RESEARCH SUMMARY

Does the Squeaky Wheel Get More Grease? The Direct and Indirect Effects of Citizen Participation on Environmental Governance in China

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KEY TAKEAWAYS

1. China, along with other countries around the world, has given citizens official private channels to report violations, therefore allowing them to put more pressure on local regulators to improve government accountability. At the same time, the public has begun to leverage social media platforms to call for actions against polluters.

2. The researchers conducted an experiment across all of China to investigate if citizen pressure can improve environmental enforcement and reduce pollution. The experiment included nearly 25,000 major polluters that account for more than 75 percent of China's industrial emissions. At baseline, about a third of these firms violated existing pollution standards.

3. The researchers recruited citizen volunteers to send messages appealing for action to a randomly chosen subset of firms after a standard violation. It was also randomly determined whether the message was sent privately (i.e. calling a government hotline or sending a private message to a government official or firm) or publicly through the popular Twitter-like Chinese social media site Weibo.

4. Public appeals to the regulator through social media reduced violations by more than 60 percent, and decreased air and water pollution emissions by 12.2 percent and 3.7 percent, respectively. Private appeals also improved environmental performance but by smaller magnitudes.

5. When the visibility of social media appeals was increased by adding "likes" and "shares" to the Weibo post, the regulator was 40 percent more likely to reply and 65 percent more likely to conduct an onsite investigation—signaling that public exposure can unlock regulatory action and enforcement.

6. Citizen appeals do not crowd out other regulatory efforts. The researchers randomized the proportion of firms that were subject to citizen appeals in each prefecture and tracked how non-appealed firms' environmental performance was affected when a larger share of its peers received appeals. They found that increasing the amount of citizen appeals in a local region does not lead to higher violation rates or emissions from non-appealed firms.

7. The study found that engaging citizens, especially through public tools like social media, can significantly reduce air and water pollution. It additionally demonstrates that the Chinese government is accountable to its citizens' demands for a cleaner environment, despite the absence of Western style voting booth disciplining. More broadly, it provides the first experimental evidence on bottom-up participation in environmental governance that characterize prominent policies in the US, Canada, India, Indonesia, and other parts of the world, besides China.

Introduction

Across the world, 2.8 billion people breathe air that is considered hazardous by the World Health Organization and 1.5 billion people contend with polluted water. This pollution causes severe consequences to human health, labor productivity and welfare. To fight pollution, countries have launched programs to collect and disclose firm-level emissions data, which would allow regulators and citizens to identify which firms have violated environmental standards. Yet still, despite having the data showing clear pollution violations, many polluters go unpunished. As a result, there exists a widespread failure of governments to achieve compliance with their own environmental standards.

China—the world's largest polluter and manufacturer—is one of the many countries that suffer from this problem of imperfect environmental compliance. However, in a novel move, the Ministry of Ecology and Environment set up a Continuous Emissions Monitoring System (CEMS), one of the few and largest systems in the world to automatically collect hourly emissions data and disclose that data publicly in real time. The CEMS system tracks the emissions from 25,000 major polluting plants nationwide, covering more than 75 percent of the country's total industrial emissions. It provides rich information that allows anyone to identify ongoing pollution violations in an easy-to-understand website and is used by the public. Despite its use and transparency, environmental compliance remains imperfect. In 2019, more than 33 percent of the CEMS firms committed pollution violations.

Why is non-compliance still prevalent even when regulators already possess the key information that they need to identify violations? Despite the central government's efforts to collect and publicize high-quality data, local Environmental Protection Agency (EPA) officials must conduct onsite investigations to verify any violations identified by CEMS data. More severe penalties, like large fines or temporary shutdowns, require two separate on-site inspections in consecutive months. Sending these inspections teams can be challenging for local governments who suffer from limited budgets. Further, the local economic costs of punishments can be high, and there is the possibility that large polluters will defy or even capture the local regulators.

It is widely believed that citizens need to get more involved in environmental governance and put more pressure on regulators to improve government accountability in enforcing environmental standards. To that end, China has created official channels for the public to report violations of standards, while environmentalists and NGOs are increasingly leveraging social media platforms to call for actions against polluters.

In this study, the authors investigate whether and how citizen participation in environmental governance can help improve environmental outcomes.

Research Design

To investigate if bottom-up citizen participation can improve environmental outcomes, the researchers conducted an eight-month experiment across all of China. They used the CEMS data to identify violating firms. They then randomly assigned CEMS firms to either an experimentally assigned control group or one of several treatment groups, and recruited citizen volunteers to file messages appealing for action when firms in the treatment group violated pollution standards. Citizen volunteers filed either private appeals (i.e. calling a government hotline or sending a private message to a government official or firm) or public appeals sent through the popular Twitter-like Chinese social media site Weibo. The public appeals on Weibo could potentially be observed by more than 500 million Weibo users. For all pollution appeals, the researchers provided a script for the citizens to follow, ensuring that content and wording were comparable but not identical across channels.

Figure 1 ·Description of a Violation

Note: This figure shows an example of a firm's real-time monitoring data from Jiangsu province. It includes information on the firm name, the monitor point, the monitor item, the monitor method, the monitor frequency, the lower and upper limits, and the monitor value. Additionally, it includes a status indication of whether the value is compliant or violated.

Figure 2 · Appealing to Regulator on Weibo

Note: A Weibo appeal, reading "The online monitoring platform shows that the average daily concentration of sulfur dioxide in Yangzi Petrochemical Co., Ltd. of Sinopec in Jiangbei New District exceeded the standard on May 12. For details, see the screenshot. @Nanjing ecological environment please pay attention and explain."

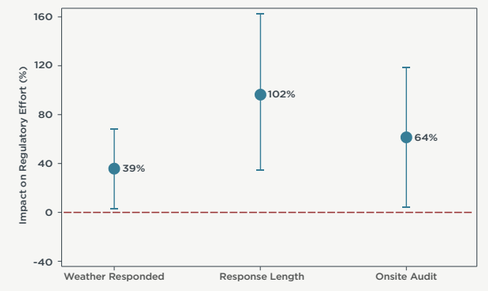
Findings

Public appeals for action delivered through social media significantly reduced firms' subsequent violations and emissions, while private appeals to regulators and firms also improved environment performance but by a smaller magnitude. When citizens used social media to highlight violations and appeal for enforcement it led to fewer violations and emissions. Firms committed 62 percent fewer violations, and air (SO_2 emissions) and water pollution (COD emissions) declined by 12.2 percent and 3.8 percent, respectively. In contrast, private appeals decreased violations only modestly, even when citizens used the same content and wording as the public appeals. Of note, firms that grossly exceeded the standard before the appeals were made improved emissions the most as opposed to firms that had emissions just above the standard. And, firms that frequently exceeded the standard decreased violations the most after the appeals.

Figure 3 · Effects of Public and Private Appeals

Increasing the visibility of appeals for action led local regulators to became significantly more responsive and increased their oversight of firms. When the researchers randomly increased the visibility of the Weibo posts by "liking" and "sharing" them, local regulators became 40 percent more likely to reply to the appeal, and the length of their replies doubled. Further, the regulator became 65 percent more likely to conduct an onsite investigation of the violation. This suggests that there is much opportunity for regulatory effort to improve, therefore improving firms' environmental performance.

Figure 4 · Effects of Social Media Publicity



Policy Implications

The study found that engaging the public in efforts to reduce pollution can significantly reduce air and water pollution. Additionally, it demonstrates that social media can be a powerful tool in facilitating citizen involvement in policy implementation and holding regulators accountable. While the research is conducted in China, it provides the first experimental evidence on engaging the public to overcome challenges in enforcing environmental policies, which characterizes prominent policies in the US, Canada, India, Indonesia, and other parts of the world, besides China.

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