
7 Globalization and the environment: convergence or divergence?

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Introduction

In the early 1990s, the environmental movement in the USA underwent an acrimonious split over whether to support the proposed North American Free Trade Agreement (NAFTA). Some groups backed the treaty, agreeing that 'the best way to ensure that Mexico's environment is cleaned up is to help Mexico become a prosperous country, and that means NAFTA'.¹ Others opposed it, arguing that 'the competition to attract investment will result in a lowest common denominator for environmental statutes' and that 'the country with the least restrictive statutes will become the floor, and others will harmonize downward to that floor'.²

Despite their differences, both sides made a common assumption: Mexico's environmental practices were inferior to those of the USA and Canada. The only point of contention was whether free trade would pull the USA and Canada down to Mexico's level, or lift Mexico to the plane of its northern neighbors. Partly as a result, both sides were oblivious to what may turn out to be NAFTA's most serious environmental impact: the erosion of Mexico's rich biological diversity in maize ('corn' in US parlance), as Mexican *campesino* farmers abandon traditional agriculture in the face of competition from cheap corn imported from the USA.³

In this chapter, I question the assumption that the global North is relatively 'green' and the global South relatively 'brown'. I also argue that neither theoretical reasoning nor empirical evidence supports the axiomatic claims that 'globalization' will promote a convergence toward better environmental practices, or toward worse environmental practices, or instead a growing divergence in environmental practices across countries.

Environmental convergence: four scenarios

In debates on North–South trade, it is often assumed that production processes in the global South tend to be more environmentally degrading than those in the global North, by virtue of weaker demand for environmental quality (ascribed to low incomes), the weaker ability of governments to promulgate and enforce environmental regulations, or both. Hence trade occurs on a tilted playing field, where southern producers have a competitive advantage over their Northern counterparts thanks to their greater scope for externalization of costs.

Economic theory is often invoked to maintain that a level playing field – one with no international differences in environmental standards – is not necessarily optimal: the marginal costs and benefits of environmental quality are likely to vary across locations.⁴ Two points should be noted in this connection. First, this does not imply that existing variations in standards across countries are optimal, nor that moves toward greater harmonization would not be welfare improving in conventional terms. Second, international differences in

<i>Direction of change</i>	<i>'Harmonization upward'</i>	<i>'Race to the bottom'</i>
<i>Environmental quality gradient</i>		
<i>North > South</i>	Ecological modernization	Environmental protectionism
<i>South > North</i>	Greening the North	Environmental imperialism

Figure 7.1 Environmental convergence: four scenarios

the 'optimal' level of environmental quality are partly – perhaps mainly – attributable to differences in ability to pay: in this sense it is 'efficient' for poorer people to breathe dirtier air. This distribution-blind notion of optimality is unexceptional in neoclassical economics, but its wider normative appeal as a basis for policy is questionable. Elsewhere I have suggested that a rights-based allocation of access to a clean and safe environment – a principle enshrined in dozens of national constitutions around the world – is an attractive alternative to the wealth-based allocation principle founded on willingness to pay.⁵

Here, however, our concern is not normative prescription but rather positive description. As in the NAFTA debate, the question is whether economic integration will lead to 'harmonization upward' in which the South becomes more like the North, or a 'race to the bottom' in which the opposite occurs. These opposing outcomes are labeled 'ecological modernization' and 'environmental protectionism,' respectively, in Figure 7.1, based on prominent schools of thought that have emphasized these possibilities.

In principle we can distinguish two further paths of convergence, in which the North–South environmental gradient is reversed: that is, southern production is cleaner and more sustainable than that of competing sectors in the North. That this is not a purely hypothetical possibility will be illustrated below. In Figure 7.1, these paths are labeled the 'Greening the North' (when the North moves up the gradient, becoming more like the South) and 'Environmental imperialism' (when the South moves down the gradient to become more like the North).

Of course, these stylized scenarios simplify complex processes. One scenario need not fit all environmental problems; it is quite possible, for example, that in some respects the environmental gradient runs from North to South while in others it runs in the oppo-

site direction. Harmonization may occur not at either end of the spectrum, but rather somewhere in the middle. And in some cases globalization may promote divergence rather than convergence. To begin mapping out the possibilities, this section considers the four convergence scenarios in turn.

Ecological modernization

The term 'ecological modernization' was coined in the 1980s by European sociologists to describe recent changes in production and consumption in industrialized countries. In many cases these have reduced use of natural resources and emissions of pollutants per unit of output, and in some cases these reductions have been substantial enough to generate net environmental improvements alongside economic growth (see, e.g., Weale, 1992, Spaargaren and Mol, 1992).

Ecological modernization theorists interpret these transformations as a response not only to market signals, but more importantly to the growth of environmental concerns among the public and policy-makers.⁶ Although originally put forward as an analysis of trends in industrialized countries, the theory has been extended globally by some of its proponents. In so doing, most have accepted the conventional premise that the environmental-quality gradient runs from North to South. Thus Mol (2001, p. 157) writes of 'the need to harmonize environmental capacities and regimes up to at least the level that has been achieved in the [Europe–North America–Japan] triad countries'. Mechanisms identified as vehicles for such harmonization upward include income growth, foreign direct investment, international agreements, and 'governance from below'.

A positive effect from income growth is premised on the view that globalization leads to rising per capita incomes, and that the latter in turn lead to greater effective demand for environmental quality (often referred to as a better ability to 'afford' a cleaner environment). During the NAFTA debate, for example, Mexican president Carlos Salinas proclaimed, 'Only through widespread prosperity can we have the resources to channel toward the protection of land, air and water' (quoted by Hogenboom, 1998, p. 180). Both links – from globalization to rising incomes, and from rising incomes to a better environment – are open to question. With respect to the latter link, it is important to recognize that many aspects of environmental quality are public goods. To be politically effective, demand for environmental quality therefore must be articulated through institutions that overcome both the free-rider problem and political opposition from the beneficiaries of cost externalization. I return to this issue in the next section.

Foreign direct investment is sometimes portrayed as a vehicle for environmental improvement on the grounds that foreign firms have superior technological know-how, derived from production in countries with stricter regulations, and that they find it efficient to use standardized processes to produce standardized products. In addition, foreign firms may be more sensitive to reputational concerns than local firms, and more subject to media scrutiny and pressure from public opinion. In keeping with this prediction, some empirical studies have found evidence of 'pollution halos' – above-average environmental performance – associated with foreign investment. In a review of this literature, Zarsky (1999, p. 14) concludes that the evidence is mixed, and that 'the most significant determinant of firm performance is community pressure' rather than the origin of investment *per se*.⁷

International agreements can also promote upward harmonization in environmental practices. Examples of such agreements include the treaties on oceanic pollution,

transport of hazardous waste, and ozone-depleting chemicals. Neumayer (2002) finds that the degree of democracy – as measured by indices of political rights and ‘voice and accountability’ – is a strong predictor of whether countries will enter into environmental agreements, again pointing to the importance of political variables in determining outcomes.

‘Governance from below’ refers to *de facto* rules that are imposed not by governments, but by ‘civil society’ and public opinion. A series of studies at the World Bank, for example, has found that ‘informal regulation’ by local communities can limit industrial pollution even in the absence of formal regulation (see Pargal and Wheeler, 1996; Pargal et al., 1997). These studies generally find average income and education of communities to be strongly correlated with successful informal regulation. Transnational environmental alliances also can increase the bargaining power of local communities (see, e.g., Keenan et al., 2007). In addition to directly influencing the decisions of private firms and government officials, informal actors have developed third-party certification and ‘eco-labeling’ initiatives that respond to and influence consumer demands.⁸

Environmental protectionism

Instead of harmonization upward, many environmentalists maintain that globalization promotes a ‘race to the bottom’, in which competition for private investment undermines environmental regulation. In its weaker variant, this argument holds that global competition impedes new regulation so that South countries remain ‘stuck at the bottom’ (Porter, 1999) and Northern countries are ‘stuck in the mud’ (Zarsky, 1997). In its stronger variant, globalization spurs the competitive lowering of standards in the North, ultimately leading to convergence on the lowest common denominator. Hence the claim in the NAFTA debate that the trade agreement would ‘sabotage’ US environmental laws.⁹

The usual policy recommendation flowing from this analysis is that Northern countries should use compensating tariffs or other trade restrictions to prevent ‘ecological dumping’ – the sale of products at prices below their marginal social cost of production by virtue of externalization of environmental costs.¹⁰ Hence this school of thought is here termed ‘environmental protectionism’.

The logic rests on the uneven globalization of markets and governance:

International trade increases competition, and competition reduces costs. But competition can reduce costs in two ways: by increasing efficiency or by lowering standards. A firm can save money by lowering its standards for pollution control, worker safety, wages, health care and so on – all choices that externalize some of its costs . . . Nations maintain large legal, administrative and auditing structures that bar reductions in the social and environmental standards of domestic industries. There are no analogous international bodies of law and administration; there are only national laws, which differ widely. Consequently, free international trade encourages industries to shift their production activities to the countries that have the lowest standards of cost internalization – hardly a move toward global efficiency. (Daly, 1993, p. 52)

Empirical studies generally have concluded that environmental regulation does not, in fact, have much effect on firms’ competitiveness (for a review, see Jaffe et al., 1995). At the same time, however, studies of ‘revealed comparative advantage’ in pollution-intensive industries (such as pulp and paper, mining, chemicals, and petroleum products) have found that countries in the global South and Eastern Europe account for a rising share of

world exports.¹¹ This relocation of 'dirty industries' – a policy infamously recommended by the World Bank's chief economist in the early 1990s (*The Economist*, 1992) – occurs mainly via net additions to the capital stock, given sunk costs in existing Northern facilities.

Even if there were robust evidence that dirty industries are migrating from North to South, this would not automatically put downward pressure on environmental standards in the North, as envisaged in the strong variant of the race-to-the-bottom logic. It is conceivable that instead northern countries would allow, or even encourage, the displacement of environmental costs to the South, with international trade allowing them to import raw materials, intermediate inputs, and final products at prices held down by cost externalization.¹² In other words, the North could maintain higher environmental standards domestically, while reaping 'ecological subsidies' from the South, a possibility to which I return below.

Greening the North

I now turn to scenarios where the environmental-quality gradient runs from South to North – that is, where southern production is cleaner and more sustainable than competing production in the North. At first blush this may seem implausible, given the deeply ingrained assumption that environmental quality is a luxury that only the affluent can afford, or at least a normal good for which demand rises with income. Indeed, it is often assumed that the 'bottom billion' – the world's poorest people – 'cause a disproportionate share of environmental degradation' (Myers, 1993, p. 23).

This demand-driven model neglects the supply side of environmental quality. We know that the global North's share of world income – and hence of world production and consumption – far exceeds that of the global South. In the year 2000, those countries with the richest 20 percent of the world's population, in terms of per capita incomes, accounted for 67 times as much income as the countries with the poorest 20 percent. The ratio narrows when computed on the basis of purchasing-power parity (PPP), but even then the average income of the richest quintile exceeded that of the poorest quintile by a ratio of 16 to 1 (Sutcliffe, 2003, p. 10).

Environmental degradation per unit of income may vary across countries or income classes. If degradation were sufficiently concave in income, the poorest quintile in theory could generate more environmental degradation than the richest quintile. But merely to equal the degradation generated by the top quintile, the environmental degradation per unit of PPP-adjusted income in the bottom quintile would have to be 16 times greater. Such a disparity seems improbable. In some respects, at least, environmental degradation per unit of income may even be greater for the rich. Contrast, for example, the pollution generated by automobiles compared to bicycles, the amount of non-renewable resources used to produce a bushel of grain in the USA compared to India, or the pollution generated in the production and disposal of synthetic as opposed to natural fibers.

If there is indeed a gradient along which certain aspects of environmental quality are better in the South than in the North, then an optimistic view of globalization is that it will promote the 'greening of the North' (Sachs et al., 1998). This is akin to the ecological modernization school of thought in that it emphasizes possibilities for harmonization upward, but with the difference that it reverses the relative positions of North and South.

Broadly speaking, there are two routes by which greening of the North could come about. The first is via reductions in northern consumption levels, a change that could be brought about by either falling incomes or a shift in preferences away from goods in favor of leisure, as advocated by the 'voluntary simplicity' movement in the USA. There is little historical precedent, however, for expecting either to happen on a meaningful scale in the foreseeable future.

The second is via transformations of production and consumption that reduce environmental degradation per unit of income. This is the sort of change envisioned by the ecological modernization school, but in this scenario it is the North that 'catches up' with the South in terms of environmental practices.

Several recent trends in agriculture in the industrialized countries illustrate this possibility. In the USA, for example, organically grown products are now the fastest-growing segment of the food market, with sales rising at more than 20 percent annually in the past decade (Dimitri and Greene, 2002). Urban agriculture and community-supported agriculture have also grown substantially, and even when these are not 'organic' (in the sense of zero use of agrochemicals), they minimize negative externalities in transportation, as well as generating positive externalities in the form of community amenities (Pinderhughes, 2003). On a related front, the 'slow food' movement that originated in Italy in the late 1980s is promoting the conservation and revival of traditional agricultural practices (Petrini, 2003).¹³ Such 'greening of the North' is by no means a uniform process, however: it has come about partly as a reaction against other features of globalization, such as the use of genetically modified organisms in agriculture and the spread of multinational fast-food restaurant chains.

Environmental imperialism

In the final convergence scenario, globalization undermines relatively clean, sustainable production in the global South. I term this 'environmental imperialism' to evoke the parallel with economic and political subordination of South to North. Here I illustrate this possibility by means of two examples: the displacement of jute by polypropylene, and the displacement of Mexican maize by US maize.

Jute versus polypropylene Since World War II, international markets for renewable natural raw materials such as cotton, jute, sisal and rubber have faced increasingly tough competition from synthetic substitutes.¹⁴ The former are produced mainly in the global South, the latter mainly in the global North. While the production of natural raw materials can have substantial negative environmental impacts (as in the case of pesticide-intensive cotton cultivation), in general synthetics entail greater environmental costs. The competition between jute and polypropylene is a case in point.

Jute, traditionally used to produce hessian (burlap) cloth and carpet backing, is the second most important natural fiber in world trade after cotton. In the late 1960s, stimulated by US military orders for sandbags for the Vietnam War, polypropylene began to compete with jute. Between 1970 and 1992, jute imports to North America and Western Europe plummeted from 1.0 million to 52 000 metric tons, and jute's real price fell by 70 percent (Boyce, 1995). This collapse hit particularly hard the incomes of small farmers and agricultural laborers in Bangladesh, the world's premier jute-exporting country.

The environmental impacts of jute production are modest. Bangladeshi farmers use only modest amounts of chemical fertilizers and little pesticide on the crop. The country's flooded jute fields support diverse fish populations, an important positive externality for rural people. Like all plants, jute sequesters atmospheric carbon, a further positive externality. At the end of the product life cycle, jute biodegrades in the soil.

Polypropylene, jute's main competitor, is manufactured by multinational petrochemical firms. The USA is the world's leading producer. Polypropylene production generates emissions of numerous air pollutants, including particulates, sulfur oxides, nitrogen oxides, carbon monoxide, volatile organic compounds, and other toxins, in addition to carbon dioxide. Since it is not biodegradable, polypropylene generates further environmental costs in the form of landfill disposal, incineration, or litter at the end of the product life cycle.

The price advantage that has helped polypropylene to displace jute arises in no small measure from the failure of market prices to internalize environmental costs.¹⁵ The result of the global competition between the two has been the displacement of a relatively 'green' southern product by a relatively 'brown' northern product. Even within Bangladesh, plastic shopping bags have begun to replace jute ones.

Maize: Mexico versus the USA Maize is the leading crop in both Mexico and the USA. Competition between producers in the two countries has intensified in recent years, as the Mexican government has cut support to small farmers and lowered maize tariffs.

Mexico is the historic center of origin of maize, and the modern center of the genetic diversity in the crop. In the hilly lands of southern and central Mexico, campesino farmers grow thousands of different varieties of maize in small plots that botanists call 'evolutionary gardens' (Wilkes, 1992). On these farms, the maize plant continues to evolve with the assistance of the human hand – in the process Darwin called 'artificial selection' – in response to climate change and newly emerging strains of pests and plant diseases. The campesinos thus provide a valuable positive externality to humankind – the *in situ* conservation and evolution of genetic diversity in one of our main food crops.

In the USA, fewer than a dozen varieties account for half of total acreage under maize. Only a few hundred varieties, many of them closely related, are commercially available. The crop therefore suffers from genetic vulnerability – the eggs-in-one-basket syndrome – a problem dramatically revealed in 1970 when a new strain of leaf blight destroyed one-fifth of the nation's corn harvest. In the effort to remain a step ahead of evolving pests and pathogens, US plant breeders run a 'varietal relay race', constantly developing new varieties that incorporate resistance to new threats. The average commercial lifespan of a US corn variety is only seven years. The raw material for this race is the genetic diversity found in the evolutionary gardens of traditional agriculture.

By the measuring stick of market prices, US farmers are more 'efficient' than their Mexican counterparts. Before NAFTA, US maize sold at roughly \$110/tonne at the border, whereas Mexican growers received \$240/tonne. Several factors contribute to the price advantage of US corn: (i) natural conditions such as better soils, more regular rainfall, and a killing frost that limits pest populations; (ii) farm subsidies that reduce US market prices; (iii) the externalization of environmental costs, such as groundwater contamination by pesticides; and (iv) the failure of market prices to internalize the value of sustaining genetic diversity provided by Mexican farmers.¹⁶

Since NAFTA took effect, Mexican imports of US corn have risen from less than 1 million tonnes/year to more than 5 million tonnes/year. Meanwhile the price of maize in Mexico has fallen by more than 70 percent.¹⁷ If these trends persist, they are likely to accelerate genetic erosion – the loss of intra-specific diversity – in the crop.¹⁸

Some comfort can be taken from the fact that samples of many Mexican maize varieties are stored in ‘seed banks’ at agricultural research institutes in Mexico and elsewhere. But seed banks are insecure, subject to the perennial hazards of underfunding, accidents and war. Most of the maize stored in the world’s single largest collection, at the Vavilov Institute in St Petersburg, today is believed to be non-viable due to inadequate maintenance. Moreover, having seeds ‘in the bank’ is not the same as knowing about varietal properties such as pest resistance and climate sensitivity, information that is most readily obtained in the field. And even at best, seed banks can conserve only the existing stock of genetic diversity; they cannot replicate the ongoing process of evolution that takes place in the farmers’ fields.¹⁹

As in the case of jute and polypropylene, the competition between Mexican and US maize pits relatively ‘green’ production in the South against relatively ‘brown’ production in the North. If we view globalization through a long-term lens, looking back to the era of colonialism and the Industrial Revolution, this may have been the more common type of race to the environmental bottom.

Environmental polarization

Rather than convergence, globalization instead could promote polarization: widening disparities in environmental quality across countries. The most likely polarization scenario, discussed in this section, would combine environmental improvements in the global North together with increasing environmental degradation in the global South. Regardless of whether a ‘green’ North and ‘brown’ South is a good description of the current situation, it could be a prediction of where the world is headed.

The impacts of pollution and natural resource depletion are often concentrated in specific localities. This fact opens possibilities for ‘environmental cost shifting’ so as to separate those who benefit from an economic activity from those who bear its external costs (Opschoor, 1992, p. 36). Globalization increases possibilities for environmental cost shifting by widening the spatial distance across which economic interactions take place. It also can widen what can be termed the ‘social distance’ between the beneficiaries of cost externalization and those who bear these costs, making the latter less able to influence the actions of the former. The likelihood of polarization hinges on whether globalization also promotes countervailing forces, such as the development of global civil-society networks, which offset these effects by reducing social distance.

To frame the discussion, I begin this section with a brief overview of the political economy of environmental degradation. In contrast to the neoclassical treatment of environmental problems as simply a result of missing markets and impersonal governance failures, political economy suggests that the identities of those who gain and lose by virtue of cost externalization help to determine the extent of corrective action undertaken by institutions of governance. I then review evidence on the impact of power disparities within countries on the magnitude of environmental degradation. I then turn to the impacts of globalization on prospects for environmental cost shifting.

Political economy of environmental degradation

Environmentally degrading economic activities generally involve winners who benefit from these activities as well as losers who bear their costs. Without winners, the activities would not occur. Without losers, their environmental impacts would not matter from the standpoint of human well-being.

In analyzing the dynamics of environmental degradation, we can therefore ask why it is that the winners are able to impose environmental costs on the losers. When market failures take the form of environmental externalities, why do the institutions of governance fail to remedy them? There are three possible reasons:

1. The losers may belong to future generations who are not here to defend themselves. In such cases, the only remedy for governance failure is a social commitment to an ethic of intergenerational responsibility.
2. The losers may lack adequate information as to the extent or sources of environmental burdens. It is often difficult, for example, to link health problems to pollution, and to track pollution to its source. In such cases, environmental education and right-to-know legislation are crucial elements of a solution.
3. The losers may lack sufficient power to alter the behavior of the winners. In such cases, a change in the balance of power between winners and losers is a necessary condition for greater environmental protection.

Here I focus on the third explanation – power disparities – since this is most directly affected by globalization.

In the past two decades, a growing body of literature has documented the uneven distribution of environmental burdens within countries, and their correlation with disparities in political power. In the USA, studies of ‘environmental justice’ have shown that communities with lower incomes and higher percentages of racial and ethnic minorities tend to face disproportionate environmental hazards.²⁰ For example, even when controlling for income, Ash and Fetter (2004) find that African Americans tend to reside not only in metropolitan areas with above-average levels of point-source air pollution, but also in localities that have higher-than-average pollution levels for the metropolitan area.

In their analysis of informal regulation in Indonesia, Pargal and Wheeler (1996) similarly find that communities with lower-than-average incomes and educational attainments tend to have higher levels of industrial water pollution, even after controlling for other variables such as the volume of output and the age of nearby factories. They attribute this to differences in the ‘implicit price’ of pollution, which they define as ‘the expected penalty or compensation exacted by the affected community’. Following this logic, Hettige et al. (2000, p. 452) write that ‘cost-minimizing firms with flexible abatement choices will control pollution to the point where their marginal abatement costs equal the “price” exacted for pollution by the affected parties’. The latter may include local communities, government officials, non-governmental organizations, stockholders and consumers – all parties who are ‘in a position to impose some cost on a firm or plant if its emissions exceed the norms adopted by that group’. The resulting ‘price’ of pollution varies across localities.

Pollutees (those who bear costs from environmental degradation) can influence the decisions of polluters in two broad ways. The first is when their well-being enters directly into the polluters’ utility function. This can be termed internalization through sympathy.

Following Sen (1975, p. 23), we can represent the degree of sympathy by means of a parameter, h_i , that indicates the weight placed on the well-being of others relative to one's own well-being. When $h_i = 0$, the polluter is indifferent to the well-being of the i th individual. When $h_i = 1$, the polluter values impacts on the i th individual the same as impacts on oneself. If $h_i = 1$ for all i individuals impacted by pollution, there is full internalization.

The second way pollutees can influence the decisions of polluters is through the political process. This can be termed internalization through governance, with governance understood to encompass both formal and informal rules that constrain behavior. Like sympathy, the ability of pollutees to use governance to alter the behavior of polluters is a matter of degree. Let the parameter π_i represent the power of the i th individual to affect social decisions regarding pollution. Where $\pi_i = 0$ for all pollutees, the 'price' of pollution (set implicitly by informal regulation or formal standards, or explicitly by pollution taxes or tradable permits) is likewise zero.

More generally, we can describe environmental governance outcomes as following a power-weighted social decision rule (Boyce, 2002, chs 4,6):

$$\max \sum_i \pi_i b_i$$

where b_i = the net benefit that individual i derives from an environmentally degrading activity (net cost if $b_i < 0$).²¹ Where the power of those who benefit – as producers via higher incomes, or as consumers via lower prices – exceeds the power of those who bear net costs, the social decision rule leads to weaker environmental governance than when the reverse is true. In general, the social decision rule yields outcomes that are 'efficient' in the conventional cost-benefit sense only in the special case where π_i is the same for everyone.

The social distance between the winners and the losers affects both types of internalization. As Princen (1997, p. 235) observes, the obscuring of environmental costs and their displacement onto others 'impede ecological and social feedback and create cognitive, institutional, and ethical lags between initial benefits and eventual full costs'. When those who benefit from polluting activities do not have any social ties to those who bear the costs – when they do not know them, or see them, or perhaps even know that they exist – there is little scope for internalization through sympathy. When the winners are very powerful relative to the losers, the scope for internalization through governance is correspondingly limited.

Power disparities and the environment

The power-weighted social decision rule generates two testable hypotheses. The first is that the distribution of environmental burdens is correlated with power-related variables such as income, education, race and ethnicity. Communities whose residents are poorer, less educated, or belong to historically marginalized racial and ethnic groups will tend to bear greater burdens than communities whose residents are affluent, well educated, or belong to historically dominant racial and ethnic groups.

As noted above, a substantial empirical literature has emerged on this topic. In general, its findings are broadly consistent with this hypothesis. There is room for debate, as always, regarding causal explanations for observed correlations. Some researchers have suggested, for example, that the inverse relation between average incomes and toxic hazards often found by studies in the USA, may arise not from disproportionate siting of

hazardous facilities near low-income neighborhoods, but rather from market dynamics in which low-income people are drawn to these locations by lower property values.²² This logic would have to be stretched, however, to explain correlations between hazards and race that persist even after controlling for income.²³

The second hypothesis is that societies with wider power disparities tend to have more environmental degradation. That is, power disparities affect the magnitude of pollution and resource depletion, as well as their distributional incidence. This hypothesis is based on the assumption that there is a positive correlation between net benefits (b_i) and power (π_i), an assumption that seems reasonable in that both are likely to be correlated with wealth.²⁴

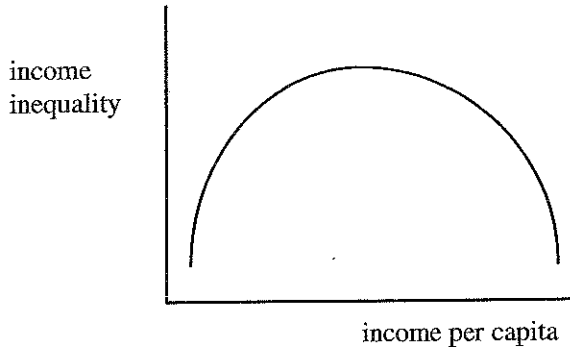
Empirical studies of this second hypothesis remain scarce, but support for it can be drawn from several recent cross-country studies that have investigated the impact of political variables on environmental performance. These studies were sparked by research suggesting that environmental degradation – or at least some types of it – is concave in income, and that high-income countries have passed a turning point beyond which further income gains are associated with environmental improvements. In an early example, the World Bank (1992, p. 41) reported an inverted U-shaped relationship of this type between atmospheric sulfur dioxide and per capita income.

This relationship has been dubbed the ‘environmental Kuznets curve’ (EKC), due to its likeness to the original Kuznets curve depicting a relationship between income inequality and per capita income (see Figure 7.2). As in the case of its namesake, the EKC has sometimes been taken to imply that problems that accompany economic growth will be resolved, more or less automatically, by growth itself. Thus Beckerman (1992) writes, ‘in the end the best – and probably the only – way to attain a decent environment in most countries is to become rich’.

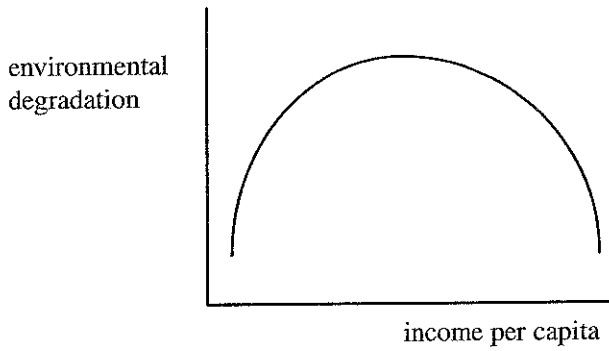
Notwithstanding the allusion to Kuznets’s earlier work on income inequality, few studies of the EKC have examined the relationship between environmental quality and inequalities of income, wealth, or power. Yet combining the two inverted-U curves (and assuming that the income levels at which they reach their turning points are roughly comparable), we can infer a positive correlation between environmental degradation and income inequality, as depicted in Figure 7.2. Such a correlation does not prove causation, of course, but it is intriguing. And because the curves themselves (when found to exist at all) are statistical relationships, rather than iron laws, there are many outliers – for example, countries with relatively low income inequality and low per capita income – making it possible to attempt to distinguish econometrically between the environmental impacts of income and inequality.

To investigate the impacts of power disparities on environmental quality, Torras and Boyce (1998) analyzed cross-country variations in air pollution (ambient concentrations of sulfur dioxide, smoke and heavy particles), water pollution (concentrations of dissolved oxygen and fecal coliform), and the percentages of the population with access to safe water and sanitation facilities. In addition to per capita income and the Gini ratio of income distribution, their analysis included two other explanatory variables – adult literacy and an index of political rights and civil liberties – regarded as relevant to the distribution of power. In low-income countries, the estimated coefficients on the rights and literacy variables had the expected signs in all cases: higher literacy and greater rights were associated with better environmental quality. These coefficients were statistically significant in the majority of cases. Controlling for these other variables, the estimated

(a) The 'Kuznets curve'



(b) The 'environmental Kuznets curve'



(c) Environment-inequality relation

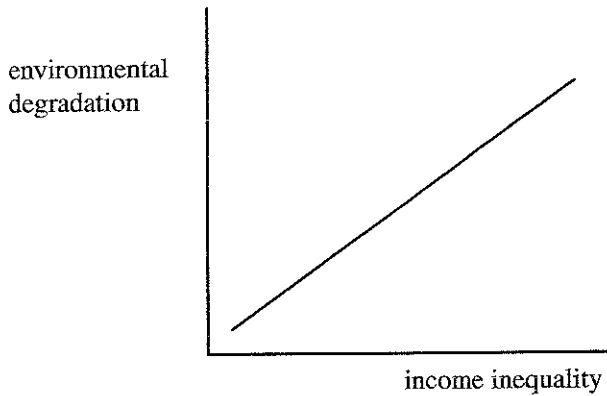


Figure 7.2 *Environmental degradation, income inequality and per capita income*

effects of income inequality were inconsistent, and the authors suggest that either rights and literacy capture more important aspects of power disparities or the quality of the income distribution data is poor (or both).²⁵ They obtain weaker results for the high-income countries, suggesting that rights and literacy are most important when average incomes are low.

Other cross-country studies have also suggested that political rights can be an important determinant of environmental outcomes. Scruggs (1998) found greater rights to have a statistically significant favorable effect on sulfur dioxide concentrations, favorable but weaker effects on particulates and fecal coliform pollution, and an adverse effect on dissolved oxygen. Barrett and Graddy (2000) found air pollution by sulfur dioxide, smoke and particulates to be 'monotonically decreasing in the extent of democratic freedoms'; for water pollutants, they found statistically significant favorable effects in the cases of fecal coliform, arsenic and lead. Harbaugh et al. (2000) also found a strong statistical relationship between an index representing democratic participation in government and atmospheric concentrations of sulfur dioxide, smoke and particulates.

Further empirical support for the hypothesis that power disparities have an adverse impact on environmental quality comes from a cross-sectional study of the 50 US states by Boyce et al. (1999). The authors derived a power-distribution index from state-level data on voter participation, tax fairness, access to health care and educational attainment. In a recursive econometric model, they found that states with more equitable distributions of power had stronger environmental policies, and that these in turn were associated with better environmental quality.

Globalization and environmental cost shifting

As globalization extends the arena for environmental cost shifting, the profound inequalities in the worldwide distribution of power and wealth become more relevant to the political economy of environmental degradation. As Sutcliffe (2003) observes, income inequality at the global level exceeds that at the national level even in the most unequal of countries, such as Brazil and South Africa (with the possible exception of Namibia). This is hardly surprising, since a global measure of inequality puts the richest strata of the population in the global North in the same universe as the poorest strata of the global South. The 'power equivalents' of this income distribution – a phrase coined by Kuznets (1963, p. 49) – may likewise be more unequal globally than at the national level. If so, the foregoing analysis suggests that globalization may lead both to environmental polarization between North and South and to an increase in the total magnitude of environmental degradation worldwide.

Having widened environmentally relevant disparities by putting the global rich and the global poor into the same basket, globalization eventually may reduce these disparities by promoting faster growth in the incomes of the poor than of the rich. But the evidence for such a trend is mixed at best.²⁶ More promising, perhaps, is the possibility of social developments – the other side of Polanyi's 'double movement' – that increase the political effectiveness of demand for environmental protection in low-income countries. Here too, however, the record to date is not terribly encouraging. While Weidner and Jänicke (2002, p. 440) find some evidence of a global convergence between North and South in environmental policies, at the same time they conclude that capacities for policy implementation have become more unequal, resulting in 'convergence of policies but divergence of outcomes'.

But countervailing forces are set in motion by globalization, too. Advances in telecommunications can shrink social distances, increasing the scope for internalization through sympathy by giving faces and voices to the people who bear environmental costs, and at the same time giving the latter greater access to information and the power that comes with it. Alliances across national boundaries, among local communities, non-governmental organizations (NGOs), workers, shareholders and consumers, can alter balances of power. And as discussed in the next section, the phenomenon of global environmental change – where there is little or no scope for cost shifting – may not only give impetus to global environmental governance, but also create new opportunities for globally egalitarian politics.

To illustrate these opposing forces, consider the rapid growth of industrial shrimp farming in the coastal areas of tropical countries. This has been accompanied by the widespread and often violent appropriation of land and aquatic resources from local residents, and by adverse environmental impacts on local communities, spurring polarization (Stonich and Vandergeest, 2001). At the same time, however, the spread of shrimp farms has sparked international alliances of environmental and peasant-based NGOs that defend and reassert community rights to natural assets (Stonich and Bailey, 2000). Similarly, export markets for beef, timber and minerals have been a major stimulus to Amazonian deforestation. Again, international alliances have emerged to support local people who traditionally have relied on the forest for their livelihoods. These were instrumental in the creation of extractive reserves in Brazil, where local communities have secured their right to harvest latex and other forest products while preventing forest clearing (Hall, 1997). As these examples suggest, globalization not only poses risks of environmental polarization and increased environmental degradation, but also creates opportunities for countervailing forces.

Concluding remarks

This chapter has viewed globalization as a process of economic integration that embraces governance as well as markets. In principle, the globalization of governance can counter adverse environmental impacts arising from the globalization of market failure that accompanies the integration of world markets. But there is nothing automatic about this outcome – it rests on human agency, and on balances of power between those who stand to gain and lose from environmental governance.

In assessing the effects of globalization, my main focus has been its impacts on environmental quality in the global North and global South. Closely related to this, however, is a concern with impacts on human well-being. Environmentalists tend to conflate the two, seeing current and future human well-being as dependent on environmental quality. Economists tend to emphasize the tradeoffs that can and do arise between environmental quality and the satisfaction of other human needs and wants. Such tradeoffs pose the positive question of how they are made in practice, as well as the normative question of how they ought to be made. I have suggested above that both questions are intimately bound up with the issue of interpersonal tradeoffs in the well-being of different people.

With respect to the positive question of how societies choose to make tradeoffs, I have suggested that these are guided by a power-weighted social decision rule, in which benefits and costs are weighed by the power of those to whom they accrue. This leads to the hypotheses that power disparities affect the distributional incidence of environmental

degradation and its overall magnitude.²⁷ As noted, there is a growing body of empirical literature that has reported findings consistent with these hypotheses.

With respect to the normative question of how societies ought to make tradeoffs, I have noted the important difference between the wealth-based approach used in conventional cost-benefit analysis, in which values are conditioned by ability and willingness to pay, and a rights-based approach in which all individuals have equal entitlements to a clean and safe environment. As I have discussed at greater length elsewhere, these two approaches can have quite different prescriptive implications.²⁸ Under the wealth-based approach, for example, if globalization were to promote environmental polarization, in which improvements in the North were coupled with increasing environmental degradation in the South, this might be argued to be welfare maximizing; indeed, in the extreme case, pollution imposed on people who have no ability to pay to avoid it is regarded as costless. Under a rights-based approach, environmental costs and benefits are not weighed by the purchasing power of those to whom they accrue. The normative stance that ultimately is adopted by formal and informal institutions for environmental governance will have profound implications for how globalization affects both the distribution of power and access to environmental quality.

This chapter has questioned several tenets of conventional thinking about the environmental impacts of globalization. I have argued that the assumption that production practices in the global North are environmentally superior to those in the global South – shared by many champions and critics of globalization alike – can be quite misleading, and can lead to the neglect of important environmental issues. I have maintained that globalization can promote environmental convergence via ‘harmonization upward’, as argued by its proponents, and via a ‘race to the bottom’, as argued by its opponents, but that neither outcome is assured *a priori* grounds. I have also noted that instead of convergence, globalization could foster environmental polarization – ‘greening’ the North and ‘browning’ the South. Whether this occurs will depend on the extent to which those who face environmental burdens are able to take advantage of new opportunities to bridge social distances and narrow power disparities, so as to promote internalization through sympathy and governance.

The environmental impacts of globalization not only remain to be seen; they remain to be determined. The outcome will not be dictated by an inexorable logic. Rather it will depend on how the new opportunities created by the globalization of markets and governance alter balances of power, both within countries and among them. As its critics fear, globalization could accelerate worldwide environmental degradation and deepen environmental inequalities. Yet globalization also gives impetus to countervailing forces that could bring about a greener and less divided world. The history of the future is still to be written.

Notes

* An earlier version of this chapter was published as ‘Green and brown? Globalization and the environment’, in the *Oxford Review of Economic Policy*, 20(1), 2004.

1. Senator John Chafee, quoted in Behr (1993).
2. ‘Sabotage of America’s Health, Food & Safety, and Environmental Laws’, advertisement in *The Washington Post*, 14 December 1992, by the Sierra Club, Greenpeace USA, Friends of the Earth, and others; quoted in Commission for Environmental Cooperation (1996, p. 29).
3. For discussion, see below.
4. See, for example, Barrett (2000), who also points out that there may be differences between harmonization of emission standards and harmonization of environmental quality standards.

5. See Boyce (2000), reprinted in Boyce (2002, ch. 2).
6. Thus Mol (2001, p. 211) writes that economic mechanisms 'will always fall short in fully articulating environmental interests and pushing environmental reforms, if they are not constantly paralleled and propelled by environmental institutions and environmental movements'.
7. Both community pressure and firm responsiveness may differ when foreign firms outsource to unbranded suppliers. In a study of northern Mexico, Gallagher (2004) found that outsourcing by US firms had adverse environmental impacts.
8. For examples, see Conroy (2007).
9. There is an obvious analogy with labor standards; see Singh and Zammit (2004). Indeed environmental protectionism is sometimes depicted by its critics as a smokescreen for other protectionist interests (see, e.g., Bhagwati, 1993).
10. 'Ecological dumping' need not be intentional. Rauscher (1994, p. 825) proposes a more restrictive definition: 'a scenario in which environmental standards are tighter in the non-tradables than in the tradables sector.' While this comes closer to the notion of dumping as a deliberate instrument of trade policy, it is possible that inter-sectoral disparities in environmental standards are not wholly intentional. In any event, proponents of environmental protectionism are more concerned with the effects of ecological dumping than its causes.
11. Low and Yeats (1992) found a rising share of pollution-intensive exports from developing countries (particularly in Southeast Asia) in the period 1965-88, albeit from a fairly small base. Extending this analysis to the period 1992-2000, Bouvier (2003) finds that this trend has continued, with some Eastern European countries also emerging as major exporters.
12. If this is accompanied by declining terms of trade for environment-intensive products, the result could be both 'environmental improvement and economic growth in the North and environmental deterioration and economic stagnation in the South' (Muradian and Martinez-Alier, 2001, p. 286).
13. See also <http://www.slowfood.com/>.
14. Maizels (1992, p. 189; 1995, p. 108) reports that substitution by synthetics reduced the developed market-economy countries' consumption of natural raw materials by 2.9 percent per year from 1963-65 to 1971-73, 0.9% per year from 1971-73 to 1978-80, and 1.2 percent per year from 1978-80 to 1984-86.
15. For details, see Boyce (1995).
16. For further discussion, see Boyce (1996).
17. For accounts of the social impacts in rural Mexico, see Weiner (2002) and Becker (2003).
18. So far, however, relatively few *campesinos* appear to have abandoned maize cultivation, in part because of the lack of other economic opportunities; see Ackerman et al. (2003).
19. For further discussion of the value of *in situ* (in-the-field) crop genetic diversity, see Brush (2000) and Thrupp (1998).
20. For literature surveys, see Bullard (1994), Szasz and Meuser (1997), Bowen (2001) and Pastor (2003).
21. 'Power' here plays a role analogous to that of 'influence' in Becker's (1983) model of fiscal policy.
22. See, e.g., Been (1994). In a longitudinal study in southern California, one of the few to examine empirically the siting versus 'move-in' question, Pastor et al. (2001) found strong evidence of disproportionate siting.
23. See, for example, Bouwes *et al.* (2003) and Ash and Fetter (2002).
24. Where b_i and π_i are negatively correlated, the result will be 'too little' environmental degradation, by the usual efficiency standard, rather than too much. For discussion, see Boyce (2002, pp. 37-38, 51).
25. For further discussion of the impacts of income inequality on environmental quality, see Boyce (2007).
26. For a review of the evidence, see Sutcliffe (2003).
27. As noted above, the power of those who bear environmental costs relative to those who benefit from cost externalization can also be described in terms of their ability to put an implicit or explicit 'price' on environmental degradation.
28. See Boyce (2002, chs 2 and 4).

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