

Are Autocracies Bad for the Environment? Global Evidence from Two Centuries of Data

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Increasing concentration of carbon dioxide (one of the major anthropogenic greenhouse gas (GHG)) has been argued to be one of the major causes of rising global temperature. The fifth assessment report of the Intergovernmental Panel on Climate Change suggests that if the carbon emission continues at the present rate then the global mean temperature will increase by 4 degrees Celsius or more above pre-industrial levels by the end of the 21st century. It is widely agreed that the global mean temperature should not be allowed to increase by more than 2 degrees Celsius above pre-industrial levels to minimize the risk posed by climate change.

Thus, reducing carbon-dioxide emissions is crucial to reduce the danger posed by climate change. Ex-ante there are reasons in favour and against democracies in achieving these desired reductions. Using data from 150 countries, we estimate the marginal emission intensity i.e. the change in per-capita carbon dioxide emission for a unit change in per-capita income across autocracies and democracies. In our empirical framework, the key coefficient is associated with the interaction of per-capita income and institution, leading to differences in turning points across institutions.

The existing literature on the effect of institutions on emission has faced serious issues of endogeneity leading to biased estimates. We use regional waves of democratisation and the mean per-capita income of other countries in the region as instruments for democracy and per capita income respectively. Using these instruments, we obtain the causal estimate of the key coefficient i.e. the difference in marginal emission intensity and confirm that democracies indeed emit less per-capita carbon dioxide for a unit increase in per-capita income compared to autocracies. More specifically, our causal estimates suggest that democracy emits 80 KG less per-capita carbon dioxide for a 1000 USD increase in per capita income. Since the population is the common denominator in both per-capita emission and per-capita income, we can further say that the democracies emit 80 KG less carbon dioxide to increase income by 1000 USD.

Results obtained in the paper suggest that these benefits of democracies have occurred in recent decades. Until the 1980s, the marginal emission intensity was higher in democracies than autocracies, although the difference was not statistically significant. In the 1990s, the marginal emission intensity in democracies became lower than in autocracies. This continued and in 2000 and 2010, marginal emission intensity in democracies was significantly lower than in autocracies. This difference in marginal emission intensity across democracies and autocracies coincides with the surge in public concern for climate change and intergovernmental initiatives to reduce emissions in recent decades, especially in democracies.

Using regimes of the world data, we also show that the main institution variable Polity 2 used in this paper and several other papers in the literature cannot distinguish between closed and electoral autocracies. Election matters and electoral autocracies have significantly lower turning

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points than closed autocracies. Also, electoral autocracies and electoral democracies are the same. But liberal democracies have additional liberal components, transparent law enforcement and access to justice. This further reduces the turning point in liberal democracies. Therefore, strengthening rule enforcement and improving access to justice can be critical in decreasing carbon-dioxide emissions.