Buying Carbon Offsets: Evidence on the Efficacy of the Clean Development Mechanism

Faculty Member: Nicholas Ryan

Proposal Description:

Many of the least expensive means to reduce global emissions may be in poorer countries. For example, it costs less to build renewable energy to displace a new coal-fired power plant, not yet built, than to displace an existing plant with some useful life remaining. Developing countries justly contend they should not use less energy, or more expensive energy, to compensate for the historical emissions of industrialized countries. Both efficiency and equity therefore demand transfer payments to support green growth in developing countries at the expense of developed countries.

This project will study how the Clean Development Mechanism (CDM), the largest such transfer program in the world to date, has affected greenhouse gas emissions. The main problem in the design of offset programs is whether they induce “additional” reductions in emissions, below the counterfactual emissions that would have occurred without offset payments. The problem is one of adverse selection: project proponents, who have more information about counterfactual emissions than the certifiers of such projects, have an incentive to claim (and be paid for) large reductions. We will: (a) assemble a new database on financial projections for CDM projects; (b) use data on movements in carbon prices and changes in the returns to proposed CDM projects, as compared to predictions from a model of the certification process, to test for and quantify adverse selection; (c) estimate adverse selection for projects in the manufacturing sector using large survey data sets on firms in India and China.

Requisite Skills and Qualifications:

Desired skills and qualifications fall into several categories.

1. Experience scraping data with python. Proficient python use is a strong plus, especially experience in the use of regular expressions for scraping semi-structured data. We will scrape data from .pdf, .xls, and .html files to assemble the database of CDM project financial projections.

2. Experience working with large manufacturing data sets in Stata / R. We will use the Indian Annual Survey of Industries (ASI) and China’s Annual Survey of Industrial Firms (ASIF). Experience working in Stata / R with large manufacturing or household data sets with tens of thousands of observations and hundreds or thousands of variables is highly desired.

3. Knowledge of Chinese. China hosts the largest number of CDM projects in the world. Most project documents are in English; however, knowledge of written Chinese is a plus to understand and interpret ASIF survey documentation.

Successful applicants will fulfill at least one of (1.) and (2.). Knowledge of both (1.) and (2.) is a strong plus.

Award: Bogdan Cuza
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