
Corey L. Lofdahl, *Environmental Impacts of Globalization and Trade: A Systems Study*, Cambridge, MA: MIT Press, 2002; 253 pages.

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In his recently published book, Corey Lofdahl brings a set of novel approaches to bear on the problem of determining, as the title notes, the *Environmental Impacts of Globalization and Trade*. Lofdahl sets out to contribute to the longstanding debate on whether globalization — and the international trade that is fundamental to it — harms the environment. He asks, “[I]s globalization an engine of prosperity and wealth for the majority of the world’s population or a source of inequality, instability, unemployment, and environmental degradation?” (p. 5). To examine the dynamics of and complex interaction between the social and natural environments, Lofdahl extends lateral-pressure theory — developed to explain interstate colonial acquisition and military conflict — to the realm of environmental degradation. In particular, Lofdahl seeks to explain how economic (as opposed to military) expansion of some states influences the natural (as opposed to security) environment of other states. Lofdahl applies three methodologies — geographic information systems (GIS), statistical and diffusion models, and system dynamics models — to this question and concludes that “trade provides the mechanism by which the costs of industrialization are pushed off by rich countries onto poor ones” (p. 157). Although the book’s empirical evidence is useful, the study is at its best in demonstrating an array of innovative ways of understanding the complex dynamics of the global economic system, the global environmental system, and the interactions between them.

Lofdahl begins the book by delineating, in broad strokes, competing arguments regarding how globalization and free trade influence the natural environment. In particular, Lofdahl seeks to explain cross-country variation in environmental degradation and the role trade plays in generating that variation. After briefly summarizing realist and institutionalist theories of international relations, Lofdahl argues for the value of lateral-pressure theory in explaining the

complex interactions between the social and natural environments. Lateral-pressure theory views population, technology, and resource access as three “master variables” that explain long-term trajectories of states in the international system. Lofdahl refocuses this theory on their environmental, rather than political and security, trajectories, seeking to see how the economic expansion of certain countries creates “lateral pressure” on the environments of other countries. In his model, global share of population, Gross National Product (GNP), and land area become the initial proxies for the three master variables. Using these variables to identify six different “ecological profiles,” with developed or “Northern” countries characterized by “stabilizing population, increasing GNP, and regenerating resources [forests]” and “Southern” countries characterized by “growing population, growing GNP, and declining forest area.” Lofdahl uses GIS techniques to demonstrate simple visual co-variation between these profiles and several metrics of environmental degradation (social indicators of development, CO₂ emissions per capita, and deforestation). He also graphs several time-series data sets to demonstrate the increasing divergence of developed and developing countries in terms of GNP, CO₂ emissions, trade, population, forest cover, and agricultural land. These approaches are intriguing. He builds on them with an array of statistical techniques to evaluate the extent to which trade has played a role in these economic and environmental trends. Using GIS as well as univariate, bivariate, and multivariate statistical methods, Lofdahl builds an argument that “more trade means less trees” (p. 125).

This study has two major strengths. First, a large-scale perspective on global environmental protection. Like much of Thomas Homer-Dixon’s work on environmental security or the ingenuity gap, Lofdahl’s work assesses the impact of deep, systemic forces across a range of cases, rather than venturing more finely grained explanations of outcomes in particular issue areas or for particular countries; in this respect, his book differs from much of the rest of the international environmental-politics literature. Second, Lofdahl demonstrates the value of bringing a range of different analytic techniques to bear on a single problem.

The weaknesses of this book result largely from acts of omission, rather than commission. Given Lofdahl’s obvious skills in statistics and simulation, the reader is

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left frustrated at points where analysis could have gone much further. The most obvious instance is where an explanation of “the environmental consequences of world economic growth over the past fifty years” relies almost exclusively on evidence regarding deforestation and CO₂ emissions (pp. 52–53). The author defends his choice by arguing that forest change is an excellent, and indeed “optimal,” indicator of environmental degradation (pp. 92, 125). Yet, this choice faces two problems. First, as Lofdahl himself notes, “deforestation data tend to be of questionable quality” and that “forest area cannot be measured adequately or uniformly” (p. 92). Indeed, deforestation data is generally available only at decadal or semi-decadal rather than annual intervals. Second, and more importantly, environmental degradation is too multi-faceted to be captured by a single metric. It would have been interesting to see whether his argument about trade’s impacts is as true for air pollution, water pollution, and species loss as for deforestation. To take but one example, it would be useful to know how much globalization has contributed to the precipitous decline in stocks of almost all top ocean fish species. Lofdahl’s impressive methodological skills would also have allowed him to contribute to recent efforts to develop reliable multi-indicator indices of environmental quality. Indeed, the failure of much environmental Kuznets-curve analysis to generalize accurately to a range of indicators beyond those initially analyzed has called many of initial findings into question. At times, Lofdahl’s simplifying assumptions seem *oversimplifying*, as when he uses GNP and food as proxies for technology and resources, respectively (p. 141).

This study is also marred by the datedness of the data used and literature cited. Although published in 2002, almost all data used is from before 1995. Population, agriculture, and social indicators of development figures come from a 1995 World Bank dataset; CO₂ data from a 1989 study, deforestation data from UNFAO, World Bank, and World Resources Institute datasets from 1996 and prior; GNP data from a 1991 study, and trade statistics from a 1994 study. Datasets on these and many more environmental indicators had increased dramatically in both number and quality by the time this book went to press, and the analysis would now be more useful if based on newer and improved data. The book also would have benefited from a more extensive and up-to-date review of the literature on the

environmental effects of globalization and free trade. Although the debate in *Scientific American* between Bhagwati and Daly may have been a “key argument” in this literature in 1993, the development and deepening of that literature since then is not addressed at all (pp. 100–102). Likewise, engagement with recent work on earth-system analysis would seem to be particularly germane to the large-scale analytic questions Lofdahl seeks to engage.

In this book, Lofdahl has made a valuable contribution to our understanding of how globalization and trade influence the natural environment. Far more importantly, however, Lofdahl has provided a useful example of how one can apply a range of sophisticated analytic techniques to grasp the interplay of two large complex systems, the social and the natural, that are at the center of our ability to live sustainably on earth.

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