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Justice and Climate Change

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The goal of the Harvard Project on International Climate Agreements is to help identify key design elements of a scientifically sound, economically rational, and politically pragmatic post-2012 international policy architecture for global climate change. It draws upon leading thinkers from academia, private industry, government, and non-governmental organizations from around the world to construct a small set of promising policy frameworks and then disseminate and discuss the design elements and frameworks with decision-makers. The Project is co-directed by Robert N. Stavins, Albert Pratt Professor of Business and Government, John F. Kennedy School of Government, Harvard University, and Joseph E. Aldy, Fellow, Resources for the Future. For more information, see the Project's website: <http://belfercenter.ksg.harvard.edu/climate>

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Abstract

Climate change raises complex issues of science, economics, and politics; it also raises difficult issues of justice. Poor nations are especially vulnerable to rising temperatures, in part because they are poor. Wealthy nations have less at risk, in part because they are wealthy. It is both tempting and plausible to suggest that for either emissions reductions or adaptation, wealthy nations owe special obligations to poor ones. In this paper, we address this general question by focusing on a much narrower one: how should permits be allocated in a global cap-and-trade system? Many observers have urged that in an international agreement, emissions rights should be allocated by reference to population, not to existing emissions. The intuition here is that every person on the planet should begin with the same emissions right. From the standpoints of distributive justice, welfare, and fairness, the per capita approach does have major advantages over an approach based on existing emissions, because it would provide significantly greater benefits to poor people. However, the per capita approach is far inferior to an approach that focuses more concretely on what the right normative theory requires. Nonetheless, insisting on a principled allocation, in which poor countries receive many permits, may make international agreement impossible. This could lead to disaster for the very nations that are poorest and most vulnerable to climate change. Targeting adaptation assistance to poor nations, or to poor people in poor nations, would be a better way to combine climate change policy with distributive justice.

Justice and Climate Change

Eric A. Posner* and Cass R. Sunstein**

I. Introduction

Climate change raises complex issues of science, economics, and politics; it also raises difficult issues of justice. Poor nations are especially vulnerable to rising temperatures, in part because they are poor. Wealthy nations have less at risk, in part because they are wealthy. It is both tempting and plausible to suggest that for either emissions reductions or adaptation, wealthy nations owe special obligations to poor ones. Our goal here is to make progress on that general question by focusing on a much narrower one: the allocation of permits in a global cap-and-trade system. As we shall see, the answer to that question is of considerable interest in itself; it also illuminates many other questions at the intersection of justice and climate change.

Many people believe that the problem of climate change should be handled by some kind of international cap-and-trade system. Under this approach, participating nations, and perhaps the entire world, would create a “cap” on greenhouse gas emissions. Nations would be allocated specified emissions rights, which could be traded in return for cash. By itself, however, the proposal for a cap-and-trade system does not answer a crucial question: How should emissions rights be allocated? Some people believe that the status quo, across nations, provides the appropriate baseline. On one view, emissions might be frozen at existing levels, so that every nation has the right to its current level of emissions. On a more aggressive view, all or most signatory nations should have to reduce their emissions levels by a specified percentage, again taking the status quo as the foundation for reductions. The status quo might seem to have intuitive appeal, but it is also somewhat arbitrary and raises serious questions from the standpoint of equity. Why should climate change policy take existing national emissions, and to that extent existing national energy uses, as a given for policy purposes? Should a nation with 300 million people be given the same emissions rights as a nation with one billion people, or 40 million people, simply because the emissions of the three nations, at the current time, are roughly equal?

Raising these questions, many observers have strenuously urged that in an international agreement, emissions rights should be allocated by reference to population, not to existing emissions.¹ The intuition here is that every person on the planet should begin

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¹ See, e.g., National Development and Reform Commission, People’s Republic of China, China’s National Climate Change Programme 58 (June 2007); Daniel Bodansky, *International Climate Efforts Beyond 2012: A Survey of Approaches* (2004) (describing several per capita approaches); Anil Agarwal, *Making the Kyoto Protocol Work: Ecological and Economic Effectiveness, and Equity in the climate regime*, available at http://www.cseindia.org/html/eyou/climate/pdf/cse_stat.pdf; Anil Agarwal and S. Narain, *Global Warming in an Unequal World: A Case of Environmental Colonialism* (1991); Tom Athanasiou and Paul Baer, *Dead Heat: Global Justice and Global Warming* (2002); Ann Kizig and Daniel Kammen, *National Trajectories of Carbon Emissions; Analysis of Proposals to Foster the Transition to Low-Carbon Economies*, 8 *Global*

with the same emissions right; it should not matter whether people find themselves in a nation whose existing emissions rates are high. Those concerned about the welfare of developing nations are especially interested in per capita allocations of emissions rights. Why should a poor nation, with a large population, be required to stick close to its current emissions level, when wealthy nations with identical populations are permitted to emit far more? Why should existing distributions of wealth, insofar as they are reflected in current emissions, be taken as the foundation for climate change policy? More bluntly: Why should the United States be given emissions rights that dwarf those of China and India, which have much larger populations?

This argument might well be connected with a general “right to development.”² If the status quo is the baseline for allocating emissions rights, poor nations are likely to have great difficulty in achieving the levels of development already attained by wealthy nations. Perhaps an imaginable climate change agreement, one that would be based on existing national rates, would violate the “right to development” even if it would be both effective and efficient.

The relationship between climate change and questions of justice is exceedingly large, and our goal in this chapter is relatively narrow. We aim to make some progress on the broader question by identifying the problems with the per capita system, in terms of both principle and feasibility, and to suggest that its current prominence and popularity are undeserved. We suggest that advocates of per capita allocations are correct on one point: In principle, there is little to be said for basing emissions rights on existing emissions levels. The most plausible defense of this approach is pragmatic. Nations are unlikely to sign an international agreement if they will be significant net losers,³ and wealthy nations might lose a great deal from any approach that does not use existing emissions as the baseline for

Environmental Change 183 (1998); Juan-Carlos Altamirano-Cabrera and Michael Finus, Permit Trading and Stability of International Climate Agreements, 9 *J Applied Economics* 19 (2006); A. D. Sagar, Wealth, Responsibility, and Equity: Exploring an Allocation Framework for Global GHG Emissions, 45 *Climatic Change* 511 (2000); Peter Singer, *One World* 35 (2002); Juliane Kokott, Equity in International Law, in *Fair Weather?: Equity Concerns in Climate Change* 173, 188 (Ferenc L. Tóth ed. 1999); Hermann E. Ott and Wolfgang Sachs, The Ethics of International Emissions Trading, in *Ethics, Equity, and International Negotiations on Climate Change* 159-68 (Luiz Pinguelli-Rosa and Mohan Munasinghe eds. 2002) (“The equal right of all world citizens to the atmospheric commons is therefore the cornerstone of any viable climate regime.”); Malik Amin Aslam, Equal Per Capita Entitlements: A Key To Global Participation on Climate Change?, in *Building on the Kyoto Protocol: Options for Protecting the Climate* 127 (Kevin A. Baumert ed. 2002); Donald Brown, American Heat: Ethical Problems with the United States’ Response to Global Warming 214 (2002); Sven Bode, Equal Emissions per Capita over Time—A Proposal to Combine Responsibility and Equity of Rights (2003), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=477281. See also J. Timmons Roberts and Bradley C. Parks, A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy 144-46 (2007) (describing international support for the per capita approach); Jeffrey Frankel, Formulas for Quantitative Emissions Targets, in *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World* 31, 40 (Joseph E. Aldy and Robert N. Stavins eds. 2007) (noting developing world demand for per capita system).

² See United Nations General Assembly, Declaration on the Right to Development, Res. 41/28 (1986). We do not explore the important controversy over historic responsibility – over the claim that the United States (and other wealthy nations) should play a special role in a climate change agreement because of their past, cumulative contributions. For discussion, see Eric A. Posner and Cass R. Sunstein, *Climate Change Justice*, 96 *Georgetown LJ* 1565 (2008).

³ See Jack Goldsmith and Eric A. Posner, *The Limits of International Law* (2006).

reductions. But this pragmatic point shows only that powerful nations might well veto approaches that are better in principle; it does not show that those nations are correct to do so. As a matter of principle, an approach based on per capita emissions rights seems preferable to one based on existing emissions, and there are strong intuitive claims, rooted in welfarist and other arguments, on behalf of such an approach. One of our principal purposes is to cast those claims in a sympathetic light.

As we shall also see, however, a per capita approach also runs into powerful objections. We demonstrate this point by comparing that approach to several others, above all those based on existing emissions and those with explicitly redistributive aims. Most fundamentally, per capita allocations will help some rich nations and hurt some poor ones. The reason is that some rich nations are highly populated, and some poor nations are not. In fact there is no correlation between population size and wealth per capita. If global redistribution or international justice is the goal, the per capita approach is a highly imperfect means.

Many people support the per capita approach not on redistributive grounds, but on the basis of a simple and plausible appeal to fairness.⁴ The atmosphere's carbon-absorbing features are naturally thought of as a common resource. Perhaps a common resource should be divided among all the people in the world on the ground that all people enjoy a right to equal opportunity or to equal human dignity.⁵ Indeed, the same type of argument has been made about mineral resources discovered under the high seas: as no particular state "owns" these resources, they should be divided on a per capita basis.⁶ And given the constraints of national sovereignty, the resources should be given to national governments on the basis of their states' share of the global population rather than divided up among individuals directly.

We will show that the analogy to common property is at best incomplete and obscures the relevant moral concerns. If we compare a climate treaty and a treaty that provides for the exploitation of an underwater mineral deposit, we immediately see that there is a crucial difference between the two settings. A climate treaty, by reducing global warming, will have differential benefits and costs for people around the world. While some people will benefit a great deal, others will benefit much less and perhaps not at all. By contrast, exploitation of mineral deposits has minimal differential effects. Per capita distribution of greenhouse gas emission permits would distribute the revenues from the abatement program on an equal basis, but would not equalize the overall effects of that program.

In principle, the appropriate way to distribute permits is on the basis of the aggregate effects of the climate treaty in light of standard normative theories — emphasizing, for example, distributive justice, welfare, or fairness. From the standpoint of those theories, and in particular on welfarist grounds, the per capita approach does have major advantages over an approach based on existing emissions, because it would provide significantly greater

⁴ See, e.g., Michael Grubb et al., *Sharing the Burden*, in *Confronting Climate Change: Risks, Implications and Responses* 318-19 (Irving M. Mintzer ed. 1992) (and citations therein).

⁵ Universal Declaration of Human Rights, Art. 1.

⁶ The Law of the Sea Convention provides that such resources be divided "equitably"; however, that term has multiple meanings and is left undefined. See United Nations Convention on the Law of the Sea, Art. 140.

benefits to poor people. But the per capita approach would also have some unfortunate incentive effects, which complicate the inquiry. Even if those effects are put to one side, a per capita approach is far inferior to an approach that focuses more concretely on what the right normative theory requires.

Our conclusions are that on welfarist grounds, the per capita approach is at most a crude second-best, and that it faces decisive objections from the standpoint of feasibility. Insistence on that approach would endanger and very possibly doom an international effort to reduce the risks associated with climate change.

Despite the narrowness of our conclusions, we hope that the analysis bears on some broader questions of justice, which are playing an important role in discussions of climate change. It is increasingly clear that distributive issues are crucial as a matter of both principle and practice. The issues we examine are not confined by any means to the allocation of allowances under a cap-and-trade system (or setting of tax rates or side payments in some kind of global carbon tax regime; those issues are fundamental to the key and generic question of the allocation of responsibility under a future international policy architecture, whether trading, taxes, standards, or other mechanisms are employed. An understanding of the problems with the per capita approach help to cast light on other, more plausible approaches for reducing the risks of climate change in a way that meets the requirements of justice.

II. The Effects of a Per-Capita Permit System

A. Aggregate Emissions vs. Per Capita Emissions

An international agreement might allocate emissions rights in many different ways. One possibility would be to begin with existing emissions rates and freeze them or require a percentage reduction. If existing rates are the good, the ranking across nations would look one way, with China and the United States at the top.⁷ But if we look on a per capita basis, the ranking is altogether different. Because of explosive emissions growth in developing nations, any particular ranking will change over time, but some of the basic conclusions are clear.⁸ For example, the United States ranks toward the top of the world's emitters on a per capita basis as well as in the aggregate, but India ranks very low in a per capita basis. Perhaps the most striking point is that while China has become the world's leading national emitter of greenhouse gases, its per capita contributions remain fairly modest, ranking it well below the top fifty contributors.

With dramatic growth in emissions from China and India, some of these conclusions will change over time; the per capita rates in China in particular will be far higher in ten years. But it is clear that per capita allocations would produce radically different distributional effects from allocations based on the national status quo. With per capita

⁷ See, e.g., <http://www.mnp.nl/en/publications/2008/GlobalCO2emissionsthrough2007.html>

⁸ World Resources Institute, Climate Analysis Indicators Tool, available at <http://cait.wri.org/cait.php?page=yearly>.

emissions rights, the world's largest nations — China and India — would be significant net gainers. Indeed, their emissions rights would probably be worth hundreds of billions of dollars. The principal losers would be the nations now having high per capita emissions. The biggest loser, by far, would probably be the United States. Because of their high per capita emissions rates, Canada and Australia would lose a great deal as well.

With this background, we should be able to glimpse the intuitive argument on behalf of per capita allocations. Nations are not people; they are collections of people. A citizen of India should not be given emissions rights that are a small fraction of those of a citizen of the United States. Nor should a citizen of China be given emissions rights that are a small fraction of those of a citizen of Japan. Each person should count for no more and no less than one. As we shall see, this intuition might be grounded in concerns of either welfare or fairness. But before we investigate these issues, it is necessary to untangle some complexities. An initial task is to obtain a better understanding of the effects of a per capita approach.

B. A Simple Example

Suppose that a firm consumes energy (and other inputs) to create goods that it sells on the market. Let us suppose that for every unit of energy (however defined) that the firm consumes, it generates greenhouse gases that have a social cost of \$10.

One approach to greenhouse gas regulation would involve taxation. In this example, the optimal tax would be \$10 per unit of energy—the amount necessary to ensure that the firm uses a unit of energy only when the private benefit exceeds the social cost. Alternatively (and identically), the firm could be prohibited from consuming energy unless it bought a permit from the government. The permit would have a price of \$10. Let us stipulate that if the permit is traded, the price will be \$10 as well.

The tax system and the permit system would raise revenue as well as deter the emission of greenhouse gases. In this example, each system would generate revenue of \$10 per unit of energy. That money could be spent in any way; for example, the revenue could go into the treasury of the government that levied the tax or sold the permit, and then used for ordinary budget expenditures or to lower general taxes. Note that the revenue raised would partially but not fully offset the immediate loss to consumer welfare. Firms would pass the tax along to consumers, who would either pay the higher price (and have less money to buy other things) or buy fewer energy-intensive goods. However, we assume that in the aggregate people are better off: the environmental benefits exceed the welfare losses from reduced consumption. Otherwise, there would be no reason to negotiate a climate treaty.

Now imagine that the world consists of two nations, Rich State and Poor State. Rich State has a large economy and relatively few people, while Poor State has a small economy and relatively many people. (For concreteness, we might assume that Rich State is analogous to the United States and that Poor State is analogous to India.) Suppose that Rich State consumes 100 units of energy at the time that the climate treaty goes into force, while Poor State consumes 20 units of energy. (For simplicity, we assume that Rich State and Poor

State do not trade; citizens of each country consume the output of firms in that country.) Rich State has 5 citizens, while Poor State has 20 citizens. Thus, Rich State consumes 20 units of energy per citizen; Poor State consumes one unit of energy per citizen. Table 1 displays this information.

Table 1: An Example

	Aggregate energy consumption	Population	Energy consumption per capita
Rich State	100	5	20
Poor State	20	20	1

The tax system would require the government of each country to levy a \$10-per-unit tax on each firm. Rich State would tax 100 units of energy and receive revenues of \$1000, while Poor State would tax 20 units of energy and receive revenues of \$200. Under the permit system, the treaty would authorize Rich State to sell 100 permits and Poor State to sell 20 permits. As Table 2 shows, the distributive effects would be the same: Rich State would raise \$1000 in revenue and Poor State would raise \$200 in revenue.

Table 2: Taxes Versus Permits

	Aggregate energy consumption	Tax per unit of energy	Tax revenues	Equivalent permits at \$10/permit
Rich State	100	\$10	\$1000	100
Poor State	20	\$10	\$200	20

We will call this *the status quo approach* because it takes as its baseline the relative use of energy in the status quo. If one thinks of the treaty as “creating” permits, then the treaty would distribute more permits to Rich State than to Poor State, just because Rich State consumes more energy than Poor State. The treaty would create 120 permits, and give 100 permits to Rich State and 20 permits to Poor State. Note that the effect of this treaty is identical to the tax approach described above.

C. Alternative Approaches

As noted, the status quo approach to distribution is based on the amount of energy consumption at the time the treaty enters into force. Because Rich State consumes five times as much energy as Poor State, Rich State receives five times as many permits as Poor State. And because wealthy countries consume more energy than poor countries, the status quo approach seems to favor wealthy countries. Of course, any judgment about whether particular nations are “favored” depends on a baseline. Rich State will surely point out that its own firms pay the revenue that it obtains from its extra permits, so that the effects wash out. It is a nice puzzle why a uniform emissions tax is not generally or intuitively taken to be unfair while the status quo approach to emissions right is often found objectionable – even though the two are identical in their effects. But at least it can be said that the status quo approach will generally give more permits to wealthy nations than to poor ones, holding population constant, simply because wealthy nations tend to emit more greenhouse gases.

Other approaches are possible. For example, under the *per-nation approach*, the treaty would distribute equal numbers of permits to every nation. Rich State and Poor State would each receive 60 permits. This approach also does not seem intuitively fair. All nations receive the same number of permits, but they must spread the revenues from the permits among different numbers of citizens. In effect, Poor State’s 20 citizens receive 3 permits each; Rich State’s five citizens receive 12 permits each (though it is unlikely that the government would directly hand out permits to citizens).

The *per-capita approach* seems much better on this score. Each nation receives permits in proportion to its population. In our example, Poor State has four times as many citizens as Rich State, so Poor State receives 96 permits and Rich State receives 24 permits. Each citizen in both countries receives, in effect, 4.8 permits.

A final approach that we will consider will be called the *redistributive approach*. Under this approach, all the permits are given to whichever country is poorer, at least up until the point where their wealth is equalized. If we assume that Poor State is sufficiently poorer than Rich State, the redistributive approach would require that all 120 permits be given to Poor State. Poor State would then sell 20 permits to its own firms and 100 to Rich State’s firms, thus acquiring all the revenue from the permit system. Table 3 displays this information.

Table 3: Four Permit Allocation Schemes

	Status quo		Per nation		Per capita		Redistributive	
	Permits	Per capita	Permits	Per capita	Permits	Per capita	Permits	Per capita
Rich State	100	20	60	12	24	4.8	0	0
Poor State	20	1	60	3	96	4.8	120	6

Note: Calculate revenues in aggregate and per capita by multiplying by \$10

Note that other approaches are possible, including mixed approaches that fall between the various approaches described above. For example, one could allocate permits on the basis of a formula that weights both population size and poverty.⁹ For simplicity, however, we will confine our discussion to the four approaches described above: status quo, per-nation, per capita, and redistributive.

D. A Note on Ex Post Efficiency

From what we will call the “ex post efficiency” perspective (our reasons for using this term will become clear later), all of these approaches are identical (assuming that the trading system works as planned). Ex post efficiency requires that energy users bear the social (climate) cost of energy use. If that cost is \$10 per unit of energy, then either a \$10 tax should be used, or states should create the number of permits such that the market price is \$10. All of our approaches allow states to set the price of the permits at \$10 or whatever the optimal price is, so they are all equally efficient.

⁹ See Jeffrey Frankel, Formulas for Quantitative Emissions Targets, in *Architectures for Agreement* (Joseph Aldy and Robert Stavins ed. 2007).

The only differences between the approaches are distributive. As we saw, under the status quo approach, Rich State's government would receive 100 permits and Poor State's government would receive 20 permits. Rich State would sell those 100 permits to the Rich State firms, and Poor State would sell the 20 permits to the Poor State firms. Under the per-state approach, Poor State would sell 20 of the permits to Poor State firms and 40 of its permits to the remaining Rich State firms that were unable to purchase the 60 permits distributed to the Rich State government. Under the per capita approach, a similar outcome would occur. If Poor State receives 96 permits, its government would sell 76 of the permits to Rich State firms. The same is true for the redistributive approach.

E. Distribution

We have seen that under the status quo system, Rich State would raise revenues of \$1000 while Poor State would raise revenues of only \$200. By contrast, the per-nation system would give Rich State revenues of \$600 and Poor State revenues of \$600. The per capita system, where Poor State is four times as large as Rich State, gives Poor State revenues of \$960 and Rich State revenues of \$240. And under the redistributive system, Poor State would receive \$1200 and Rich State would receive \$0.

These are points about redistribution across nations. But it is also important to understand the per-capita redistributive effect of the various policies. Under the status quo system, Rich State receives \$200 per capita, while Poor State receives \$10 per capita. Under the per-nation system, Rich State receives \$120 per capita, while Poor State receives \$20 per capita. Under the per capita system, Rich State receives \$48 per capita, as does Poor State. Under the redistributive approach, Rich State receives \$0 per capita, while Poor State receives \$60 per capita. (See Table 2, above.)

To obtain a full understanding of the distributive effects of the alternatives, we need to take into account the benefit side of the climate treaty. The permit system would reduce greenhouse gas emissions, resulting in mitigation of climate change. These benefits could be the same for Rich State and for Poor State, or different. It is well known that the benefits of reducing climate change are not constant across nations.¹⁰ Some nations have far more to lose than others from (say) 2.5 C warming, and from such warming, some nations are likely to be net gainers. Under prominent projections, India and African nations are especially vulnerable, and the United States and China have significantly less to lose; Russia might even gain. Here again we might consider both aggregate and per-capita effects. Suppose that the mitigation benefits of the treaty produce benefits of \$2000 for one state and \$0 for the other state, or \$1000 for both states. If the benefits accrue to Rich State in the first case, then each of its few citizens receive a benefit of \$400; if to Poor State, then each of its many citizens receive a benefit of \$100. In the second case, each Rich State citizen receives benefits worth \$200 and each Poor State citizen receives benefits of \$50. Table 4 summarizes the discussion so far.

¹⁰ See, e.g., Nordhaus and Boyer, *supra* note, at 91; David Anthoff et al., *Equity Weighting and the Marginal Costs and Benefits of Climate Change* (2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=983032

Table 4: Distributive Effects of Permit Allocation Schemes

System	Permit Distribution	Aggregate Revenue	Aggregate Net Benefits		
			R: \$2000 P: \$0	R: \$0 P: \$2000	R: \$1000 P: \$1000
Status quo	100/20	1000/200	3000/200	1000/2200	2000/1200
Per-nation	60/60	600/600	2600/800	600/2600	1600/1600
Per capita	24/96	240/960	2240/960	240/2960	1240/1960
Redistrib.	0/120	0/1200	2000/1200	0/3200	1000/2200

System	Per Capita Permit Distribution	Per Capita Revenue	Per Capita Net Benefits		
			R: \$400 P: \$0	R: \$0 P: \$100	R: \$200 P: \$50
Status quo	20/1	200/10	600/10	200/110	400/60
Per-nation	12/3	120/30	520/30	120/130	320/80
Per capita	4.8/4.8	48/48	448/48	48/148	248/98
Redistrib.	0/6	0/60	400/60	0/160	200/110

The first panel displays aggregate figures; the second panel displays per capita figures. The first figure in each cell displays Rich State’s (or Rich State citizens’) gain; the second figure does the same for Poor State. The Permit Distribution column displays the distribution of permits, as depicted in Table 3. The Aggregate Revenue column multiplies these numbers by 10 in order to produce revenues from the sale of permits. The final three columns display the net treaty benefits (revenue plus climate benefits) under the three different assumptions about the differential impacts on the climate of an effective climate treaty. The cells with bold figures show outcomes that are most nearly equal for the two states.

One can immediately see that there is a large difference between equalizing revenue (Column 3) and equalizing the net benefits of the treaty (Columns 4-6). Focusing on per capita effects (Panel 2), we can see that the per capita approach equalizes revenues, but it does not equalize treaty benefits under any of the three assumptions. Indeed, equalization of revenues can occur amidst gross disparities in treaty benefits — a point that raises serious questions about the idea that per capita distributions are fair.

III. The Per Capita Approach in Principle

A. From a Welfarist Perspective

1. The Case for the Per Capita Approach

In discussions about climate treaties, defenders of the per capita approach argue that this approach is fairer than likely alternative approaches, such as the status quo approach. This argument is especially prominent in the developing world, where it is asked: Why should wealthy nations be given an entitlement to their existing emissions rights? This question seems to be one of fairness, to which we will turn in due course. But it can also be translated into a plausible welfarist argument. It makes sense to begin with that argument,

which is in some ways more tractable, and which will illuminate the fairness questions as well.

Welfarists care about two things: maximizing the size of the pie and distributing it equally. The larger the pie, the more that is available for everyone to consume, and all else equal, welfare should rise with consumption. At the same time, most welfarists believe that the welfare, or utility, that is obtained from an additional good is declining.¹¹ If you have zero apples, you are willing to pay a lot for one apple. If you have ten apples, you are willing to pay much less, or zero, for an eleventh. We can easily see that if disincentive effects are small, welfarists would advocate redistribution of resources from wealthy nations to poor nations, or at least from wealthy people in wealthy and poor nations to poor people in wealthy and poor nations.

With respect to maximizing the size of the pie, we observed above that the per capita approach is no less *ex post* efficient than any other approach. Thus, the welfare effects of different schemes depend entirely on their distributional effects; other things being equal, distribution to those who are poor will increase welfare. To the extent that the larger countries tend to be poorer, the per capita approach will help poor people, and because poor people have the highest marginal utility for a dollar, helping poor people will maximize global welfare. Certainly compared to the status quo approach, per capita allocations seem supportable on welfarist grounds; at first glance, they seem to be the right way to proceed. The examples of the United States on the one hand, and China and India on the other, are highly salient, because the former is rich and the latter two are poor by comparison. To the extent that the per capita approach would require the United States to give hundreds of billions of dollars to China and India, it might seem desirable on welfarist grounds.

At the outset, of course, there is a serious complicating factor, which has to do that future generations, including currently poor people, will almost certainly be **wealthier than** current generations.¹² Emissions reductions will help future poor people, not present poor people, and it is not obvious that policymakers in wealthy nations should attempt to help future poor people, who are likely to be far less poor than present poor people. If the goal is redistributive, current poor people almost certainly deserve priority. This point greatly complicates the claim that emissions reductions are justified on redistributive grounds. Note, however, that we are speaking of emissions rights, not emissions reductions, and emissions rights will benefit people who are now living. For this reason, the redistributive argument, grounded in welfarist considerations, has considerable intuitive appeal.

2. *Objections and Concerns*

1. *Distribution.* We have said that welfarists care about equal distribution, believing that money has diminishing marginal utility. From their perspective, the per capita approach has three serious defects. First and most fundamentally, the per capita approach is attractive

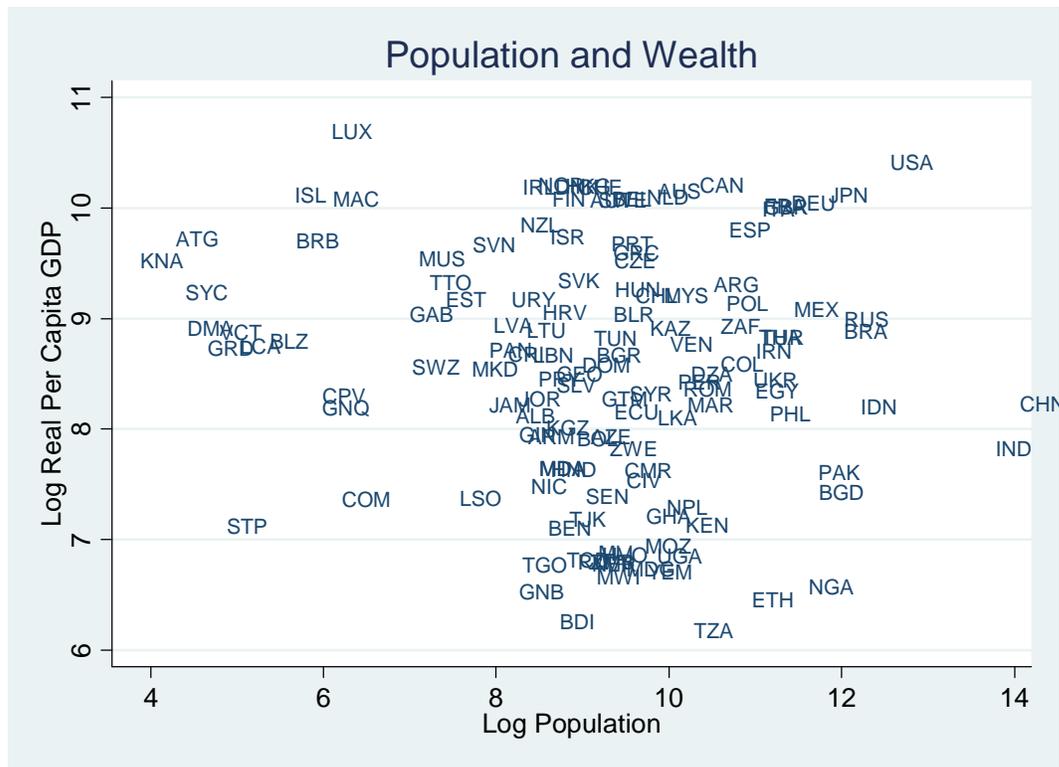
¹¹ See Matthew Adler and Eric A. Posner, *New Foundations for Cost-Benefit Analysis* (2005). Note that this approach assumes that interpersonal comparisons of utility are possible.

¹² This claim has been made by many people in many places, above all Thomas Schelling. *See, e.g.*, Jagdish N. Bhagwati et al., *Expert Panel Ranking*, in *GLOBAL CRISES, GLOBAL SOLUTIONS* 605, 630, 635 (Bjørn Lomberg ed. 2004) (remarks of Vernon Smith); *id.* at 627 (remarks of Thomas Schelling).

from that perspective only insofar as larger states tend to be poorer. Not all large states are poor, and not all small states are rich; indeed, the opposite is frequently the case. The United States has a population of 301 million and per capita GDP of \$46,000. Bhutan has a population of 2 million and per capita GDP of \$1,400. The per capita approach seems to be a crude and even arbitrary way to redistribute wealth, certainly compared to the pure redistributive approach that gives few or no permits to rich states and all or most of the permits to poor states, regardless of size. We assumed away this problem in our example above because we stipulated that Poor State was both bigger and (as befits its name) poorer. But that assumption (driven perhaps by the examples of the United States, China, and India) is unrealistic.

Indeed, the relationship between population and wealth turns out to be essentially zero. For a demonstration, consider Figure 1.

Figure 1: Relationship Between Population and Per Capita Wealth¹³



Clearly, there are rich small states (upper left), and poor big states (lower right), and everything in between. There is no statistically significant correlation between population and GDP per capita.

¹³ The figure shows the natural logs of per capita GDP and population averaged over the years 1980 to 2000. Taking the natural log of the variables makes the data points easier to see in a manageable figure. The correlation coefficient between per capita GDP and population is -0.036 and is not statistically significant. The data are taken from Alan Heston, Robert Summers, and Bettina Aten, Penn World Table Version 6.2, Center for International Comparisons of Production, Income, and Prices at the University of Pennsylvania, September 2006, available at <http://pwt.econ.upenn.edu/>.

Second, the permits—in the scheme that we describe—are distributed to both greenhouse gas winners and losers. Some poor states will become far poorer as a result of climate change; others are less vulnerable. Some rich states will face serious adverse effects from climate change; others are less vulnerable. Some poor states, and some rich states, may even be net gainers from climate change. Ideally, permits should be distributed in light of these consequences, but the per capita approach fails to take them into account. If distribution is our concern, why should two highly populated poor nations receive the same number of permits from a program from which one gains a lot and another a little – or from which one gains a lot and another actually loses?

Third, the permits are allocated to the governments of poor states, not to the citizens of poor states. This distinction matters because nearly all poor states have a class of wealthy elites, and these wealthy elites usually control the government or have considerable influence over it. Given that the governments in these states already are unenthusiastic about redistributing wealth from the elites to the poor, it is questionable that they will use the wealth generated by the permit scheme to help the poor. They may well prefer to help the rich.

The first two problems were illustrated in Table 1, above. The key point is that the intuitive attractiveness of the per capita approach depends on seeing it in isolation from all of the effects of a climate treaty. Once we take these factors into account, the per capita approach appears far less attractive, and on plausible assumptions, indefensible from the standpoint of the very accounts that most at first sight justify it.

We agree that as a matter of actual practice, these defects are not necessarily fatal to the per capita approach. Everything depends on the alternatives. One might argue in response not that the per capita approach is ideal, but that it is superior to a system that is its most likely alternative—one that uses status quo energy consumption as the baseline and thus favors people living in wealthy and wasteful countries. Perhaps this response is correct. But it must acknowledge the underlying problem, which is that the per capita system is only indirectly connected to the underlying normative goal—indeed, so indirectly that it is conceivable in principle (although most unlikely in practice) that it has worse distributive effects than the status quo approach.

A welfarist should favor redistribution to the world's poor to the extent that doing so is feasible and does not excessively reduce aggregate global welfare. But if one is a welfarist, there is no reason to think that the per capita approach to climate regulation is the right way to redistribute wealth and thus to increase global welfare. It would be much better to redistribute all resources than to redistribute shares of the atmosphere's capacity to absorb greenhouse gases; it would be much better to redistribute resources to poor people rather than to poor nations; and it would be better to redistribute to the poor nations rather than to the large nations. And if redistribution is to occur in the specific context of a climate treaty, the redistributive approach, sketched above, would be much better than the per capita approach.

These points bear directly on the “who pays” question for both emissions reductions and for adaptation. Suppose that we take distributive justice seriously. If so, we might conclude, not that the per capita approach is best, but that wealthy nations should pay poor

ones for emissions reductions, for adaptation, or for both. This claim itself runs into serious objections, which we cannot explore here¹⁴; but it is more plausible than the claim for per capita emissions allocations.

2. *More on Welfare: Ex Ante Efficiency.* Arguments in favor of per capita distribution have, so far, focused on what we have called ex post efficiency effects, and neglected the possible ex ante effects of the distribution scheme. The ex ante effect of a climate treaty refers to its effect on future programs, including those that have nothing to do with greenhouse gases. Any treaty will establish a precedent on which states will rely, at least in part, as they negotiate additional treaties in the future. For example, if the per capita approach is used for a climate treaty, then it will suggest itself as a basis for allocating the costs of a terrorism treaty.

Suppose, then, that a climate treaty based on the per-capita approach established a precedent. How might such a precedent influence behavior, compared to the baseline status quo approach? It would create two perverse incentives.

First, the per capita principle would establish that the most highly populated states would obtain the greatest benefits from international cooperation. Governments would be rewarded for pursuing fertility policies that maximize the size of the population. This incentive is especially perverse from the perspective of climate change, because more people will consume more of the earth's resources (though, conceivably, more efficiently). Second, to the extent that the per-capita approach favors poorer countries (and that is its only normatively attractive feature), the principle would establish that poorer states would obtain the greatest benefits from international cooperation. Governments that adopt sensible policies that promote economic growth would be penalized by this principle. This incentive is also perverse.

What system, then, is optimal for ex ante efficiency? The ideal principle would give states an incentive to identify in advance global problems and negotiate treaties to solve them, and otherwise not affect their incentives to control their populations, invest in institutions, and so forth. Such a principle would be, at a minimum, a form of International Paretianism, so that states believe that they will not be made worse off by a legal solution, a belief that would discourage states from entering treaty negotiations.

But treaties that solve problems generate surpluses beyond the amount necessary to make states indifferent between entering and not entering a treaty. What should be done with the surplus? It is tempting to think that one can distribute the surplus without affecting incentives ex ante, but this is highly implausible. (If one can, then one would probably want to distribute the surplus to the poorest countries rather than on a per capita basis, which, as we have been arguing, is morally arbitrary.)

From an efficiency perspective, the best use of the surplus would be to reward the states that had taken steps in advance of the treaty to abate greenhouse gases.¹⁵ These states

¹⁴ See Eric A. Posner, Cass R. Sunstein, and David Weisbach, *Climate Change Justice* (forthcoming 2009).

¹⁵ Hence the scholarly support for banking systems under which any future climate treaty would reward states that make abatement efforts prior to treaty ratification. See, e.g., Ann P. Kinzig and Daniel M. Kammen,

would probably be the European states that accepted binding reductions under the Kyoto Protocol, though there are complexities here, since not all European states accepted meaningful reductions and others were simply taking advantage of independent technological and demographic changes in their country.¹⁶ The larger point is that such a distribution would establish a precedent to the effect that when a global problem exists, states that respond quickly and in advance of a treaty will not be penalized.

It emerges that from the standpoint of ex ante efficiency, the per capita approach has serious drawbacks, even when compared with the seemingly unattractive status quo approach. As we have indicated, these drawbacks cannot be evaluated without knowing the magnitude of the effects. If, for example, a climate change agreement had small consequences for population growth, and had little effect on incentives in the context of other international agreements, the drawbacks would not be a substantial concern. Our only point is that they must be investigated in order to obtain a full account of the welfare effects of the per capita approach.

B. *Fairness*

Fairness can be specified in multiple different ways. We venture three specifications here in an effort to see whether the per capita approach can be defended on fairness grounds.

1. *Fairness and the veil of ignorance.* Many people reject the idea that questions of global justice should be approached in welfarist terms.¹⁷ In their view, the goal is not to promote aggregate social welfare; it is instead to do what fairness requires. Arguments of this kind often posit a veil of ignorance, or “original position,” from which allocations might be chosen.¹⁸ In the standard version of this argument, people behind the veil do not know various circumstances of their lives; they do not know their place in society, their social status, their class position, or even their natural assets (such as intelligence and strength).¹⁹ The central claim is that the principles that would be chosen behind the veil qualify as fair, because they ensure that outcomes are not a product of factors or considerations that are irrelevant from the moral point of view.

Many people who are attracted to this claim also want to suppose that choosers are made ignorant of the nation in which they might find themselves.²⁰ If deprived of that information, what distributive principles would they select? It is possible that in the international context, as in the domestic one, they would select welfarist ones. Perhaps

National Trajectories of Carbon Emissions: Analysis of Proposals to Foster the Transition to Low-Carbon Economies, 8 *Global Environment Change* 183 (1998). For a discussion of the use of this principle in domestic environmental law, see Nash, *supra*.

¹⁶ See Kathryn Harrison and Lisa McIntosh Sundstrom, *The Comparative Politics of Climate Change*, 7 *Global Env. Pol.* 1 (2007) (describing the differential effects of the Kyoto Protocol on European countries).

¹⁷ See Thomas Pogge, *Realizing Rawls* 211-80 (1989); Martha C. Nussbaum, *Frontiers of Justice* (2006).

¹⁸ See John Rawls, *A Theory of Justice* 118-123 (revised edition 1999).

¹⁹ *Id.* at 118.

²⁰ See Pogge, *supra* note, at 211-236.

people would choose to maximize overall welfare, if placed behind the veil.²¹ But it is also possible that they would take particular care to protect the least well-off, perhaps through a version of Rawls' difference principle, which permits inequalities only to the extent that they operate to the advantage of the least advantaged.²² There is a vigorous debate over the application of that principle or imaginable variations to the international domain.²³

We need not pause over the philosophical complexities here. The basic point is that welfarism is rejected by many people who believe that severe deprivation for some cannot be justified by large welfare benefits for many, and that fairness is often taken to require attention to those who face such deprivation, whatever is suggested by the welfarist calculus.²⁴

Consider a common sense specification of this claim, adapted to the climate change problem. Some nations are much richer than others, in a way that violates the requirements of justice. Perversely, the status quo approach creates a kind of entitlement to the continuation of practices that violate those requirements. No such entitlement can be defended. A climate change agreement would be unacceptably unfair if it makes it more difficult for poor nations to develop — especially because development is designed to remove their citizens from difficult conditions and to achieve something closer to the threshold or to equality with wealthy nations. A per capita approach is the most fair, because it allows every citizen to count for no less and no more than one, in a way that respects the moral irrelevance of national boundaries.

We do not intend to challenge these general points about fairness here. Our basic claim is that if they are taken as a defense of the per capita approach, they run into serious difficulties. The reason is that the central objections to the welfarist argument rematerialize when fairness, understood in the stated way, is our guide. To the extent that some of the most populous states are wealthy, the per capita approach is not fair at all; to that extent, it has some of the same vices as the status quo approach. Per capita allocations also have the disadvantage of giving numbers of permits to highly populated nations that have relatively little to lose from climate change. And it remains true that permits are allocated to the governments of poor states, not to the citizens of poor states, and allocations to such governments may not help those who are most in need. If fairness requires redistribution across national boundaries, the status quo approach runs into significant trouble, and the per capita approach is better; but those interested in global redistribution would hardly choose that approach among a menu of possibilities.

2. *The atmosphere as common property.* There is another type of fairness argument, to the effect that the atmosphere, with its beneficial carbon-absorbing characteristics, is common

²¹ Cf. John Harsanyi, Can the Maximin Principle Serve As A Basis for Morality, 69 Amer. Econ. Rev. 594 (1975) (arguing that people would choose to maximize average utility, behind the veil of ignorance).

²² See John Rawls, A Theory of Justice (1971).

²³ For varying perspectives, see Pogge, supra note; Nussbaum, supra note, at 273-324.

²⁴ It will also be rejected by those who believe that principles of justice do not extend across borders. See, e.g., Rawls, supra; Thomas Nagel, The Problem of Global Justice, 33 Philosophy & Pub. Aff. 113 (2005).

property, belonging to everyone in the world.²⁵ A climate treaty closes a commons, converting it into private property. It is only fair to distribute the parcels of property to the former users of the commons, namely, everyone in the world, on a per capita basis. One might draw an analogy to minerals discovered in the sea bed under the high seas, which are outside the sovereignty of any country. The Convention on the Law of the Sea provides that revenues from exploitation of these minerals should be distributed “equitably.”²⁶

But the analogy is at best partial and in fact reveals the limits of this argument. A climate treaty, like a treaty allowing for the exploitation of minerals, has two effects of present interest. First, both treaties generate revenues—for permit sellers, in the climate case, and for mining companies, in the mineral case. Second, both treaties generate benefits for consumers—people who benefit from abatement of climate change, and people who benefit from the lower price of, say, oil. Because virtually everyone benefits from lower oil prices, the effect is spread around the world. Thus, the only remaining question in the case of the mineral treaty is how to distribute revenues fairly. In the climate case, the climate effects are extremely variable—hurting some people very badly, others not all, and benefiting still others. From the standpoint of fairness, it would be stranger to ignore these latter effects while considering only the revenue effects. The analogy to property is not helpful; it distracts from the relevant question, which is the distribution of all treaty effects across the world’s population.

IV. Feasibility Issues

Thus far our focus has been on issues of principle. But any climate change agreement must be feasible. The poignant irony is that insistence on the first-best outcome, as a matter of principle, may make the climate change problem intractable, in a way that could lead to disaster from the standpoint of the very nations that are poorest and most vulnerable.

A. State Consent and International Paretianism

Treaties require the consent of treaty partners, and so states must believe that by entering a treaty, they are serving their national interest. Of course the idea of national interest can be specified in many different ways. But as a first approximation, nations care about the welfare of their own citizens, and the welfare of citizens in other places are not a primary consideration and may not matter greatly.²⁷ A workable climate treaty will have to be one that serves the interests of the United States and other major industrial nations,

²⁵ See, e.g., Grubb et al. *supra*, at 318-19; Hermann E. Ott and Wolfgang Sachs, *The Ethics of International Emissions Trading*, in *Ethics, Equity and International Negotiations on Climate Change* 137, 168 (Luiz Pinguelli-Rosa and Mohan Munasinghe eds. 2002).

²⁶ See United Nations Convention on the Law of the Sea, Art. 140.

²⁷ The best evidence for this proposition is the pattern of foreign aid. Poor countries, understandably, do not provide foreign aid, but middle-income countries also do not seem to feel that they have a responsibility to help people living in poorer countries. Rich countries provide foreign aid but are not generous, and scholars have shown that much (but not all) foreign aid can be traced to specific strategic interests. See, e.g., Alberto Alesina and David Dollar, *Who Gives Foreign Aid to Whom and Why?*, 5 *J. Econ. Growth* 33, 55-56 (2000).

including developing nations such as China and Brazil. We use the term *International Paretianism* to refer to this pragmatic constraint on treaty-making: a treaty is not possible unless it makes all its signatories better off.

It should be clear, from the foregoing discussion, that we reject International Paretianism in principle. From a welfarist perspective, a step, such as genocide prevention, might be justified even if its national benefits are exceeded by its national costs, so long as the global benefits exceed the global costs. The only point is that domestic self-interest imposes a significant limitation on what is feasible, and that nations should not be expected to sign a climate change agreement from which they are large-scale net losers. China is not likely to sign an agreement that would cost it, on net, hundreds of billions of dollars each year; the same is true of the United States. An important question, then, is whether a proposed allocation of emissions rights will require one nation to give a great deal, in monetary terms, to others.

The pragmatic virtue of the status quo approach is that it takes seriously these political constraints on treaty-making. The corresponding problem with the per capita approach is that it would require smaller industrial states to buy permits from larger developing states, violating International Paretianism. There is little reason that the rich states would be willing to agree to such an approach. The behavior of the United States, with respect to the Kyoto Protocol, is revealing in this regard. The United States would have had to spend a great deal to comply with its obligations; it is no accident that no member of the United States Senate, Democratic or Republican, supported ratification.

To be sure, most wealthy nations send foreign aid to developing nations, and so it would be a mistake to define their national interests in purely economic terms. We have noted that nations are capable of being altruistic. A nation's national interest might be understood as some combination of altruistic and economic interests, a combination already reflected in their foreign aid as well as economic policies. The nature of the combination will vary with domestic political pressures. To the extent that powerful domestic constituencies want to assist those in other nations, the altruistic elements will be magnified. One might argue that, given the current level of altruism, nations would be willing to adopt the per capita approach.

The problem is that the existing level of foreign aid is probably not greatly lower than the amount that rich states are willing to be pay in order to be altruistic. Such nations are unlikely to agree to massive increases in the redistribution of wealth by entering a climate treaty that requires them to bear most of the cost of greenhouse-gas abatement. To insist on the per capita approach, then, is most likely to subvert the best chance for a climate treaty and hence to render the climate change problem intractable — a special problem for poor nations that are particularly vulnerable to that problem.

B. Defective Government and Alternative Means to Redistribute

As is well known in the development literature, redistributing wealth to poor nations is not easy or obvious.²⁸ Large cash grants to governments are often siphoned off by corrupt officials. Loans are similarly abused and often not repaid. Grants and loans not lost to corruption are nonetheless often wasted because the donee government lacks the expertise and institutional capacity to identify problems, monitor the disbursement of funds, and use them widely.²⁹ Donors have devised numerous means for monitoring and controlling the use of funds but these often fail and frequently generate resentment. In some cases, donors misunderstand the needs of the countries and squander funds on projects that do not help people who live in it; in other cases, donors impose conditions that are politically controversial and even destabilizing.³⁰ Donors have also tried to circumvent corrupt or inept governments by directing aid to individuals and NGOs rather than governments. But small donees are hard to monitor and control, and have limited impact, and aid programs involving multiple recipients are hard to coordinate.³¹

Now consider a climate treaty, which most likely would require the allocation of valuable permits to the governments of poor states—the same corrupt or ineffective governments that have misused foreign aid. It seems highly likely that some of these governments will misuse these permits as well—transferring them to cronies, for example. Even if the governments of developing countries are not corrupt, they will still not necessarily use revenues from permits in the way that donor countries, motivated by altruism, would want them to. Recall that the per capita approach was justified by redistributive concerns: all else equal, a climate pact that favored developing nations is desirable. If large countries tend to be poor, then the per capita approach has attractive redistributive features. The redistributive approach is even better than the per capita approach, on this view. But if the redistributive approach is not practicable, the per capita approach might be second best.

Any realistic climate treaty will do no more than allocate permits to the governments of developing nations. After these nations sell the permits, they will be free to use the revenue however they want to. But the governments of developing nations are not particularly generous to their poor. In a state like Guatemala, for example, taxes are low, apparently because wealthy people disproportionately influence the political process.³² It seems unlikely that the Guatemalan government, having received a windfall of permits, will redistribute the revenues to the poor.

²⁸ For pessimistic empirical assessments of the relationship between aid and economic growth, Simeon Djankov, Jose G. Montalvo, and Marta Reynal-Querol, *Does Foreign Aid Help?*, 26 *Cato J.* 1 (2006); William Easterly, Ross Levine, and David Roodman, *New Data, New Doubts: A Comment on Burnside and Dollar's "Aid, Policies, and Growth"*, 94 *Am. Econ. Rev.* 774 (2004); Robert J. Barro and Jong-Wha Lee, *IMF Programs: Who Is Chosen and What Are the Effects?* (NBER Working Paper No. 8951, 2002).

²⁹ See, e.g., William Easterly, *The White Man's Burden* 60-112 (2006).

³⁰ Simeon Djankov, Jose G. Montalvo, and Marta Reynal-Querol, *The Curse of Aid* (Universitat Pompeu Fabra Working Paper, 2005).

³¹ See, e.g., Arnbab Acharya, Ana Fuzzo de Lima, and Mick Moore, *Aid Proliferation: How Responsible Are the Donors?* (IDS Working Paper 214, 2004) (pointing out the costs to donee countries from dealing with multiple donors).

³² See, e.g., Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions, UN Doc. A/HRC/4/20/Add.2 (2007).

The point for present purposes is that it would be hazardous to repeat the errors of development policy by using a climate treaty as an opportunity to engage in foreign aid. The distribution of permits on a per capita basis, by favoring poor states, would be just such an effort. If giving piles of cash to poor states has failed to help them, then giving them piles of permits will also fail to help them. To the extent that this is so, they should receive no more permits than are necessary to cause them to internalize the external climate effects of polluting activity.

Conclusion

Our goal here has been to make progress on the relationship between justice and climate change, by focusing on a particular proposal that raises general issues in a tractable form. We have urged that claims from both welfare and fairness fail to provide strong support for the per capita approach. A central problem is that some wealthy nations have large populations and some poor nations have small populations. Per capita allocations of emissions rights would result in substantial benefits for China and India, both of which are poor. But many nations are significantly poorer than those nations, and a directly redistributive approach would be a far more effective way of assisting those who need help. Moreover, any international agreement will benefit some nations more than others and cost some nations more than others. In these circumstances, the per capita approach gives the appearance, not the reality, of fairness.

On welfarist grounds, and putting incentive effects to one side, the redistributive approach is superior to the per capita approach, which is in turn superior to the status quo approach. Unfortunately, the best approaches in principle are also least likely to be feasible in practice. Insisting on the best approaches would likely defeat current efforts, themselves admittedly fragile, to take significant steps to reduce greenhouse gas emissions, and in the process harm poor nations, which are most vulnerable to the climate change problem.

Our discussion has focused on per capita allocations, not on other approaches to current disparities of wealth across nations. It would be possible to accept our conclusions while urging that wealthy countries should pay for emissions reductions in poor nations, or should help fund the costs of adaptation. But even here, our analysis raises some cautionary notes: In practice, such approaches may run afoul of International Paretianism, and it must be asked whether the relevant payments are, in principle, an effective or instead crude way of assisting those who need help. At least it can be said, however, that targeting adaptation assistance to poor nations, or to poor people in poor nations, would be far better than many other current proposals for combining climate change policy with distributive justice.