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Study Examines How Clean Air Act Affects Municipal Bond Market.

Research has studied the effects of climate risk on financial markets, but few studies have addressed the effect of environmental policy on those markets. A new study examined whether federal policy aimed at mitigating local air pollution–specifically, the Clean Air Act–affected the municipal bond market from 2005 to 2019. The study concludes that increases in regulatory stringency or uncertainty over future environmental policy increased the cost of municipal debt used to fund infrastructure and other projects. The findings have implications for policy, including the risk that environmental regulations could jeopardize local governments' ability to raise capital for critical infrastructure.

The study, by researchers at Carnegie Mellon University (CMU), appears as a National Bureau of Economic Research working paper.

"Our work provides the first empirical evidence that environmental policy affects municipal bond yields, and thus, the cost of raising funds for providing essential local public goods, such as hospitals, schools, and roads," explains Akshaya Jha, assistant professor of economics and public policy at CMU's Heinz College, who coauthored the study. Researchers selected the Clean Air Act to study, in part because it is one of the most significant federal interventions into markets in the postwar period. In 2010, annual pollution-control expenditures required to comply with the act were roughly $3 billion, with annual benefits of the act more than $200 billion.

A central part of the Clean Air Act is the National Ambient Air Quality Standards (NAAQS), through which the U.S. Environmental Protection Agency (EPA) sets maximum allowable concentrations of local air pollutants. Establishing the NAAQS is a two-pronged process. First, the EPA announces a proposed rule. Then, after a public comment period, the final NAAQS are announced.

Counties with pollution levels above the final NAAQS in any given year are deemed to be in nonattainment. While the EPA sets the standards, state and local governments are responsible for establishing plans to ensure compliance. Often, compliance mandates that polluting firms in local jurisdictions reduce emissions levels, which can be costly.

Researchers collected secondary market data on municipal bonds from the Electronic Municipal Market Access database. Municipal bonds are issued by local governments, and are typically used to finance projects like schools, roads, and infrastructure. These data comprise secondary market trades in the U.S. municipal bond market, including more than 140 million trades from 2005 to 2019. The study examined only municipal trades that could be linked to a county and focused on regulations targeting ground-level ozone, resulting in more than 81 million trades corresponding to roughly 3,000 counties.

The study concluded that:

Municipal bond yields increased in response to the announcement of the proposed rule but declined after the announcement of the final standard. This suggests that investors require higher returns to

be compensated for the uncertainty induced by the announcement of the proposed rule; this uncertainty is resolved with the announcement of the final rule, lowering the returns necessary for investors to hold the bond.

Around annual compliance announcements, yields fell for counties that remained in compliance but increased for newly noncompliant counties. This suggests that investors perceived that municipalities facing nonattainment had a higher default risk.

Yields were substantially higher for bonds from counties just above the relevant ozone standard than for bonds from counties just below the standard. This suggests that increases in regulatory stringency or uncertainty over future environmental policy increased the cost of municipal debt raised.

A growing body of research has documented that climate risk has been priced into financial markets. “Our results for local air pollution regulations suggest that any cost-benefit analysis of new climate policy must consider the impacts on financial markets of both extreme weather events and the costs associated with complying with the new policy,” notes Stephen A. Karolyi, assistant professor of finance and accounting at CMU’s Tepper School of Business, who coauthored the study.

Because municipal bonds are used to finance local public goods, such as schools, infrastructure, and health care facilities, distortions to municipal bond yields might jeopardize local governments’ ability to raise capital, the authors suggest.

“Our findings should be part of a policy debate regarding the tradeoffs inherent in providing local public goods and federal-level environmental regulations,” suggests Nicholas Muller, associate professor of economics, engineering, and public policy at CMU’s Tepper School of Business, the study’s other coauthor.

CARNEGIE MELLON UNIVERSITY

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