The current distribution of effective marginal tax rates (combining personal income tax rates, social insurance contributions, and rates of withdrawal of various transfers as market income increases) is shown on Figure 8. Although Araar, Duclos, and Blais (2005) find that a revenue-neutral "flat-tax" NIT would not decrease significantly income poverty and inequality, Figure 9 shows that it would clearly equalise marginal tax rates both vertically and horizontally, and would therefore be beneficial in terms of equity in the dimension of the freedom to choose one's lifestyle.

4.3.3   Child care subsidies

Our last example of HI draws from Quebec's current policy of extensive child care subsidies which, in the words of a member of the province's National Assembly, is

> "a formidable tool of equity, of equal opportunity for our children.(...) We built on solid values, (...) which have made us understand that individual equity, equity between individuals is at the base of the economic and social development of the community." (Camil Bouchard, M.N.A. for Vachon, *Journal des débats*, Assemblée nationale du Québec, 31 May 2005)

Let us subject this statement to a "reality check". This can be done using a useful and recent M.A. thesis at UQÀM. Grenier (2005) imputes the value of Quebec's child care subsidies across quartiles of disposable income and across types of child care parental choices and child care facilities (institution-based, home-based, *etc.*). Some of the results are shown in Table 3. Unsurprisingly perhaps, not only is the probability of benefitting from a subsidy increasing with incomes, but so is the expected value of the subsidy. Moreover, at a any given quartile, there is a significant degree of horizontal variability in the benefit received, depending on parental choice and type of child care. The child care subsidy system thus fails both in terms of vertical and horizontal equity in the income support dimension.

Table 4: Probabilities (%) of child care use conditional on quartiles and types of care, children 0 to 4 years old, 2002; value of subsidy across different types of care in parentheses

Quartiles of disposable income	Institution ($ 6180)	Home-based ($3672)	Other ($0)	No child care ($0)	Total
1st quartile	20.85	5.42	16.28	57.45	100%
2nd quartile	32.68	13.66	17.35	36.31	100%
3rd quartile	40.34	14.26	20.25	25.15	100%
4th quartile	41.41	15.97	27.03	15.59	100%

Furthermore, and as discussed above, such a preference-based subsidy system also fails in the dimension of freedom to choose. It first penalises horizontally the freedom of choice of those families that would otherwise prefer those child care arrangements that are not subsidized by the state. Since those families have on average a lower level of disposable income, that *freedom-to-choose* penalty is also on average larger for those with lower well-being in the income dimension. Hence, extending the consideration of well-being to other dimensions *reinforces* the conclusion that Quebec's current child care subsidy is both vertically and horizontally inequitable in the income dimension. Interestingly, this issue was raised in the last federal election campaign:

> "Choice in child care. We will give all parents $100 per month per child under age 6 to spend on child care needs as they choose — whether that means formal day care, a babysitter, neighbourhood child care, or helping one parent stay at home." ("Stand up for Canada: the Conservative Party's election platform," www.conservative.ca)

Note that such a more egalitarian policy alternative is also advocated by one of Quebec's political parties:

> "Diversify the provision of daycare services in order to respect parents' freedom of choice and respond to their needs, while maintaining the $5 per day program, by directly distributing the subsidy, which currently goes to the daycare centres, to the parents as a daycare

coupon. Consequently, parents will use this coupon to purchase day-care services they will have chosen according to their own needs." (Action démocratique du Québec 2002)

5   Conclusion

This paper has enquired into some of the possible bases for the popular, though relatively unexplored, principle of horizontal equity. It has also categorised and illustrated some of the more important empirical sources of horizontal inequity. The most important messages of the paper are probably

- that the combination of relative well-being effects and of a Rawlsian-type veil of ignorance can provide a justification for a search for HE;

- that HE can and should often be applied to dimensions of well-being other than income;

- and that incorporating HE can influence important aspects of policy analysis.

This being said, the end feeling appears to be somewhat of a stalemate between efficiency, vertical equity, and horizontal equity criteria. In this inconclusive result, however, we are in good company. First, that of a prominent welfare economist:

"Even when we care about horizontal inequity we would presumably want to balance that concern against other policy objectives, such as reducing absolute poverty." (Ravallion 2004)

Second, that of the President of the National Bureau of Economic Research:

"The process of tax design must therefore balance the achievement of horizontal equity against other desirable features of a tax structure." (Feldstein 1976, p. 89)

And third, that of a recent Nobel Prize laureate:

"Virtually any tax system will have some degree of horizontal inequity; one needs, then, to trade off horizontal equity with other desiderata of a good tax system. One needs, then, a meta-principle for evaluating tax systems."(Stiglitz 1982, p. 28)

Far from clearing up a debate, it is therefore to be feared that this paper has instead stirred up a number of unresolvable issues. In this again, however, I find solace in the words of others, which are also my last words:

> "I believe that there is also a place and a function in our ongoing intellectual life for a less complete work, containing unfinished presentations, conjectures, open questions and problems (...).
>
> There is room for words on subjects other than last words." (Nozick 1974, p. xii)

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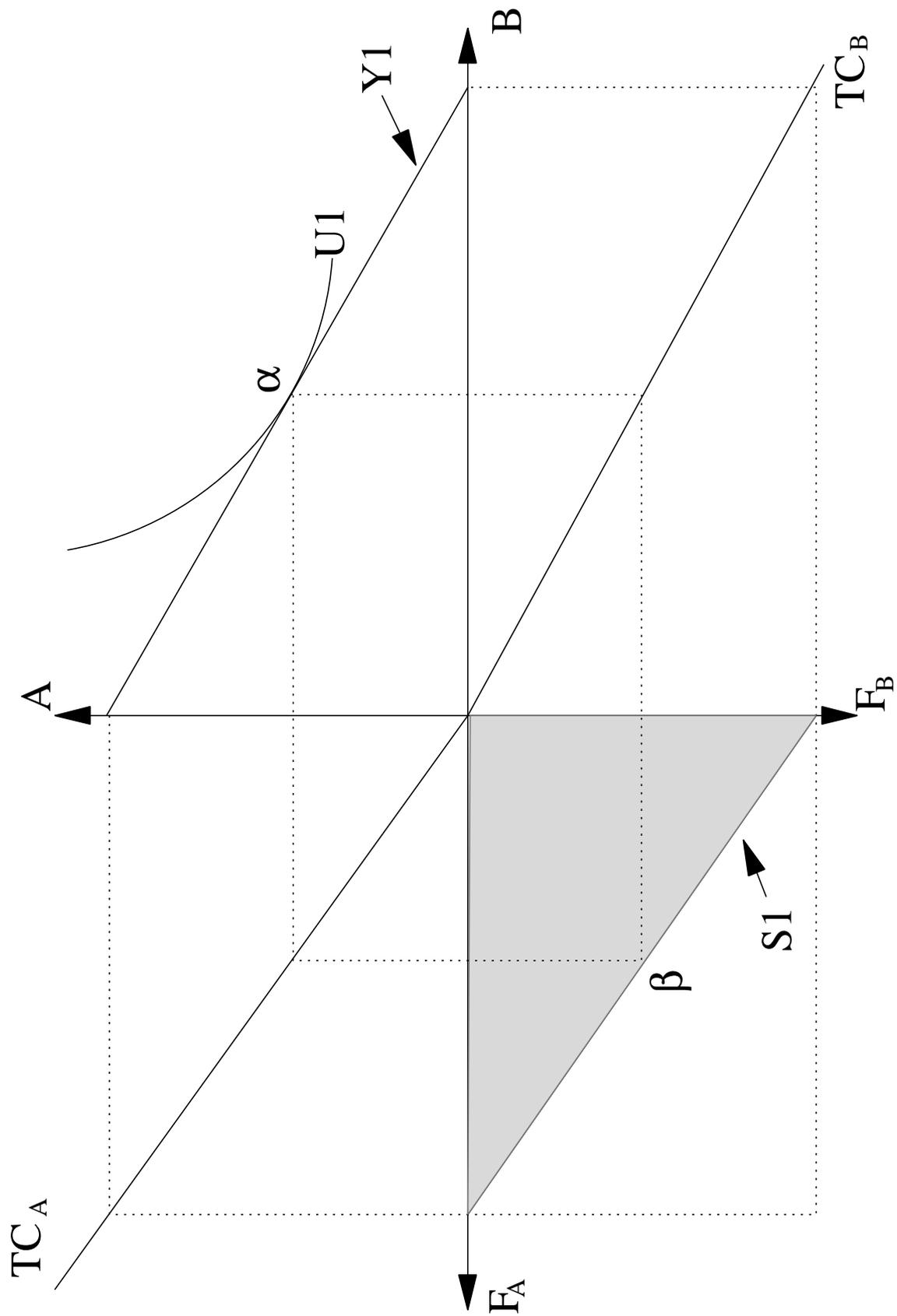Figure 1: Resources, capabilities and functionings
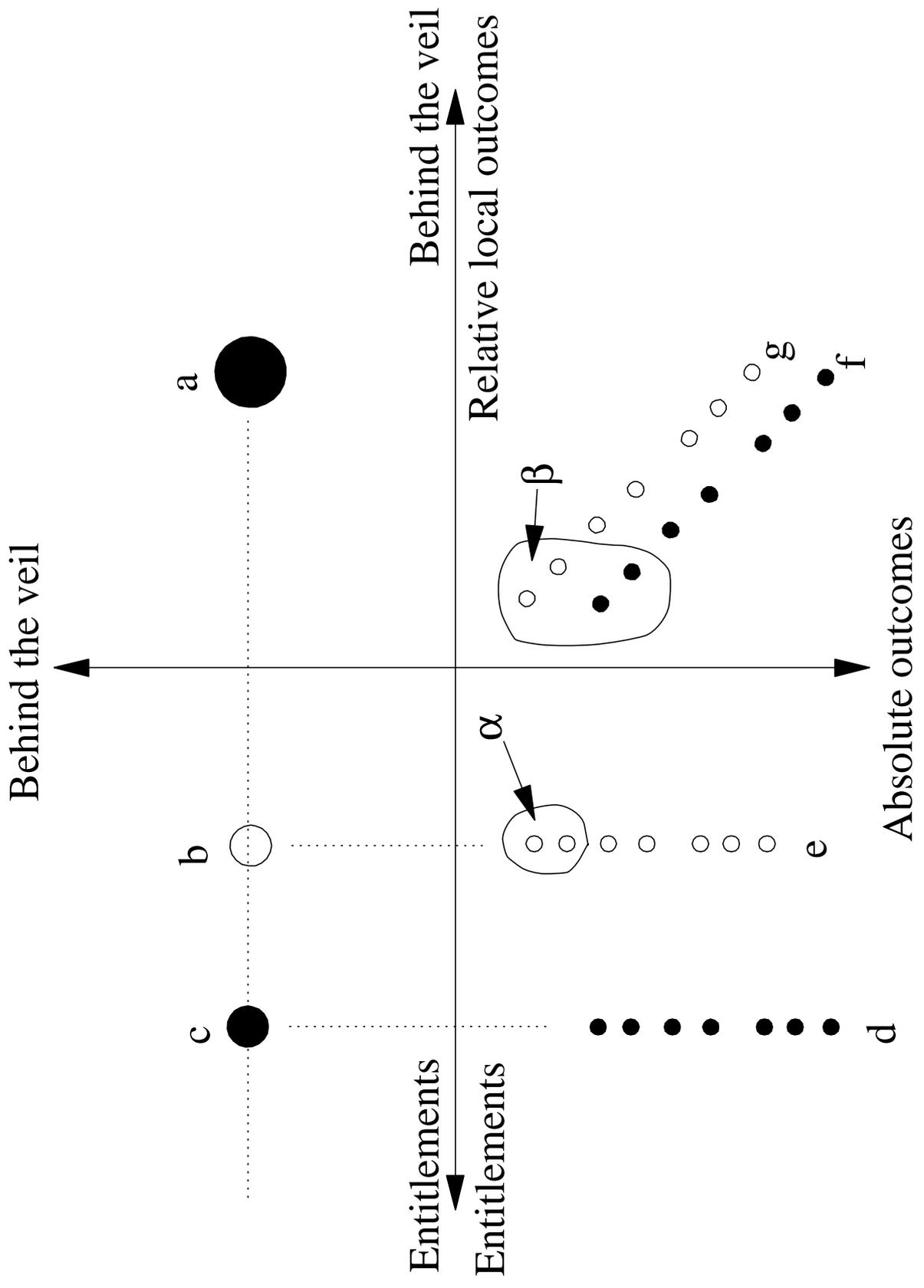
Figure 2: HE and entitlements
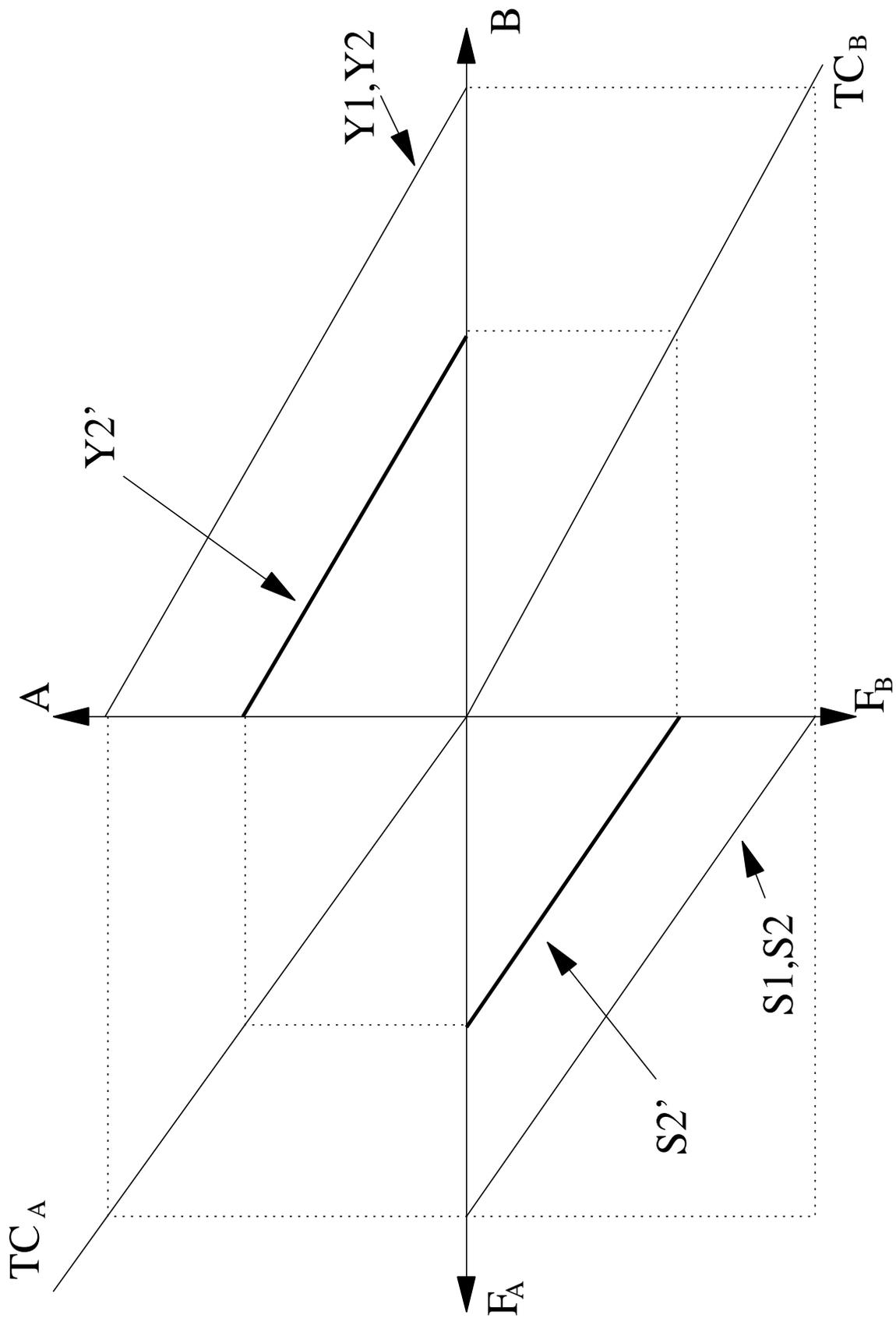
Figure 3: The effect of targeting
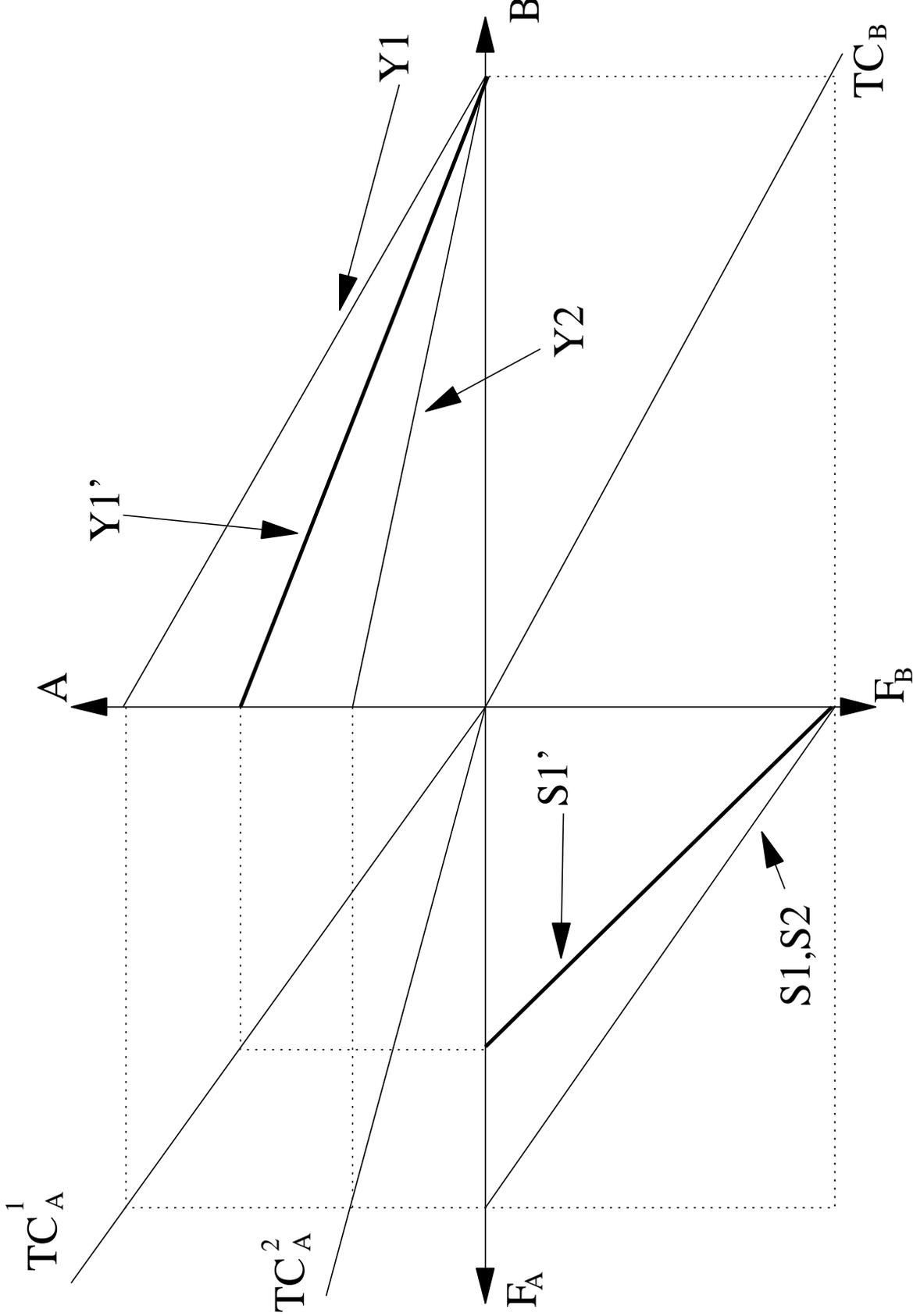
Figure 4: Differences in transformation curves

Figure 5: HE *vs* HI tax system — same overall tax revenue, same marginal tax rate, but different tax allowance for children and adults
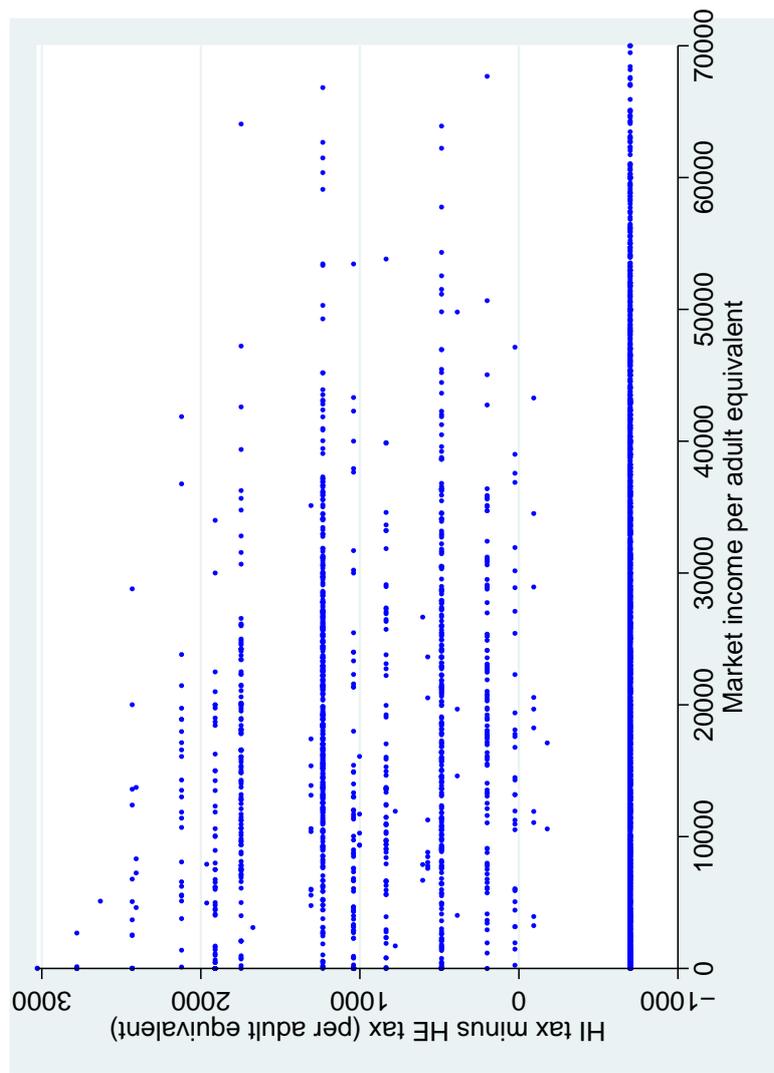
Figure 6: Discrimination by preferences

Figure 7: Well-being and freedom of choice

Freedom of choice

Max U(A,B)

Max closeness to S

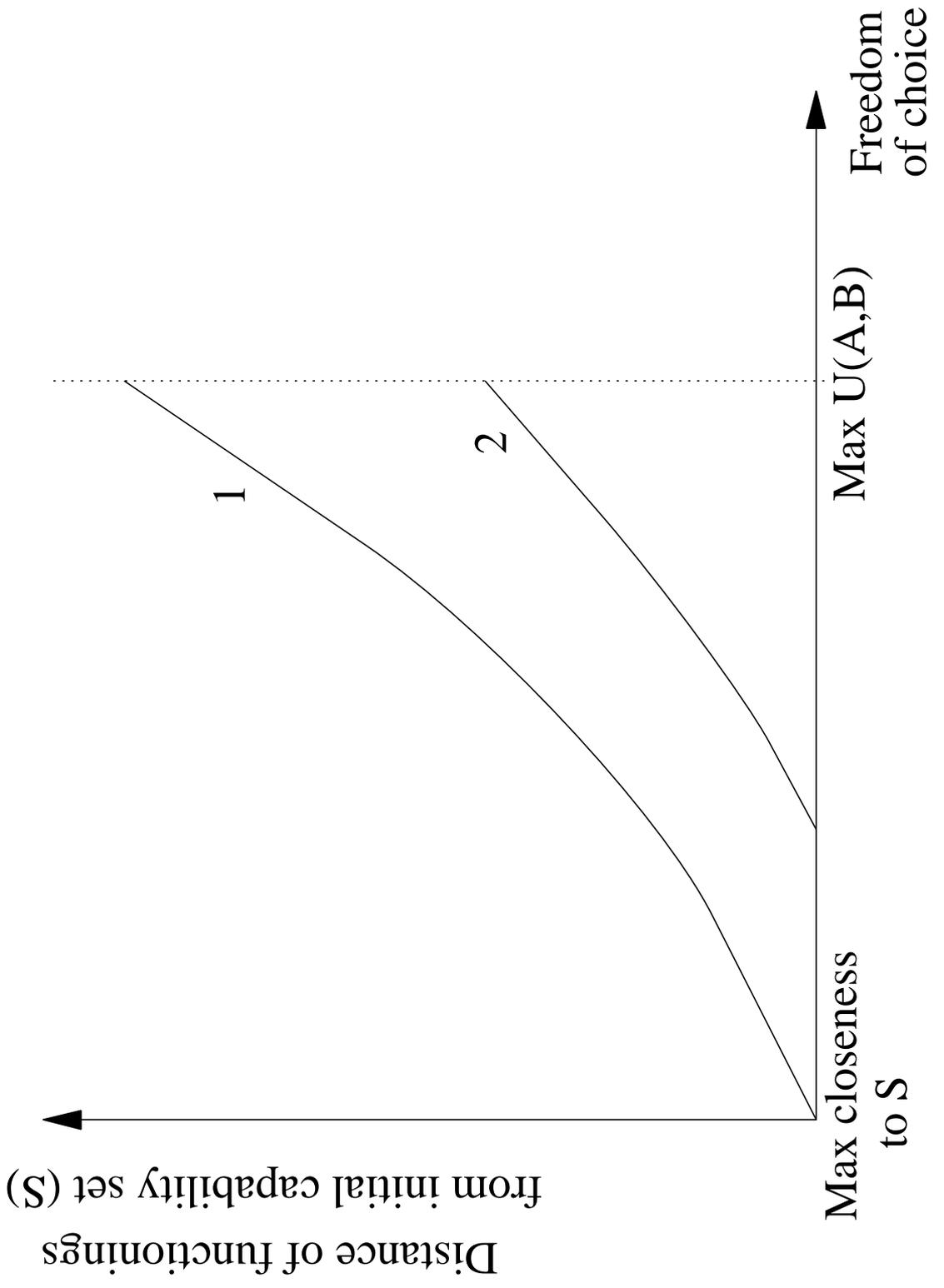Distance of functionings from initial capability set (S)
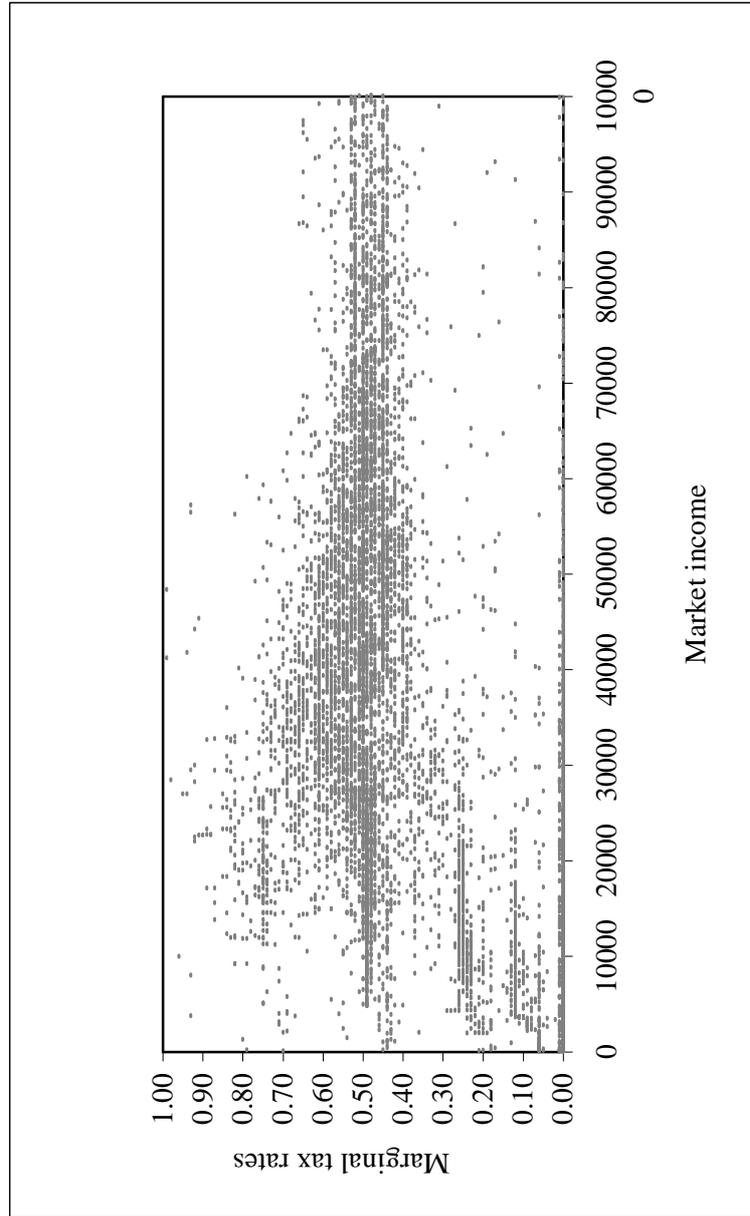
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Figure 8: Marginal tax rates in Québec

Figure 9: Marginal tax rates in Québec under a Basic income scheme with a flat tax