The Politics of Environmental Regulatory Actions in China: Does Fixed Asset Intensity Affect Pollution Levies, Punitive Actions and Firm Environmental Ratings?

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Prepared for the Climate Change and Paris Agreement Workshop at the Sun Yat-sen University, September 15-16, 2018.
Theoretical efforts: regulatory politics much better understood in the developed world; e.g., Konisky & Teodoro 2016 ⇒ what about authoritarian states? ⇒ China?
Motivations

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  What affects governments’ decision to regulate and to target firms?
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What affects governments’ decision to regulate and to target firms?

Whether and how do firms lobby and pressure the government to affect regulation?
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Whether and how do firms lobby and pressure the government to affect regulation?

Regulations/regulatory instruments (command & control, market-incentive based, information-based): effectiveness and scope conditions.
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- Data efforts: a database on firm-level regulatory actions for China ⇒ Chinese equivalent of EPA's Enforcement and Compliance Data;
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Also link this to firm characteristics (e.g., Chinese Industrial Enterprise Surveys) and local characteristics ...
# Data-sharing EPA

## The Larger Project

### Theory

### Sample and Regulatory Actions

### Coded Empirical Analysis

### Conclusion and Discussion

### Backup slides

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### Map Legend

- **Map**
- **Baseline Options**
- **Zoom to** 13003

### Current Summary

- **35 Facilities Found**

### Criteria

- Search Type: All Data
- Results View: Interactive Map
- City, State, and ZIP Code: 13003
- Active/Operating: Yes

### Explore Enforcement and Compliance

- Facilities with Current Violation
- Facilities with Current Significance
- Facilities with Violations
- Facilities with Formal Enforcement Actions
- Facilities with Informal Enforcement Actions

### Filter Facilities

- Not Filtering on 35 Facilities

### Facility Summary

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Mapped</th>
<th>Street Address</th>
<th>City</th>
<th>State</th>
<th>FRS ID</th>
<th>Reports</th>
<th>Significant Violation</th>
<th>Questions with Noncompliance (5 years)</th>
<th>Inspections (5 years)</th>
<th>Formal Enforcement Actions (5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>301 Innovation Boulev</td>
<td>Y</td>
<td>301 Innovation Blvd</td>
<td>College</td>
<td>PA</td>
<td>13003</td>
<td>G G G</td>
<td>No</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Arrow Industries</td>
<td>Y</td>
<td>1239 Haverford Dr</td>
<td>State</td>
<td>PA</td>
<td>13003</td>
<td>G G G</td>
<td>No</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Aspen Dental</td>
<td>Y</td>
<td>3715 Atherton St</td>
<td>State</td>
<td>PA</td>
<td>13003</td>
<td>G</td>
<td>No</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Atkinson Street Drain</td>
<td>Y</td>
<td>North Atkinson St</td>
<td>Township</td>
<td>PA</td>
<td>13003</td>
<td>G G G G</td>
<td>No</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
All credit goes to the IPE
Policy Implications:

China’s contribution to climate change (the largest emitting country of carbon dioxide);

China’s own severe environmental problems:
An “Environmentalist” US Embassy in Beijing ...

![Graph showing daily average of PM2.5 in micrograms per cubic meter from 2013: Day 1 to Day 365. The x-axis represents days from 0 to 365, and the y-axis represents concentrations from 0 to 500 micrograms per cubic meter. The graph highlights a significant spike on November 2, 2013.]
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But what explains government regulation or the *enforcement* of regulations?
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  often, if not always, focus on pollution fees/levies.
We focus on something else: the share of fixed assets (e.g. buildings and equipment).
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- The mobility mechanism: higher fixed asset intensity $\Rightarrow$ less (spatial) mobility $\Rightarrow$ less credible exit-threat $\Rightarrow$ MORE likely to be targeted by the government.
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- The market entry barrier mechanism: higher fixed asset intensity ⇒ high natural barriers to entry & more opportunities for monopoly rent extraction ⇒ more market power ⇒ more political influence ⇒ LESS likely to be targeted by the government.
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⇐ large initial capital investment

⇐ high sunk cost
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  ⇒ 65% of the total industrial water and air pollution;

  ⇒ we choose not to include water treatment plants.
Firms by industries, 2014
Firms’ spatial distribution, 2014
Many potential instruments for firm environmental regulations:

- pollution fees/levies: this is the focus of past studies ...
- punitive actions: e.g., suspension of production, fines, and rectification;
- environmental ratings: a color rating of black, red, yellow, blue, and green ⇒ links to firm borrowing.
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Pollution fees/levies, 2012-2014
Punitive actions, 2012-2014
Variables

Explain:
- pollution fees/levies: thousand RMB, in logarithm;
- punitive action: 1/0;
- environmental rating: 1, 2, 3, 4, 5
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Using fixed asset intensity: industry-level measures to address an endogeneity concern ⇒ firm adjustment asset component in response to government regulations;

- fixed asset to output ratios ($\frac{\text{fixed assets}}{\text{output}}$), fixed asset to sale ratios ($\frac{\text{fixed assets}}{\text{sale}}$), and fixed asset to total asset ratios ($\frac{\text{fixed assets}}{\text{total assets}}$);
- take median (and mean) measures of all firms’ in the same industry in China (not just Jiangsu).
Variables

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Jiangsu, 3 time periods: 2012, 2013, and 2014;
### Empirical Results

<table>
<thead>
<tr>
<th></th>
<th>Pollution Levies</th>
<th>Punitive Action</th>
<th>Envi. Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Asset Intensity</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>State-owned (SOE):</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collectively owned:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMT owned:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign owned:</td>
<td>−</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Total output:</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Business income tax:</td>
<td></td>
<td>−</td>
<td>+</td>
</tr>
<tr>
<td>Firm age:</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any violation:</td>
<td>+</td>
<td>+</td>
<td>−</td>
</tr>
</tbody>
</table>
What do we find?

A higher level of fixed asset intensity increases a firm’s environmental rating by the government;

At the same time also increases its chances of receiving a government punitive action (e.g., fines, suspension, and rectification) + the amount of pollution levies paid.
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Interpretation?
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Interpretation?

A strategic local government?

- facing severe environmental issues and pressures from the central government to clean up the environment, more likely to target firms with high fixed asset intensity, knowing that these firms are much less likely to relocate;
- high fixed intensity firms also enjoy strong market power ⇒ compensate them by offering better environmental ratings ⇒ a good publicity; linked to preferential government treatments (e.g., in financing from state-owned banks).
Next steps

- more qualitative evidence is needed to verify the aforementioned “strategic local governments” story;

- does a good environmental rating increase a firm’s future chances of financing from state-owned banks?

- omitted variables: e.g., firm’s political connection with the government?

- increase the sample size ...
Firms’ spatial distribution, 2012
Firms’ spatial distribution, 2013