Kiel, 27. March 2012

Millard-Ball, Adam, The Tuvalu Syndrome. Can Geoengineering Solve Climate's Collective Action Problem? (April 22, 2011). Climatic Change, Vol. 110, pp. 1047-1066, 2012

Abstract:
Geoengineering research has historically been inhibited by fears that the perceived availability of a technological fix for climate change, such as the deployment of space-based reflectors, may undermine greenhouse gas abatement efforts. I develop a game theoretic model to show that the credible threat of unilateral geoengineering may instead strengthen global abatement and lead to a self-enforcing climate treaty with full participation.

A 'rogue nation' may wish to unilaterally geoengineer if it faces extreme climate damages (as with Tuvalu), or if there are minimal local side effects from geoengineering, such as hydrological cycle disruption or stratospheric ozone depletion. However, the costly global side effects of geoengineering may make it individually rational for other countries to reduce emissions to the level where this rogue nation no longer wishes to unilaterally geoengineer. My results suggest a need to model the impacts of a "selfish geoengineer" intent only on maximizing net domestic benefits, as well as a "benevolent geoengineer" out to restore global mean temperature and minimize global side effects.

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