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Theme: Understanding Global Change

Sub-theme: Global Environmental Governance

Title: Quantifying the impact of environmental governance on anthropogenic carbon dioxide emission

Extended abstract: Governments across countries have begun to get involved in the struggle to protect environment against global warming. Environmental governance encompasses rules and practices of institutions (government, business, and civil society groups) related to the management of the environment in its different forms through conservation, protection of natural resources, etc. Improvements in environmental governance are known to reduce anthropogenic emissions of greenhouse gases that trap heat in the environment leading to global warming. But, assessing the magnitude of this reduction is under-researched. In this paper, we quantify the impact of environmental governance on anthropogenic carbon dioxide (CO_2) emission (a greenhouse gas). CO_2 emission is the main determinant of countries' environmental quality. We did regression analysis on a panel dataset of 120 countries with the following linear specification:

CO_2 emission per capita = intercept + b0(GDP per capita) + b1(GDP per capita)^2 + b3(fossil fuel usage) + b4(environmental governance index) + error;

Data for all variables except environmental governance index was obtained from the World Bank database. The environmental governance index for countries was obtained from Environmental Sustainability Index Project of Yale and Columbia University. This index was available only for the years 2002 and 2005. Our study demonstrates that application of the generalised least squares estimator to the random effects model is an appropriate approach to use because it is more efficient than ordinary least squares estimator. This also means that the existence of unobservable time-invariant country specific effects is not sufficiently important to warrant the adoption of a fixed effects specification. We find a reduction in per capita CO_2 emission by 0.36 metric tons when environmental governance index changes across time and between countries by one unit. Our study justifies the role of existing environmental activism by government and non-government sector and calls for more inter-country agreements to reduce emission of CO_2.

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