

### **“Equality of opportunity”**

Equality of opportunity is to be contrasted with equality of outcome. While advocacy of the latter has been traditionally associated with a left-wing political philosophy, the former has been championed by conservative political philosophy. Equality of outcome fails to hold individuals responsible for imprudent actions that may, absent redress, reduce the values of the outcomes they enjoy, or for wise actions that would raise the value of the outcomes above the levels of others'. Equality of opportunity, in contrast, 'levels the playing field,' so that all have the potential to achieve the same outcomes; whether or not, in the event, they do, depends upon individual choice.

This traditional political alignment was upset by Ronald Dworkin (1981a, 1981b) who posed the question: if one is egalitarian, then what is it one should seek to equalize, welfare or resources? He argued, first, that equalizing welfare (outcome) was undesirable, even if interpersonal comparisons of welfare could be made, because doing so would fail to hold individuals accountable for their preferences. The issue of 'expensive tastes' was important for Dworkin; he argued that, if a person were glad he possessed an expensive taste, or identified with it, as opposed to viewing it as an addiction – a taste he would prefer not to have -- then society owed him no extra resources to satisfy it. Dworkin argued that egalitarians should advocate the equalization of resources, as opposed to outcomes, but his conception of what comprised resources was broad. Resources consisted in not only transferable goods and wealth, but internal talents as well. The question became, what allocation of *transferable* resources

would count as equalizing the *entire bundle* of resources across persons – in other words, would count as appropriately compensating individuals for their endowment of non-transferable resources? Dworkin's answer was to construct a kind of market for contingent claims behind a thin veil of ignorance, in which traders knew their preferences (importantly, over risk) but not what resources they would come to have in the (actual) world. The desirable tax scheme, in the world, would mimic the allocation of transferable resources that would be implemented at the equilibrium in this market for contingent claims, after the birth lottery occurred. (See Roemer [1996, chapter 7] for a formal model.)

Dworkin's contribution, importantly, attempted to integrate the issue of responsibility into egalitarian theory – as such, to take the most important tool of the political right, and harness it for use by the political left. In Dworkin's theory, individuals are held responsible for their preferences, and this is implemented through the insurance market behind the veil of ignorance, where traders representing persons use their persons' preferences to enter into insurance contracts. But persons are not held responsible for their resources, including internal talents, and the families into which they are born, and this is implemented through allowing the traders behind the veil to insure against bad luck in the birth lottery in so far as the distribution of these resources is concerned.

Several years later, G.A. Cohen (1989) and Richard Arneson (1989) criticized Dworkin's theory. Cohen argued that 'Dworkin's cut' between preferences and resources, was, for the purpose of ethics, the wrong way to separate characteristics. Suppose a person developed champagne tastes because she grew up in an aristocratic

family in which she was never exposed to beer. Was it correct, then, to later deny her the resources to buy champagne to achieve the level of welfare that beer drinkers could achieve more cheaply? Or suppose a person, who grew up in a disadvantaged home, one lacking resources, developed no ambition to develop his talents; indeed, he was satisfied with these unambitious tastes. Should he likewise be held responsible, even though his tastes were the consequence, at least in part, of an indigent childhood?

Arneson argued that Dworkin was right to argue against taking the ‘equalisandum’ as welfare, but said that replacing it with ‘resources’ was wrong – rather it should be replaced with *opportunity for welfare*. What did it mean, then, to equalize opportunities for welfare? In what sense did this differ from ‘equalizing resources’ à la Dworkin? Arneson struggled to formulate an alternative, but did not succeed in proposing one that was clearly feasible.

Following Arneson and Cohen, Roemer (1993, 1998) proposed a model to attempt to capture the insights of this philosophical discussion, and would permit one to compute, for a given situation, what policy constituted the ‘equal opportunity’ policy. He separated the influences on the outcome a person experiences into *circumstances* and *effort*: the former are attributes of the person’s environment for which he should not be held responsible, and effort is the choice variable for which he should be held responsible. An equal-opportunity (EOp) policy is an intervention (e.g., the provision of resources by a state agency) that makes it the case that all those who expend the same degree of effort end up with the same outcome, regardless of their circumstances. Thus, EOp ‘levels the playing field,’ in the sense of compensating persons for their

deficits in circumstances, making it the case that, finally, only effort counts with regard to outcome achievement.

A more precise formulation follows. Suppose there is an *objective* for whose acquisition a planner wishes to equalize opportunities: this might be a wage-earning capacity, a life expectancy, or an income level. Denote the achievement of the objective as a function  $u(\alpha, x; \beta)$  where  $\alpha$  is the (scalar) level of effort expended by the person,  $x$  is the policy of the planner, and  $\beta$  is the vector of circumstances of the person.  $u$  is monotone increasing in the argument  $\alpha$  -- thus effort enhances the acquisition of the objective. Nevertheless, effort may be subjectively costly for the individual: thus,  $u$  is not to be thought of as the usual economist's utility function, in which effort is costly. For example,  $u$  might be the wage-earning capacity a person comes to have, where  $\alpha$  is the number of years of schooling and  $\beta$  measures family background, natural talent, and so on. The policy  $x$  can be chosen from some feasible set of policies  $X$ : it might, for example, be the distribution of a resource possessed by the planner. The set of individuals with a given value of  $\beta$  is called a *type*.

Suppose that, for each ordered pair  $(x, \beta)$  there ensues a distribution of effort in type  $\beta$ , denoted by its cumulative distribution function  $F(\alpha; x, \beta)$ . The distribution of effort, classically, would result from the maximization of a preference order by the individuals of the type, one in which effort is differentially costly for those individuals. Typically, these distributions  $F$  will differ across types ( $\beta$ ). By hypothesis, individuals are not to be held responsible for their type. We now ask, how should one interpret the stricture to choose a policy that equalizes the values of the objective *at constant effort*

*levels* across types? The problem is that the *distribution* of effort in a type is a characteristic of the type, and if individuals are to be compensated for their types, they should likewise be compensated for the characteristics of those distributions. (E.g., if a disadvantaged type has a distribution of effort with a low mean, that itself should be taken into account in the compensation scheme.) Roemer's solution was to propose that the *degree* of a person's effort should be measured by her *rank* in the effort distribution of her type. Thus, define the rank  $\pi$  by

$$\pi = F(\alpha; x, \beta)$$

and define the 'indirect' objective function

$$v(\pi; x, \beta) = u(F^{-1}(\pi; x, \beta), x; \beta).$$

Then  $x$  is an equal-opportunity policy just in case it equalizes the value of objective across types at every degree of effort, that is:

$$\forall \pi \in [0,1] \quad \forall \beta, \beta' \quad v(\pi; x, \beta) = v(\pi; x, \beta'). \quad (1)$$

Here, the process by which the effort distributions  $F$  emerge is black-boxed; of course, in actual applications, the black box would be unpacked with the specification of utility functions that individuals maximize to derive their efforts.

In general there will be no policy which equalizes opportunities in the sense of (1). For example, let  $u$  be wage-earning capacity,  $\alpha$  be years of schooling,  $\beta$  be the educational level of the individual's parents, and  $x$  be investment in the education of the individual by the state. Suppose policies can be targeted to types, and there is a per capita social endowment of  $\bar{x}$  for education. Suppose we partition the population into a

finite set of types,  $\{\beta_i \mid i = 1, \dots, n\}$  where the population frequency of type  $i$  is  $p_i$ . A feasible policy is a vector  $(x_1, \dots, x_n)$  such that  $\sum p_i x_i = \bar{x}$ . We have as data, as well, the distribution functions  $F(\cdot; x, \beta)$ . For this general specification, there will generally not exist a feasible policy satisfying (1).

Some alternative is therefore required. One may proceed as follows. We desire to equalize the values of  $v$  across different  $\beta$ 's, at each  $\pi$ . As a second-best, we desire to maximize the minimum value of  $v$  across different  $\beta$ 's, at each  $\pi$ . Thus, define

$$\Phi(\pi; x) = \min_{\beta} v(\pi; x, \beta).$$

We define a policy  $x$  to be *efficient* if

$$\text{there is no } x' \in X \quad \text{s.t.} \quad (\forall \pi)(\Phi(\pi; x') \geq \Phi(\pi; x)) \quad , \quad (2)$$

where the inequality sign in (2) is understood to mean that for some value(s) of  $\pi$ , there is strict inequality. We are interested only in efficient policies. There may, however, be many, even a continuum, of these, and the theory, thus far, gives us no way of choosing among them.

To see this, let us consider a special case in which effort responses within types are insensitive to the policy: thus, we may write those distributions as  $F(\alpha; \beta)$ . Suppose that there are just two types,  $\beta=1$  and  $\beta=2$ , indicating the level of education of parents; each type comprises one-half the population. The Department of Education has one unit per capita of an educational resource to be invested in children. A *policy* is an ordered pair  $(y, 2-y)$ , indicating the per capita investment in children of the two types. Suppose that  $u(\alpha, y; \beta) = \alpha^a y^c \beta^b$  is the value of the objective (perhaps, the child's future wage)

where  $y$  is the amount of educational resource invested in the child. We will denote a policy by the value of its first component,  $y$ . Then

$$\Phi(\pi; y) = \min_y [(F^{-1}(\pi; 1))^a y^c, (F^{-1}(\pi; 2))^a 2^b (2 - y)^c]. \quad (3)$$

We may compute that the two arguments of the min function in (3) are equalized exactly when

$$y = \frac{2}{1 + \left(\frac{1}{2}\right)^{b/c} \left(\frac{F^{-1}(\pi; 1)}{F^{-1}(\pi; 2)}\right)^{a/c}}. \quad (4)$$

Now define

$$m = \min_{\pi} \left( \frac{F^{-1}(\pi; 1)}{F^{-1}(\pi; 2)} \right), \quad M = \max_{\pi} \left( \frac{F^{-1}(\pi; 1)}{F^{-1}(\pi; 2)} \right). \quad (5)$$

Then any policy

$$y \in \left[ \frac{2}{1 + \left(\frac{1}{2}\right)^{b/c} M^{a/c}}, \frac{2}{1 + \left(\frac{1}{2}\right)^{b/c} m^{a/c}} \right] \quad (6)$$

is efficient, and this interval comprises exactly the efficient policies. Thus, there is a continuum of efficient policies.

There has been no general agreement concerning how to narrow the set of efficient policies to a single choice – in other words, how to rank efficient policies from the equal-opportunity viewpoint. Roemer (1998) proposed to choose a single policy by solving the problem:

$$\max_x \int_0^1 \Phi(\pi; x) d\pi; \quad (7)$$

Van de Gaer (1993) proposed to solve

$$\max_x \min_{\beta} \int v(\pi; x, \beta) d\pi . \quad (8)$$

Each of these proposals is somewhat arbitrary. Fleurbaey and Maniquet (2004) summarize the axiomatic approach to the problem, to which they and others have made substantial contributions. I believe that appeal to the equal-opportunity principle as such cannot resolve the issue; we must bring additional ethical considerations to bear.

How does the theory of equal opportunity fit into social choice theory? There are a number of ways one may answer this question; I believe the most salient point is that the equal-opportunity approach is distinguished from classical social-choice theory in being *non-welfarist*. Welfarism is the view that only the set of vectors of outcome (welfare) possibilities matters for the social decision. To be precise, if we represent individual preferences over social alternatives by utility functions, then the choice of a social alternative should depend only upon the information that is recoverable from the utility possibilities sets of the possible societies. In this sense, welfarism is a consequentialist view. Sen (1979) criticized the welfarist postulate for ignoring the issue of civil rights (the right not to be beaten by another, for instance); Roemer (1996) criticized it, with regard to the theory of distributive justice, for ruling out any theories which mention property rights. The equal-opportunity approach says that one cannot judge the goodness of a social outcome by knowing only the distribution of outcomes; one must also know *how hard people tried* in order to evaluate that goodness – in other words, one must know the correlation of effort with achievement to pass judgment on the fairness of a distribution scheme. Put this way, it is clear that the equal-opportunity approach formalizes a view that is held quite generally by citizens in many countries,

judging by opinion surveys. In judging how just schemes of distribution are, the proverbial man on the street usually wants to know if reward is ‘proportionate’ to effort expended. Knowing just the distribution of outcomes does not suffice.

There have been several empirical studies applying these ideas. In Roemer et alii (2003), the authors asked: in a set of eleven OECD countries, what income-tax regime would equalize opportunities for income acquisition among workers? All workers in a country were assumed to have a quasi-linear utility function over income and labor, with a constant labor-supply elasticity with respect to the marginal tax rate (or the wage). The sole circumstance was taken to be the level of education of the mother of the worker. Young male workers were partitioned into three types, according to whether their mothers had low, medium, or high levels of education. The set of policies,  $X$ , was taken to be the set of feasible affine income tax regimes, that is, ones postulating constant marginal tax rates and a lump-sum payment to all. The objective was the post-fisc income (not utility) of the individual. Using the EOp objective of (7) above turns out to be equivalent to choosing that income-tax regime which maximizes the average post-fisc income of the least advantaged type, those whose mothers did not complete secondary school. Table 1 summarizes the observed marginal tax rates in the countries of the sample and the equal-opportunity tax rates, so computed, under the assumption that the (male) labor-supply elasticity with respect to taxation is  $-.06$ .

Table 1 EOp marginal income tax rates for eleven countries

Country	Observed marginal income-tax rate	EOp marginal income tax rate

Belgium	.53	.54
West Germany	.36	0
Denmark	.44	0
France	.31	.58
Italy	.23	.82
Netherlands	.53	.47
Norway	.39	0
Spain	.38	.61
Sweden	.52	0
United States	.24	.65
Great Britain	.36	.71

Countries can be partitioned into three groups: those for which observed tax rates are much greater than the EOp tax rate (West Germany, Denmark, Sweden, and Norway), those for which the observed and EOp tax rates are approximately the same (Belgium and the Netherlands), and those for which observed tax rates are much lower than the EOp tax rates (Italy, Spain, France, the US and GB). The pattern is not particularly surprising, given common perceptions of the depth of income-transfer programs in these countries.

A comment upon the countries in the first category is in order. To say that the EOp tax rate is zero in the northern European countries means that, with the postulated labor-supply effects of taxation, the average post-fisc income of the least advantaged type would be maximized with a lump-sum tax to finance public goods, and no other transfer payments. This occurs precisely because the *pre-fisc* distributions of income across the

three types of worker are already very close in these countries. In the other countries of the sample, these pre-fisc distributions are sufficiently far apart that positive marginal tax rates will, despite their incentive effects, increase the average post-fisc income of the least advantaged type.

Should one conclude from table one that, from the equal-opportunity viewpoint, marginal income taxation should be abandoned in northern Europe? Hardly so, for the partition of workers into only three types is quite coarse. There are many other circumstances besides the education of the mother for which society might wish to compensate citizens. Indeed, the article under discussion studies as well a typology for four of the countries (where data exist) into six types, where workers are typed not only by three maternal education levels but also by two levels of native ability, as measured by performance on IQ tests. It turns out that a positive marginal EOp tax rate is then recommended for Sweden, although Denmark retains its zero tax rate! (With a sufficiently low labor-supply elasticity, this result, too, would be changed.)

Income taxation may not be the instrument of choice to equalize opportunities for income: one naturally thinks of using educational finance policy as a method for compensating children from disadvantaged families. Betts and Roemer (2003) partitioned American male workers, who were attending secondary school in the late 1960s, into four types, defined by four levels of maternal education. They took *wage-earning capacity* as the objective and state educational investment in the child as the policy instrument, and asked: What distribution of educational finance would have equalized opportunities for wage-earning capacity among these four types of worker? Wage elasticities with respect to educational investment were computed for the four types

using data from the US Panel Studies on Income Dynamics (PSID). Assuming a per capita educational budget of \$2500, the recommended allocation is presented in Table 2.

Table 2: EOp allocation of investment with per capita budget of \$2500 per student per annum

Parental Ed'n	< 8 years	8 < ed < 12 yrs	12 yrs	> 12 yrs
EOp investment	\$5360	\$3620	\$1880	\$1100

In other words, equal-opportunity investment would allocate almost five times as much to the most disadvantaged type of student as to the most advantaged type. Interestingly, we computed that the average wage of workers, under this allocation would have risen by 2.6% over the observed average wage – in other words, there is no observed trade-off between equity and ‘efficiency.’

The authors computed that if the allocation of table 2 had been implemented there would have been very little change in the fraction of black workers who would have risen above the bottom quintile of the wage distribution. They proceeded to compute the EOp policy for a different typology of workers into four types, defined as:

LB: low maternal education, black

HB: high maternal education, black

LW: low maternal education, white

HW: high maternal education, white.

The results are presented in table 3.

Table 3: EOp allocation of educational investment, four types, race x maternal education

Type of worker	LB	HB	LW	HW
EOp investment	\$8,840	\$16,260	\$2,610	\$679

For this typology, the investment ratios are huge. Moreover, the total wage bill would fall by 2% under the allocation of table 3, showing that an equity ‘efficiency’ trade-off does exist with respect to this typology.

At the least, the calculations of Betts and Roemer demonstrate that there is a large difference between an *equal-resource policy*, which invests the same amount in all children, and an *equal-opportunity policy*, which invests in children so as to attempt compensation for differential social circumstances. The United States, with its system of locally financed public education, is in most places less equitable even than the equal-resource policy would be: that is, usually more is invested in the public education of advantaged children than of disadvantaged children.

I have earlier distinguished between the equal-opportunity approach and the more classical welfarist approach in welfare economics. A second important distinction is between equal-opportunity, as a concept of equity, and meritocracy. Consider the problem of admissions to university or professional school. The equal-opportunity approach would suggest admitting the highest effort candidates from each of a set of types, distinguished by their levels of advantage in background. The meritocratic approach would suggest admitting those who are most likely to be high achievers. EOp focuses upon fair treatment *among the pool of candidates*, while meritocracy has a double focus: treating fairly the candidates, but also considering the quality of services those

candidates will, in the future, provide to society at large. (On the other hand, meritocracy is *not* concerned with effort of candidates in its measurement of fair treatment – rather only with ability to perform.) Thus the two approaches are in conflict.

Clearly, the quality of services provided to society at large must count – the unadorned EOp approach cannot in general be the right one. Generally speaking, society should follow a mixture of equal-opportunity and meritocratic policies. To calibrate the right mixture would require, as well as data to calculate the relevant elasticities, a general theory of justice for society at large, in which account is taken not only of fairness to those competing to occupy social positions, but of the welfare of those who eventually consume the products those individuals will produce. In the American debate around affirmative action, one can hear a different emphases. With respect to school admissions, most citizens seem concerned with fairness to the candidates, although there is a dispute as to what traits should or should not count in judging fairness; but with respect to employment, many believe meritocratic principles are primary. Thus, race-based affirmative action policies in universities are under challenge for focusing on the wrong parameters of disadvantage (which, many argue, should be ones of social class, not race), while affirmative-action employment policies are challenged for paying insufficient attention to competence in employing workers.

In the applications discussed above, the policy makers -- whether fictitious ones in the brains of scholars, or actual ones in social institutions – have generally contemplated only the effects of policies in a single sector, whether it be in education or employment. Recently, Calsamiglia (2005) has posed the following problem. Suppose individuals are competing for positions in several sectors simultaneously (in her

example, for admission to a university and an athletic team), and the admissions officer in each sector is attempting to design an equal-opportunity policy for the candidates in his sector alone. Thus, the university admissions officer knows that abilities and circumstances and efforts of candidates for university, and the athletic coach knows the same information as it applies to performance in her sector. Each designs a *local* equal-opportunity admissions policy for his own sector. When will the combination of policies equalize opportunities *globally*? The tension here is that policies in each sector will, if improperly designed, distort the efforts of candidates in other sectors.

Calsamiglia demonstrates that, under suitable conditions, locally designed EOp policies aggregate into a global EOp policy if and only if they *equalize rewards to effort* across types in each sector. For example, assigning disadvantaged students who are applying to law school ‘extra points’ to compensate them does *not* equalize rewards to effort for them and more advantaged students: rather, one requires a policy which, for each unit of effort expended, increases the probability of admission by the *same amount* across all types of student. One can say, that is, that equalizing rewards to effort is the necessary and sufficient condition for decentralizing the social problem of equalizing opportunities across the board into policy formation at the sectoral level. Whether or not Calsamiglia’s insight will be important in policy design will depend upon the degree to which individuals are involved in inter-sectoral effort allocation decisions.

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