

Federal Mandates, Local Budgets, and Long-Run Growth: Evidence from the 1972 Clean Water Act

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Federal spending mandates account for over 13% of local government budgets. Yet, little is known about federal requirements on local spending affect local growth. I examine this question using the 1972 Clean Water Act (CWA), the largest federal spending mandate in US history. The burden of CWA compliance fell mainly on local governments through required large-scale improvements to wastewater infrastructure. These requirements imposed an unexpected expense on municipal budgets, particularly among smaller communities with limited revenue sources. Knowledge of the long-term effects of spending mandates is limited due to the endogeneity of local spending decisions and the diffuse incidence of such complex mandates as No Child Left Behind, or vehicle emission control programs required under the Clean Air Act. I construct a new panel dataset combining city-level CWA compliance with municipal finances, and leverage a novel instrument for *ex ante* CWA compliance to provide the first analysis of a large federal environmental spending mandate on local government outcomes.

I use a difference-in-differences approach to estimate the impact of CWA infrastructure compliance on municipal budgets and growth. The empirical challenge is that cities choose infrastructure based on the demands of their citizens. Cities with more advanced infrastructure are wealthier, and a naive comparison between *ex ante* compliant and non-compliant cities would overestimate the impact of the CWA. To solve this endogeneity problem, I use a city's downstream population as an instrument for wastewater treatment technology adoption. Cities with historically large population centers downstream were more likely to be pressured by their downstream neighbors, long before the CWA became legislation, to adopt stringent wastewater treatment in order to reduce conveyance of harmful pollutants to downstream drinking water sources. Such early-adopter cities were unaffected by the CWA infrastructure standard when the law passed in 1972. By leveraging variation in infrastructure adoption driven by forces external to the city, this instrument provides variation in *ex ante* CWA compliance that is plausibly exogenous to local spending decisions or growth.

I find CWA infrastructure requirements caused local governments to double expenditures on wastewater from 6% prior to the Act, to over 12% of their operating budgets. To finance these compulsory expenditures, cities doubled both user fees, and issuance of short-term debt. These unit costs were, on average 20% higher among smaller cities, unable to exploit infrastructure scale economies enjoyed by larger cities. I do not find evidence that cities displaced funding of other goods and services in response to the CWA, however cities reduced overall public employment by approximately 5 employees per thousand residents.

This change in cities' amenity-tax bundles had substantial implications for the growth of small cities: among cities with below-median population size, housing prices grew 9% slower relative to control cities over a thirty-year period, and population stagnated relative to larger cities. Part of this difference in growth trajectories can be attributed to allocation of federal grants: housing price decline occurred mainly among small cities that did not receive federal infrastructure grants. My estimates imply that residents of smaller, treated cities valued the wastewater infrastructure less than the city's cost of building and operating the infrastructure. More broadly, these results suggest that federal policies implemented through local spending mandates not only induce fiscal costs on local governments, but can disrupt sorting equilibrium. Federal assistance that takes account of variation in scale economies and cities' ability to raise revenues may mitigate the distributional impacts of locally-funded infrastructure requirements.