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Analysis

Inequality, democracy, and the environment: A cross-national analysis

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ABSTRACT

This paper joins the debate on the relationship between inequality and the environment. Departing from the past contributions, which focused either on the theories of environmental behavior or on economic interests, this paper develops arguments about "political choice" mechanisms that help explain the linkages between inequality and national policymaking related to the establishment of protected areas. A cross-national analysis of the interactions between inequality, democracy and the legal designation of protected areas in a global sample of 137 countries shows that, ceteris paribus, the effects of inequality vary depending on the strength of democracy: in relatively democratic countries inequality is associated with less land in protected areas, whereas in relatively undemocratic countries the reverse is true. The highly significant effects of inequality undermine the democratic dividend in the arena of nature conservation.

The "inequality hypothesis" posits that economic inequality hampers industrial regulation and leads to an oversupply of environmental pollution. James Boyce, one of the most prominent scholars of environmental inequalities, noting that the rich often prefer private external assets to public domestic assets, conjectures: "Inequalities may fatten foreign bank accounts, but they do not protect the environment at home" (Boyce, 2002, 43). More broadly, Boyce's thesis is that distribution of costs and benefits of environmental intervention play an important role in determining environmental outcomes. As such, inequalities can cut both ways. Under certain conditions, political and economic elites may be able to impose a larger share of the costs of environmental protection on the relatively poor and politically marginalized groups, who often lack institutional representation (Torras and Boyce, 1998; Clement and Meunie, 2010). In those cases, economic inequalities are likely to contribute to some types of environmental protection.

This paper tests the inequality hypothesis in this broader sense to examine how economic inequalities and political freedoms affect cross-national variation in the percentage of national territory set aside for nature conservation, via legal designation of terrestrial protected areas (PAs). The choice of the outcome variable reflects the intent to draw on the available research on the subject and to respond to methodological critiques of much of the scholarship on inequality and environment (see, Gates et al., 2002; Berthe and Elie, 2015). The empirical results and supplementary analyses presented in the paper show that the effect of income inequality on designation of PAs is contingent on the strength of democracy. Inequality has a positive effect on designation of PAs in non-democratic countries, while the effect of democracy on designation of PAs is positive at low levels of inequality; however, the democracy dividend for conservation diminishes with increasing economic inequality. Noticeably, the environmental Kuznets curve is valid for cross-sectional analysis of PAs within the developed countries subsample, though, as I explain below, none of the income variables is significant either in a full sample using developed country interaction effects or in the subsample of developing countries.

The analytical strategy used in this paper proceeds in three steps. First, the next section offers a concise review of the scholarship on inequality and environment and maps the mechanisms of inequality-environmental linkages to inform the hypotheses that this paper tests. Section 2 discusses data and empirical methods, followed by a discussion of the results of empirical analysis in Section 3. Section 4 supplements empirical analysis by drawing on two different strands of research related to PAs: 1) extensive research on the political economy of PAs and 2) scholarship in biological sciences, which examine the extent of overlap between the land under PAs and the areas rich in critically endangered biodiversity ("gap-analysis"). The main findings of these research programs help buttress the findings of political economy of institutions analysis presented below. The concluding section summarizes the contributions that this paper makes to the debates on inequality-environment linkages and outlines an agenda for further research on the topic.

1. Inequality, Democracy and the Environment

1.1. Inequality and the Environment: Taking Interests and Preferences seriously

The contributors to this journal have been engaged in a productive debate about the relationship between economic and political inequality

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and environmental outcomes (Boyce, 1994; Scruggs, 1998; Torras and Boyce, 1998; Roca, 2003; Berthe and Elie, 2015). Economic elites, who often also command significant political power, derive benefits from the polluting activity, while economically and politically weaker sections are forced to bear the costs of environmental degradation (Boyce, 1994). Boyce argues that, because the rich stand to profit from lower environmental regulations, they would not necessarily demand a cleaner environment. An important counter-argument is that increasing income may be associated with either same level of preference for degradation (if environment is considered a normal good) or a lower level of preference for environmental degradation (when environment is considered a "superior good") (Scruggs, 1998). If the environment is valued as a superior good, the rich are likely to prefer a clean environment and are willing to pay higher taxes or accept a greater amount of environmental regulation, as implied in the research on environmental Kuznets curve.

The Kuznets curve argument has been criticized on a number of grounds. Empirical studies show that income elasticity of environmental improvements is less than or very close to one, which undermines the argument that environmental quality exhibits the characteristics of a normal or superior good (Torras and Boyce, 1998; Martini and Tiezzi, 2014). Even if increased incomes were associated with stronger preferences for clean environment, such preferences may not lead to a clean environment for everyone. While the wealthy may be willing to pay for the cost of cleanup, as the literature on environmental justice shows, waste disposal and landfills facilities tend to be sited disproportionately around neighborhoods inhabited by the predominantly poor groups of people of color and racial minorities (Taylor, 2014). Environmental protections may be accompanied by displacement of the costs of clean-up and conflicts related to competing resource use and management strategies (Roca, 2003). Lastly, because environmental protection is a public good that individuals cannot buy in the market, it is not proper to analyze environmental outcomes as an aggregation of individual choices (Roca, 2003, 7; Wilkinson and Pickett, 2010).

Effective environmental protection requires public participation, good government, effective regulation, and diffusion of technological change – each of which is often related to higher incomes (Magnani, 2000; Bimonte, 2002; Carson, 2010). Even so, "it is likely, but not inevitable, that *a society will choose* to reduce pollution levels as it becomes wealthier" (Carson, 2010, 3), as the present logjam in the U.S. environmental policies suggests. The coincidence of increased wealth and public action for environmental protection cannot be taken for granted; neither can the institutional means through which popular preferences translate into policy interventions. Public institutions rarely function autonomously as implied in formal analyses of institutions. Even in advanced democracies, the differences of political and economic power within a society shape the emergence and functioning of political institutions, including those that are directly linked to environmental policymaking (see, Magnani, 2000; Moe, 2005; Steinberg, 2015). This may be one reason why empirical studies examining the effect of decision-making rules, such as Single Majority Rule (SMR) or Power Weighted Rule (PWR), on environmental outcomes produce mixed results (Berthe and Elie, 2015). Collective action problems act as an important barrier against popular mobilization, which reinforces the elite dominance of environmental policymaking. The complex entanglement of collective action problems, enduring power asymmetries, and the public good nature of environmental outcomes present theoretical and policy challenges against the efforts to examine the effects of inequality on environment. Theoretical difficulties discussed above are closely related to methodological problems.

Scott Gates and co-authors argue that the empirical literature on democracy and environment "focuses too much on environmental outcomes instead of looking at environmental commitment" (Gates et al., 2002, 11). Somewhat counterintuitively, the focus on outcomes is problematic because environmental outcomes are a product of complex interactions between social, economic, political, and *environmental* forces, which most empirical studies rarely control for. Such omitted-variable biases are likely to be especially relevant in studies pertaining to non-point sources of environmental outcomes, such as terrestrial conservation. To address the methodological problems discussed above, Gates et al. suggest that, instead of environmental outcomes, scholars should examine environmental *commitments* which are directly linked to the policy process. Berthe and Elie (2015, 195) also articulate a related concern in their review of the inequality-environment literature: "because they mask the intermediary stages between inequality and environmental pressures, these tests are unable to validate any particular theoretical explanation." Responding to these arguments, this paper formalizes the notion of "intermediary stages" by introducing the distinction between policy *outputs* and policy *outcomes*, commonly employed in policy studies. Policy outputs are "plans, projects, and other tangible items" that result from environmental policy process, while policy outcomes are "the effects of outputs on environmental and social conditions" (Koontz and Thomas, 2006, 113). Political scientist David Easton defines "outputs" as a "stream of activities flowing from the authorities in a system" (Wahlke, 1971, 282). Legal designation of PAs indicates a concrete policy commitment and constitutes an important policy output, which is valued in international environmental policy arena and contributes to a variety of local outcomes, as the next sub-section explains.

This paper's focus on policymaking and institutional development in the presence of inequalities provides a theoretically grounded alternative mechanism to supplement previous research anchored in theories of economic behavior and environment preferences. The emphasis on policies and institutions also speaks to James Buchanan's argument that studies of social choice mechanisms cannot rely on assumptions that are often made about "individualistically oriented decision-making processes" of markets (Buchanan, 1954, 118; Ostrom, 2011). The next subsection develops a framework related to political decision-making at the national level, which is a response to Berthe and Elie's (2015, 195) recommendation about the development of "political choice" mechanisms relevant to environmental policy area under examination. This paper focuses on how interests of policymakers align vis-à-vis the legal designation of PAs, as well as how the policy outputs may affect the material interests of forest-dependent people.

Instead of relying purely on a deductive logic, the framework outlined in the next section mirrors the methods of "abduction" used by a number of contributors to this journal (for a review, see, Forstater, 2004). The starting point in abduction is to identify a puzzling empirical outcome, which does not conform to well-established theories. The next subsection begins by outlining a puzzling outcome related to the designation of PAs the world over, which is difficult to explain on the basis of available theories of environmental public goods. To explain this puzzling anomaly, I propose and test a set of hypotheses based on theories of political economy of institutions.

1.2. Political-Economy of Protected Area Designation

Designation of PAs has been a major focus of international conservation groups that have helped enact international agreements, such as the United Nations' Convention on Biological Diversity, UNESCO's World Network of Biosphere Reserves, and the World Congress on National Parks and Protected Areas. The fourth Congress held in 1992 resolved to bring 10% of the planet's landmass under PAs. While it was an ambitious goal at the time, approximately 210,000 PAs covered 15.4% of terrestrial areas as of 2014 (Juffe-Bignoli et al., 2014; see, Fig. 1). Such an accelerated growth of PAs cuts across the developing-developed countries divide that tends to characterize most other environmental policies. Moreover, unlike other environmental commitments on which governments often renege, no country has witnessed a net reduction in the landmass brought under the legal designation of PAs since 1990. It is evident that, quite contrary to theoretical