Should Egalitarians Expropriate Philanthropists?•

Indraneel Dasgupta
University of Nottingham
indraneel.dasgupta@nottingham.ac.uk

and

Ravi Kanbur
Cornell University
sk145@cornell.edu

24 March, 2007

Abstract

Wealthy individuals often voluntarily provide public goods that the poor also consume. Such philanthropy is perceived as legitimizing one's wealth. Governments routinely exempt the rich from taxation on grounds of their charitable expenditure. We examine the normative logic of this exemption. We show that, rather than reducing it, philanthropy may aggravate absolute inequality in welfare achievement, while leaving the change in relative inequality ambiguous. Additionally, philanthropic preferences may increase the effectiveness of policies to redistribute income, instead of weakening them. Consequently, the general normative case for exempting the wealthy from expropriation, on grounds of their public goods contributions, appears dubious.

JEL Classification No. D31, D63, D74, Z13.

Keywords: Community, Public goods, Inequality, Distribution, Philanthropy, Egalitarianism.

• We thank Richard Cornes, Amrita Dhillon and Prasanta Pattanaik for helpful discussions, and The Pew Charitable Trusts for financial support.

1. Introduction

Andrew Mellon had been accused of being tardy in his tax payments. In 1937, Mellon decided to build the National Gallery of Art in Washington D.C., donating his private art collection to it. The Roosevelt administration lowered its tax demands. Should it instead have forced Mellon to pay up, and distributed the consequent tax revenue among the poor?[1]

This normative question is general. Rich individuals often voluntarily contribute large amounts towards the provision of public goods that are intrinsically important for the well-being of poor individuals, but have limited impact on their incomes. Examples of such public goods that routinely acquire rich patrons include places of worship, ethnic festivals, literary and cultural activities, sports clubs, civic/neighborhood amenities (including parks, museums, theatres, community halls, libraries), facilities for scientific research, etc. Poor individuals often benefit from these public goods without having to incur any major expenditure, while rich donors claim large tax deductions on grounds of their contribution. These tax deductions in turn reduce the resources available for direct redistribution.

It is well known that greater inequality is not necessarily Pareto-improving.[2] What, then, are the normative grounds for accepting philanthropy (in the sense of voluntary public goods provision) by the rich as a substitute for direct income redistribution? Standard measurement of inequality typically concentrates on the distribution of consumption expenditure. If the rich spend part of their income on public goods that are also consumed by the poor, would standard inequality measures *overstate* inequality in the distribution of welfare? If so, the case for prioritizing income equality over other values (e.g. individual freedom, respect for property rights, social stability) may indeed become normatively less compelling. The normative case for direct income redistribution may also appear less persuasive if it turns out that such redistribution is largely ineffective in altering the distribution of welfare. Would the direct income gain the poor make from a given redistribution be largely negated by the consequent reduction in public good provision by the rich? If so, the observed reduction in standard measures of income inequality would significantly *overstate* the fall in welfare inequality.

Our purpose is to examine these two issues.[3] The thrust of the literature on voluntary provision of public goods has been on investigating how (income) inequality affects provision.[4] Our focus is on addressing the exact opposite question: how voluntary provision affects (welfare) inequality.

[1] It is widely suggested that a deal was struck. Since then, Federal and State governments in the U.S. have come to encourage the wealthy to donate art to reduce tax liability as a matter of policy. See D'Arcy (2002).

[2] See Dasgupta and Kanbur (2007), Cornes and Sandler (2000), and Nozick (1974, pp. 265-268).

[3] Voluntary contributions to local, or community-specific, 'club' goods is also likely to have important implications for distributive conflicts among economic classes and identity groups, as well as for organizing measures to combat poverty. On these themes, see, respectively, Dasgupta and Kanbur (2007, 2005a, 2005b).

[4] See Cornes and Sandler (1996) for an overview.

We consider a game of voluntary contributions to a public good, among agents with identical preferences, who vary in terms of their personal income. In the Nash equilibrium, all rich agents contribute to the public good, while all non-rich individuals completely free-ride. As in standard measurement of inequality, we wish to focus on a money-metric measure of welfare achievement. However, since individuals can freely access the public good contributions of others, their personal earnings can no longer provide such a measure. Instead, we utilize the standard notion of equivalent variation to develop a money-metric measure of welfare achievement that incorporates the benefits from the public good. Inequality in welfare achievement is then measured in terms of pair-wise gaps in such 'real', or 'equivalent' income, instead of differences in personal income. Aggregation of absolute gaps leads to absolute measures of inequality, while aggregation of the gaps normalized by the average or the maximum of the income distribution leads to relative measures of inequality.

We show that, under standard restrictions on preferences, the following must be true. The mediation of philanthropy makes the absolute difference in real income (or welfare achievement) between two non-rich individuals larger than that in their nominal incomes. Thus, philanthropy *magnifies* the welfare consequences of income inequality among the non-rich. If the non-rich are sufficiently poorer than the rich, or if the rich are sufficiently numerous, this is true of the gap between rich and non-rich individuals as well. Hence, according to absolute measures of inequality, the community may in fact be made more unequal, rather than less, by philanthropy. The result with relative inequality measures is ambiguous — even here, there can be no guarantee that philanthropy reduces inequality. Our conclusion is driven essentially by the fact that any given amount of the public good is worth less to the poorer individual. Thus, while each rich individual benefits every non-rich individual through her spending on the public good, she also benefits more than the latter from the spending by *other* rich individuals on the public good. These two effects contradict one another in terms of their impact on welfare inequality. When the second effect dominates, absolute welfare inequality between the rich and others exceeds the corresponding nominal inequality. Thus, our results suggest that one may maintain an attitude of skepticism vis-à-vis the claim of equality-enhancement via philanthropy. Rich philanthropists certainly benefit the poor through their contributions to public goods, but they may also benefit one another *more* through such contributions.

We proceed to address the issue of effectiveness of nominal redistribution in reducing welfare inequality. We show that a given, efficient, redistribution of monetary income may reduce absolute inequality in real incomes (i.e. welfare achievements) *more*, rather than less, when the rich contribute to the public good. The same may also hold for relative inequality. As before, two contradictory effects turn out to be at play. A nominal redistribution reduces the supply of the public good from the rich. However, the presence of the public good also makes a dollar of private income more valuable to poorer individuals, compared to a private consumption society. Real inequality would fall by a greater magnitude than nominal inequality when the second effect dominates.

Section 2 lays out the basic model. Section 3 presents our results regarding the relationship between inequality in personal incomes and inequality in welfare outcomes. We discuss the effects of nominal redistribution on welfare inequality in Section 4. Section 5 discusses some extensions. Section 6 concludes. Proofs are relegated to the Appendix.

2. The Model

Our first step is to model the provision of the public good. Let a community consist of $n \geq 3$ individuals. The set of individuals is $N = \{1,...,n\}$. Each individual consumes a private good and a public good. For any $i \in N$, x_i is the amount of the private good consumed, y_i is the amount of the public good provided by *i* herself, whereas y_{-i} is the amount of the public good provided by all other agents. Preferences are given by a strictly quasi-concave and twice continuously differentiable utility function $u(x_i, B_i)$, where $B_i \equiv y_i + \theta y_{-i}$, $\theta \in (0,1]$. Thus, agents may be concerned only with the total amount of the public good. This possibility, the so-called 'pure' public good (Cornes and Sandler, 1996; Bergstrom *et al.*, 1986) case, implies $\theta = 1$. The public good may also be 'impure' - agents may derive greater utility from an additional unit of the public good if they themselves provide it (Andreoni, 1990; Cornes and Sandler, 1994), perhaps because of the 'warm glow' from the act of giving. In this case $0 < \theta < 1$.[5] We assume agents have identical preferences.

Agent $i \in N$ has own money (or nominal) income, $I_i \in (0, I_C]$. Thus, the highest income in the community is $I_C \in \Re_{++}$. Let $C = \{i \in N \mid I_i = I_C\}$, $n > |C| = n_C$. Thus, *C* is the set of rich members of the community; who all earn I_C; the community contains n_C such individuals. The community also contains some non-rich individuals, who earn less than I_C. Define $P = [N \setminus C]$, and let $\bar{I}_P = \max\{I_i \mid i \in P\}$. Thus, *P* is the set of non-rich individuals, i.e., all individuals who earn less than I_C; $\bar{I}_P$ is the second-highest income level in the community.

Agents simultaneously choose the allocation of their expenditure between the two goods.[6] For notational simplicity, we shall assume that all prices are unity. Thus, incomes in our analysis are all implicitly price-deflated. A community member's maximization problem then is the following.

[5] The lower the value of θ, the stronger the marginal 'warm glow' benefit from giving. Preferences can also be equivalently represented by $U(x_i, y_i, y)$, where *y* is the total amount of the public good, and $\frac{\partial U}{\partial y_i} \Big/ \frac{\partial U}{\partial y}$ is some non-negative constant, this term being *0* for the pure public good case. Lower values of θ evidently correspond to higher values of $\frac{\partial U}{\partial y_i} \Big/ \frac{\partial U}{\partial y}$.

$$\underset{x_i, B_i}{Max} \; u(x_i, B_i) \text{ subject to:}$$

$$x_i + B_i = I_i + \theta y_{-i}, \tag{2.1}$$

$$B_i \geq \theta y_{-i}. \tag{2.2}$$

The solution to the maximization problem, subject to the budget constraint (2.1) alone, yields, in the standard way, the unrestricted demand functions: $[B_i = g(I_i + \theta y_{-i})]$, and $[x_i = h(I_i + \theta y_{-i})]$.

Our main assumptions regarding preferences are the following.

A1. $g', h' > 0$.

A2. $\underset{[I_i + \theta y_{-i}] \to \infty}{Lt} h(I_i + \theta y_{-i}) = \infty$.

A3. $\underset{x_i \to 0}{Lt} u(x_i, y) = \underset{x_i \to 0}{Lt} u(x_i, 0)$.

A1 is the assumption that all goods are normal. By A1, there must exist a unique and symmetric Nash equilibrium in the voluntary contributions game.[7] In any Nash equilibrium, it must be the case that:

$$B_i = \max[\theta y_{-i}, g(I_i + \theta y_{-i})] \text{ for all } i \in N. \tag{2.3}$$

A2 implies that demand function for the private good is unbounded from above, i.e., one can generate any arbitrary level of demand for the private good by suitably choosing the nominal income level.[8] A3 is the assumption that the public good is worthless when one has no private consumption.[9]

Agent i is *non-contributory* in a Nash equilibrium if, in that Nash equilibrium, $[\theta y_{-i} > g(I_i + \theta y_{-i})]$, and *contributory* otherwise. By a non-contributory agent, we thus mean one who, given total contribution by others, would prefer to convert some of the public good contributions by others into her own private consumption. Since she cannot do so (2.2), a non-contributory agent spends nothing on the public good. Given total contribution by others, contributory agents would not wish to reduce their spending on the public good. Given any $\theta y_{-i} > 0$, by A1, $[\theta y_{-i} > g(\theta y_{-i})]$; thus, agents with income sufficiently close to 0 must be non-contributory.

As discussed earlier, our interest lies in a situation where, in the Nash equilibrium, the rich contribute to the public good, whereas the non-rich free-ride. We ensure this by assuming $[\theta g(I_C) > g(\bar{I}_P + \theta g(I_C))]$. Intuitively, this implies all non-rich agents earn so much less than the

---

[6] Individuals sometimes contribute time, rather than money, towards public goods. So long as time contributions can be substituted by purchased inputs, including labour, such contributions are formally equivalent to monetary contributions. See Dasgupta and Kanbur (2005b).

[7] See Bergstrom *et al.* (1986) and Andreoni (1990).

[8] For convenience of exposition: we only need the upper bound on *h* to be greater than I_C.

[9] Intuitively, this captures the idea that, at the edge of survival, the public good has a negligible impact on the individual's well-being. Multiplicative functional forms such as the Cobb-Douglas imply this property.

rich that the former are all non-contributory even when there is only one rich individual in the community. Given A1, this suffices to ensure that only the rich, i.e. agents belonging to the set *C*, will ever be contributory in the Nash equilibrium, regardless of the number of rich individuals. We shall denote the contribution of a rich individual by y_C; thus, in the Nash equilibrium, $y = n_C y_C$.

Due to philanthropy on part of the rich, individual $i \in N$ acquires consumption access to y_{-i} amount of the community's public good. A natural way to measure the monetary value of this gain is in terms of the standard notion of *equivalent variation*, i.e., in terms of the additional money she would need to achieve the same utility, if she did not have this access.[10] Let the *real income* of agent *i* in a Nash equilibrium, where she consumes (x_i, B_i), be defined as: $[r(x_i, B_i) \equiv V^{-1}(u(x_i, B_i))]$; where V is the indirect utility function. Thus, if all consumption were somehow privatized, *i* would be as well off as before only if she is given $[r(x_i, B_i) - I_i]$ dollars over her own nominal income I_i. Evidently, an agent would be better off in one Nash equilibrium rather than another, if, and only if, her real income is higher in the former. We define:

$$f(I_i, y_{-i}, \theta) \equiv \theta^{-1}[(I_i + \theta y_{-i}) - r(x_i, B_i)]. \tag{2.4}$$

The function f provides the monetary equivalent of the welfare loss generated by the in-kind, rather than cash, nature of philanthropy. When all others together spend y_{-i} on the public good, it is as if *i* receives a transfer, in kind, of that amount of the public good. When *i* is contributory, the public good contribution by all others is evidently equivalent, in terms of its effect on *i*'s welfare, to a cash transfer of θy_{-i}. The equivalent variation is therefore simply θy_{-i}. However, when *i* is non-contributory, the in-kind nature of the transfer generates a welfare loss. The equivalent variation in this case is consequently less than θy_{-i}. Recall that an agent is non-contributory if and only if $I_i < \bar{I}_P$. Thus, money value of the individual gain from philanthropy is the equivalent variation $\theta[y_{-i} - f(.)]$; where:

$$f(.) = 0 \text{ if } I_i = I_C, \text{ and } f(.) \in (0, y_{-i}) \text{ if } I_i \in (0, \bar{I}_P]. \tag{2.5}$$

Consider now a non-rich (and thus, non-contributory) agent. For such an agent, how does the gain from philanthropy, i.e., the equivalent variation, change with changes in (a) the agent's own (nominal) income, and (b) the magnitude of public good provision by rich agents?

Lemma 2.1 (Dasgupta and Kanbur, 2007) *Given A1, if* $I_i \in (0, \bar{I}_P]$, *then: (i)* $f_{y_{-i}} \in (0,1)$, *(ii)* $f_{I_i} < 0$, *and (iii)* $f_{y_{-i}I_i} < 0$, $f_{I_iI_i} > 0$.

[10] For a related approach to measuring individual gains from public good provision, see Cornes (1996). The questions we address are however quite different.

By Lemma 3.1, an additional dollar of public good provision is worth a positive amount, but less than θ, of cash income to non-rich individuals. Their valuation of a given amount of the public good, and of an additional dollar of it, both rise with their cash income. The former rises at a decreasing rate.

Lastly, the total amount of the public good must increase as the rich become more numerous. However, individual contributions must fall as the number of rich individuals increases.

Lemma 2.2. *Given A1-A2, the Nash equilibrium level of the public good, y, is increasing in* n_C, *while* y_C *is decreasing in* n_C, *with* $\underset{n_C \to \infty}{Lt} y_C = 0$.

Proof: See the Appendix.

3. Inequality

In our community, the rich provide collective goods, whereas the non-rich free-ride. Does this imply one should consider the distribution of real income less unequal than that of nominal income? To address this question, one needs to first choose a measure of inequality. Which class of inequality measures should one opt for? The presence of the public good, in effect, generates some additional income. There are two common views in the literature on what distribution of such increments would leave inequality unchanged (see Kolm, 1976). From one normative point of view, inequality remains unchanged if and only if this additional income is divided equally. Thus, one should opt for absolute inequality measures, i.e., inequality measures that aggregate absolute income gaps. Standard examples are the variance and the Kolm absolute measure.[11] From the other normative point of view, inequality is unchanged if the increment is divided in proportion to current income. This perspective leads to relative inequality measures, i.e., inequality measures that aggregate relative income gaps — specifically, income gaps normalized by either the average or the maximum of the distribution. Standard examples of relative measures include the Gini measure of inequality.

Let the real income gap between individuals *j* and *l* in the Nash equilibrium be denoted by R_{jl}, and let M_{jl} denote the corresponding nominal income gap. Using (2.4), we can write:

$$R_{jl} = M_{jl} + \theta(y_l - y_j) + \theta\lfloor f(I_l, y_{-l}) - f(I_j, y_{-j})\rfloor, \tag{3.1}$$

where y_j denotes the Nash equilibrium contribution by *j* and $y_{-j} \equiv y - y_j$ denotes total Nash equilibrium contribution by all agents other than *j*; y_l, y_{-l} being defined analogously.

Proposition 3.1. *Let A1 hold. Then the following must be true.*

[11] Chakravarty and Tyagarupananda (1998) show that these two are the only absolute decomposable inequality measures that satisfy some other standard properties.

(i) *For all* $(j,l) \in P \times P$ *such that* $M_{jl} > 0$, $\lfloor R_{jl} > M_{jl} \rfloor$.

(ii) *Given A2, there exists* $n^*(I_C, \bar{I}_P) \in \{1,2,...\}$ *such that* $\lfloor R_{jl} > M_{jl} \rfloor$ *for all* $(j,l) \in C \times P$ *when* $n_C > n^*$.

(iii) *Given A3 and* $n_C \geq 2$, *there exists* $I^*(I_C, n_C) > 0$ *such that* $\lfloor R_{jl} > M_{jl} \rfloor$ *for all* $(j,l) \in C \times P$ *when* $\bar{I}_P < I^*$.

Proof: See the Appendix.

First consider the non-rich segment of the community. By Proposition 3.1(i), the real gap between every pair of individuals belonging to this segment is higher than the corresponding nominal gap. Intuitively, this happens because the public good is worth more to wealthier individuals (Lemma 2.1). Thus, the presence of the public good magnifies the welfare consequence of nominal differences within the non-rich section of the community. Note that only A1 is required for this result.

How do nominal and real gaps compare between the rich and the others? Contradictory effects are at work here. A rich individual, say *k*, benefits all non-rich individuals through her spending on the public good. Since the latter do not contribute, the nominal gap will necessarily *overstate* the real income gap between *k* and any non-rich individual if *k* is the only rich person in the community. However, when there are other rich individuals, *k* also benefits more than the non-rich from public spending by such individuals. Proposition 3.1(ii) implies that, above some threshold number of rich individuals, the second effect will dominate the first. Thus, whenever the number of rich individuals is sufficiently large, the nominal income gap will *understate* the magnitude of differences in real income between the rich and all others.[12] Note that only A1 and A2 are required for this claim to hold. If, alternatively, A1 and A3 hold, such understatement must occur in every community with at least two rich individuals whenever non-rich incomes are sufficiently low (Proposition 3.1(iii)).

Since $\dfrac{\sum_i \sum_j (z_i - z_j)^2}{2n^2} \equiv Var(z_i)$, Proposition 3.1 immediately yields the following.

Corollary 3.2. *Let A1, A2 and A3 hold. Then there exists* $n^* \in \{1,2,...\}$ *such that, if the community contains more than* n^* *rich individuals, the distribution of nominal income will exhibit a lower variance than that of real income. The same is true for any community with at least two rich individuals whenever non-rich incomes are sufficiently low.*

---

12 The basic point is that, Bill Gates, for example, attains a larger hike in real income from the $31 billion donation to the Gates Foundation by Warren Buffet, than the average American who values the Gates-Buffet objective of poverty alleviation in developing countries, but not enough to contribute. Consequently, Buffet's donation may make real inequality between Gates and this average American higher than the nominal inequality.

Proposition 3.1 and Corollary 3.2 contest the view that voluntary public spending by the rich necessarily compensates for prior inequalities in income. Our results show that, in general, wealthier individuals are likely to benefit more from such contributions. Thus, the distribution of real income within the community may be more (absolutely) unequal than that of nominal income, rather than less.

Absolute measures of inequality violate the property of scale invariance. Scale invariance requires equal-proportion changes in all incomes to leave the inequality measure invariant. Both normative and pragmatic considerations are invoked to justify this property. The normative a priori position appears to contradict egalitarian intuition. The pragmatic justification is that inequality rankings should not change when all incomes are measured in a different unit, say pounds rather than dollars. Since our analysis is based on price-deflated incomes, this consideration is not germane to our conclusions. Note nevertheless that the variance is 'unit consistent': inequality rankings between different distributions are unaffected by equal-proportion changes in all incomes (Zheng, 2005). Thus, our claim, that the real distribution may be more unequal than the nominal one (Corollary 3.2), is unaffected by the additional restriction that the inequality measure also satisfy unit consistency.

Relative measures incorporate the property of scale invariance. Depending on preferences, pair-wise real inequality between the rich and the non-rich may or may not be less than the corresponding nominal inequality under such measures.[13] Intermediate measures have also been proposed (Bossert and Pfingsten, 1990). Our conclusions will hold for particular parameterizations of such measures.

4. Real Effects of Nominal Redistribution

A marginal redistribution of nominal income from the rich to others will induce the former to reduce their spending on the public good. Thus, the redistribution will directly increase real incomes of the non-rich, but the cutback in public good provision by the rich will reduce them. What would be the net effect on inequality? Does philanthropy by the rich *necessarily* make redistribution of nominal income less effective in reducing inequality? We now show that there should not be a general presumption in favor of this view. Depending on preferences and the initial nominal distribution, a

---

[13] Suppose $\frac{B_i}{x_i}$ does not increase along the income expansion path. Homothetic preferences are a special case of this restriction. Then, as can be easily checked, for every $(j,l)\in C\times P$, $\left[\frac{r_l}{r_j} > \frac{I_l}{I_j}\right]$. This in turn yields: $\left[\frac{r_l}{r_l + r_j} > \frac{I_l}{I_l + I_j}\right]$. Thus, expressed as a proportion of a rich person's income, or as a proportion of mean income, pair-wise nominal inequality between the rich and others is *always greater* than the corresponding real inequality. This conclusion need not hold when $\frac{B_i}{x_i}$ increases along the income expansion path.

marginal redistribution may in fact turn out to have a greater inequality-reducing impact on the real distribution than the nominal one, in addition to making the non-rich better off.

We establish our claim via an example. Let preferences be given by the symmetric Cobb-Douglas form $x_i y$, and suppose $|P| = n_C \geq 2$. Thus, the number of rich individuals is identical to that of non-rich individuals. Notice that our specification of preferences satisfies A1, A2 and A3. In line with our earlier analysis, we assume $\frac{I_C}{2} > \bar{I}_P$; then A1 implies that, regardless of the value of n_C, all *P* agents must be non-contributory in the initial Nash equilibrium.

Consider a marginal redistribution of nominal income: each rich individual loses one dollar, while every non-rich individual gains this amount. Public good provision must fall subsequent to the redistribution, and the rich must necessarily become worse off. The tax-transfer policy will reduce the nominal income gap between a rich and a non-rich individual by \$2, while the nominal income gap between any two non-rich individuals will stay invariant. What happens to real income gaps?

First consider any pair of non-rich individuals with dissimilar nominal incomes. By Lemma 2.1, the real income gap between these individuals must fall, even though the nominal gap stays invariant. Thus, the marginal redistribution must necessarily reduce real inequality within the non-rich segment of the population. What happens to real inequality between the rich and others?

Observation 4.1. *Suppose every C individual loses \$1, while every P individual gains this amount. Suppose further that all P individuals remain non-contributory in the post-redistribution Nash equilibrium. Then, in the post-redistribution Nash equilibrium,*

(i) *all P individuals must be better off, and*

(ii) *there exists* $\underline{\lambda}(n_C) \in \left(0, \frac{1}{2}\right]$ *such that, if* $\bar{I}_P < \underline{\lambda} I_C$*, then, for all* $(j,l) \in C \times P$*,* R_{jl} *must fall by more than \$2.*

Proof: See the Appendix.

By Observation 4.1, our example has the following properties. First, the redistribution will benefit the non-rich, despite the fall in public good provision. Second, if the rich are sufficiently richer than the others, the redistribution must reduce the real income gap between a rich and a non-rich individual by more than \$2. Hence, in this case, the redistribution will reduce the real income gap between *any* arbitrary pair of individuals with dissimilar nominal incomes by an amount greater than the reduction in the corresponding nominal income gap. It follows that the fall in aggregate (absolute) real inequality (as measured by the variance) must be greater than that in aggregate nominal inequality.

It can also be checked that, if the rich are sufficiently richer than the non-rich, the redistribution must increase total real income in the community, despite the fall in public good provision. Thus, a rich person's real income must fall when expressed as a *proportion* of total (or mean) real income in the community. It follows that in this case the relative income gap between the rich and the poor must also fall, leading to a fall in measures of relative inequality of real income. Furthermore, when non-rich incomes are sufficiently low, the redistribution also increases the real income of a non-rich person, expressed as a proportion of the real income of a rich person, by more than the corresponding change in nominal income. It follows that, even when inequality is measured in relative terms, redistribution may reduce real equality more than it reduces nominal inequality.

This example shows that philanthropic preferences on part of the rich need not *necessarily* reduce the effectiveness of redistributive measures at the margin. Indeed, such preferences may actually make nominal redistribution more effective, rather than less. This conclusion holds irrespective of whether inequality is measured in absolute or relative terms.

5. Extensions

(i) Preference heterogeneity

We have assumed that preferences are identical across community members. This is primarily for convenience of exposition. We can generalize the analysis to the case where all rich individuals have identical preferences, as do all non-rich individuals, but the preferences of the rich differ from those of the non-rich. Our conclusions, as summarized in Proposition 3.1 and Corollary 3.2, will continue to hold for this extension. Counterparts of the example presented in Section 4.1 can also be constructed. If all rich individuals have identical preferences, but preferences vary within the non-rich section, then part (i) of Proposition 3.1 need not hold. However, our conclusions regarding pair-wise inequality between the rich and the non-rich (Proposition 3.1 ((ii) and (iii)) will remain unaffected.

(ii) Inferior public goods:

Our conclusions are essentially driven by the assumption that the public good is normal. If it is inferior, then, evidently, poorer individuals will benefit more from public good provision by the rich. Hence, philanthropy by the rich would reduce (absolute) real inequality. However, if the public good is inferior, it appears unlikely that the rich would contribute towards its provision in the first place. An exception might arise if ability to spend on the public good, on part of the poor, is significantly less than their willingness, say due to labor or credit market imperfections. But major labor or credit market imperfections would in turn intuitively appear to strengthen the case for improving the private asset base of poor individuals, (i.e., in effect, provide monetary transfers), not weaken it.

(iii) Private consumption augmenting public goods:

We have focused on voluntary provision of public goods that directly improve well-being, but do not have major income (or private consumption) consequences for non-rich individuals. Religious edifices (e.g. churches and temples), cultural goods (museums, concert halls, theatres, artistic performances), ethnic festivals, parks, promenades, community centers, sports clubs, sports facilities, etc. all appear to fall in this category. So does aid to foreigners, when one considers the community to consist *only* of residents of the donors' own country. Rich philanthropists however often also provide public goods that have a significant positive impact on the private earnings of non-rich individuals, or, more generally, increase their private consumption. Cash donations, soup kitchens, homeless shelters, donation of clothing or medicine, all provide obvious examples of philanthropy that directly add to the private consumption of the poor. Charitable provision of hospitals, educational institutions, water supply, sanitation, irrigation, security, medical research, etc. may all significantly increase the earning capacity of the non-rich. If the positive private consumption effect of such philanthropy is larger for poorer individuals, then this may counteract the inequality augmenting effect we have highlighted. However, some of these private income/consumption effects may also further increase inequality. The extremely poor are unlikely to study at Oxford on Rhodes Scholarships, crop research, irrigation and local security may all benefit landowners much more than the landless, medical facilities may be more effective for those who can afford more food. Thus, the impact on inequality appears ambiguous, depending critically on the size and distribution of private benefits that flow from the public good.

6. Conclusion

Rich people are frequently advised by thoughtful conservatives to spend their wealth on collective goods that benefit sections of the poor. Bill Gates and Warren Buffet are merely the latest in a long line of wealthy individuals to actually end up doing so. Even politicians on the left typically allow large tax incentives for charitable contributions. In so doing, they also appear to endorse the claim that one should consider philanthropy a substitute for direct income redistribution.

Why should one do so? It is well known that, even with public goods provision by the rich, there are no a priori grounds for expecting redistribution to necessarily make the poor worse off. Is it then the case that philanthropy itself is likely to significantly enhance equality? Or is it that philanthropy is likely to reduce the effectiveness of income-equalizing interventions? Answers to these questions would appear to be of considerable interest in clarifying the trade-offs facing policy-makers.

This paper has argued that both answers may be negative. Using measures of both absolute and relative inequality, we have shown that philanthropy may actually exacerbate inequality, instead of reducing it. Thus, one should reject the claim that philanthropy is *necessarily* equality enhancing. Nor should one admit the presumption that philanthropy reduces the efficacy of income redistribution. Our analysis appears to weaken the normative case for permitting wealthy philanthropists to opt out of efficient redistribution schemes. Equality-enhancing claims of specific acts of philanthropy need to be individually established – there should not be any indiscriminate presumption in their favor.

In particular, as a broad criterion, what appears to be of critical importance in assessing such claims is the magnitude of their direct impact on the private asset base of poorer individuals, i.e., on their private consumption. Philanthropic contributions to basic health, education, housing and sanitation facilities, medical research into diseases that disproportionately affect the poor, and to technologies that improve demand for low-skilled labor, seem to generally fall in this category. Such contributions reach the non-rich, directly or indirectly, largely in the form of a significant increment in private consumption, and can hence be reasonably perceived as a substitute for direct redistribution of private income.[14] Our analysis suggests that, in contrast, philanthropic provision of public goods that are intrinsically valuable, but have negligible income-augmenting effects on the non-rich, may be reasonably viewed as *complementary* to a policy of redistribution. Thus, from an egalitarian perspective, the case for exempting donations to, say, churches, temples, museums, art galleries, opera houses, sports clubs, community centers, public parks, universities, elite private schools, private hospitals etc., from taxation appears questionable. Automatic presumption of public benefit from all types of charities, a presumption common in Western countries both in law and in the public discourse, with its concomitant tax implications, appears open to challenge. This is especially so when one's prior normative intuition regarding inequality leads one to adopt absolute measures. Our analysis points to the need for further empirical evaluation of this issue in specific policy contexts.[15]

If the general normative case for exempting rich philanthropists from expropriation is indeed as caveat-riddled as we suggest, why do even political parties with egalitarian credentials so commonly accept it as a matter of course? Political-economic compulsions of electoral coalition-building may provide a partial explanation. Elsewhere (Dasgupta and Kanbur, 2007) we have examined some aspects of this issue. Further exploration of this theme appears to constitute a useful line of inquiry.

Appendix

Proof of Lemma 2.2.

That y is increasing, and y_C decreasing, in n_C follow directly from A1. Suppose $\underset{n_C \to \infty}{Lt} y_C \in \Re_{++}$. Then, $\underset{n_C \to \infty}{Lt} \left[I_C + \theta(y - y_C)\right] = \infty$. In light of A1-A2, this implies $\underset{n_C \to \infty}{Lt} x_C = I_C$, a contradiction. Hence $\underset{n_C \to \infty}{Lt} y_C = 0$. ◊

[14] Thus, the publicized priorities of the Gates-Buffet project, or those of George Soros, would appear to be broadly in accord when considered globally, but *not* self-evidently so when considered in the restricted context of American society. Few Americans are likely to experience a significant rise in their private consumption from improvements in malaria medicines. Whether private foundations generally meet these objectives more efficiently than public agencies is a different question, one on which evidence appears ambiguous.

[15] Charity policy in the U.K., for example, is going through such a rethink. The British parliament is currently debating a new charities bill that removes the automatic presumption of public benefit. This bill instead requires charities to register with a regulator, the Charity Commission, which must, in turn, apply an independent test of public benefit. Scotland passed such a law in 2005. The debate, of course, is over exactly what constitutes 'public benefit' that is adequate to merit tax concessions (Leigh, 2006).

Proof of Proposition 3.1.

(i) Since *j* and *l* are both non-contributory, (3.1) reduces to:

$$R_{jl} = M_{jl} + \theta\lfloor f(I_l, y) - f(I_j, y)\rfloor.$$

Since $I_j > I_l$, $\theta > 0$, part (i) follows from Lemma 2.1(ii).

(ii) Since *l* is non-contributory, using (3.1) we get:

$$\lfloor R_{jl} - M_{jl}\rfloor = \theta[f(I_l, y) - y_C].$$

Let $\theta[f(I_l, y) - y_C] = \Gamma(n_C)$. By Lemma 2.1(i) and Lemma 2.2, $\Gamma(n_C)$ is increasing in n_C, with $\Gamma(1) < 0$ and $\underset{n_C \to \infty}{Lt}\Gamma(n_C) > 0$. The claim follows.

(iii) By A3, $\underset{I_l \to 0}{Lt} f(I_l, y) = y$. Hence, $\underset{I_l \to 0}{Lt}\theta[f(I_l, y) - y_C] = \theta(n_C - 1)y_C > 0$ for $n_C \geq 2$. Noting the continuity of *f*, Lemma 2.1(ii) yields part (iii). ◊

Proof of Observation 5.1.

It can be easily checked that, in the Nash equilibrium,

$$\text{for all } i \in C,\ r_i = I_C + \left(\frac{n_C - 1}{n_C}\right)y = \left[\frac{2}{1 + n_C^{-1}}\right]I_C; \tag{X1}$$

$$\text{for all } i \in P,\ r_i = 2\sqrt{I_i y} = \left(\frac{2}{\sqrt{1 + n_C^{-1}}}\right)\sqrt{I_i I_C}\,. \tag{X2}$$

By (X2), the impact of a marginal tax-transfer policy on the real income of a P individual is given by:

$$\text{for all } i \in P,\ \left[\frac{\partial r_i}{\partial I_i} - \frac{\partial r_i}{\partial I_C}\right] = \left(\frac{1}{\sqrt{1 + n_C^{-1}}}\right)\left[\frac{I_C - I_i}{\sqrt{I_i I_C}}\right] > 0\,. \tag{X3}$$

(X3) yields part (i). Now let $I_i \equiv \lambda_i I_C$ for $i \in P$. Then we can rewrite (X3) as:

$$\text{for all } i \in P,\ \left[\frac{\partial r_i}{\partial I_i} - \frac{\partial r_i}{\partial I_C}\right] = \left(\frac{1}{\sqrt{1 + n_C^{-1}}}\right)\left[\frac{(1 - \lambda_i)}{\sqrt{\lambda_i}}\right]. \tag{X4}$$

Since the RHS in (X4) is decreasing in λ_i, and approaches infinity as λ_i approaches 0, it follows that:

$$\text{there must exist } \underline{\lambda}(n_C) > 0 \text{ such that } \left[\frac{\partial r_i}{\partial I_i} - \frac{\partial r_i}{\partial I_C}\right] > 1 \text{ iff } \lambda_i < \underline{\lambda}(n_C). \tag{X5}$$

Noting that, since $n_C \geq 2$ by assumption, (X1) implies $\frac{\partial r_i}{\partial I_C} > 1$ for all $i \in C$, part (ii) follows. ◊

References

Andreoni, J. (1990): "Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving", *Economic Journal*, 100 (401): 464-477.

Bergstrom, T., L. Blume and H. Varian (1986): "On the Private Provision of Public Goods", *Journal of Public Economics*, 29: 25-49.

Bossert, W. and A. Pfingsten (1990): "Intermediate Inequality: Concepts, Indices and Welfare Implications", *Mathematical Social Sciences*, 19: 117-34.

Chakravarty, S. and S. Tyagarupananda (1998): "The Subgroup Decomposable Absolute Indices of Inequality", in S.R. Chakravarty, D. Coondoo and R. Mukherjee (eds.), *Quantitative Economics: Theory and Practice*, New Delhi: Allied Publishers.

Cornes, R. (1996): "Measuring the Distributional Impact of Public Goods", in D. Van de Walle and K. Nead (eds.), *Public Spending and the Poor: Theory and Evidence*, Washington D.C.: Johns Hopkins University Press/World Bank.

Cornes, R. and T. Sandler (2000): "Pareto-Improving Redistribution and Pure Public Goods", *German Economic Review*, 1(2): 169-186.

Cornes, R. and T. Sandler (1996): *The Theory of Externalities, Public Goods and Club Goods*, 2nd edn., Cambridge: Cambridge University Press.

Cornes, R. and T. Sandler (1994): "The Comparative Static Properties of the Impure Public Good Model", *Journal of Public Economics*, 54: 403-421.

D'Arcy, D. (2002): "Artful Dodgers", www.forbes.com/2002/07/03/0703hot.html.

Dasgupta, I. and R. Kanbur (2007): "Community and Class Antagonism", *Journal of Public Economics* (forthcoming).

Dasgupta, I. and R. Kanbur (2005a): "Bridging Communal Divides: Separation, Patronage, Integration", in C. Barrett (ed.), *The Social Economics of Poverty: On Identities, Groups, Communities and Networks*, London: Routledge.

Dasgupta, I. and R. Kanbur (2005b): "Community and Anti-Poverty Targeting", *Journal of Economic Inequality*, 3(3): 281-302.

Kolm, S. (1976): "Unequal Inequalities I and II", *Journal of Economic Theory*, 12: 416-442, and 13: 82-111.

Leigh, G. (2006): "Small Matters of Life and Death", *The Guardian*, London, 29 June.

Nozick, R. (1974): *Anarchy, State and Utopia*, New York: Basic Books.

Zheng, B. (2005): "Unit-Consistent Decomposable Inequality Measures", mimeo, University of Colorado at Denver.