

## Optimal Unilateral Carbon Taxes

**Faculty Member:** [Samuel Kortum](#)

### Proposal Description:

Carbon emissions are a global externality, yet policy responses are emerging at a more local level. For example, California initiated its own climate policy with the Global Warming Solutions Act in 2006, initiating a cap and trade system in 2013. Any such unilateral attempt to address the global nature of climate change faces a major challenge. Market responses in other regions (states or countries) can lead to a shift in the location of production or in the choice of production technology, offsetting any progress in reducing global emissions. Our work is about how unilateral policies can be designed so as to maximize reductions in global emissions at minimum economic cost to the entity implementing the policy. Starting from a stylized theoretical foundation, our goal is to extend this work along three dimensions. The first is to move beyond theory to a quantitative approach in which we can compute tax rates in a carefully calibrated version of the model. Analyzing California's policy is a natural application to determine how an existing policy might be tweaked to make it more effective. The second is to scale up the approach to allow for an arbitrary number of locations separated by transport costs. The third is to consider policy coordination between entities enacting carbon policies.

### Requisite Skills and Qualifications:

Applicant should be comfortable with mathematical models, programming in Matlab, and working with data in Excel and STATA.

**Award:** Ziyang Guo

Michael Barresi

**Tobin Application Link:** [Tobin Application](#)

**Project Type:** Tobin RA

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