

Why Have Greenhouse Emissions in RGGI States Declined? An Econometric Attribution to Economic, Energy Market and Policy Factors

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THE The Regional Greenhouse Gas Initiative (RGGI) is a consortium of northeastern U.S. states that have agreed to limit carbon dioxide (CO₂) emissions from electricity generation through a regional emissions trading (cap-and-trade) program. Since the initiative came into effect in 2009, CO₂ emissions have dropped precipitously, while the price of emission allowances has also fallen. The authors investigate why emission reductions were achieved so quickly and so inexpensively.

A number of external factors may have led to the drop in emissions and emission allowance prices. Specifically, the post-2008 recession, new natural gas discoveries, and the interaction of complementary policies (like renewable portfolio standards and Federal Clean Air Act regulations) may have played a role in the outcome of the RGGI market. Another potential explanation is that generation and emissions may have shifted to non-RGGI states. Similar studies of other subnational policies have found this effect (called “leakage)

in other contexts. If the rate of leakage is large, the effectiveness of a policy may be called into question since the little or no aggregate benefit may be derived from implementing a policy.

The authors develop a statistical model of electric generation and emissions for RGGI states. The statistical model uses data to simulate the baseline level of emissions without RGGI and test the impact of individual components on emissions. The authors find that the success of the RGGI is due to a combination of predicted factors, including the emissions trading program itself, complementary environmental programs, lower natural gas prices, and possibly some regional spillover effects.

- Controlling for all other factors, the RGGI program appears to be the dominant factor in the emissions decline.
- Power sector emissions would have been 50% higher by 2011 if not for the combination of policy, natural gas market, and macroeconomic

factors.

- Natural gas markets were responsible for more than one-third of the emissions decline due to low natural gas prices.
- The post-2008 economic recession had very small influence on the decline in emissions.
- The reduction in emissions from RGGI may be countered by generation and emissions leakage to surrounding states. Non-RGGI states may have picked up generation, especially from coal, that was diverted due to the RGGI program.

The results suggest that regional strategies can be effective in cutting emissions within a region, but the leakage analysis suggests that policies in one region may shift problems to other regions. Since GHGs are a global pollutant, national or global policies will reduce the likelihood of leakage and make emission reduction policies more effective.