

Discussion of

# Smokestacks and the Swamp



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by

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# My overall assessment

- It is a true pleasure to read the paper!
-   Well written, extremely thorough empirical analysis!
  - Ten figures and 11 tables.
  - Thirteen figures and 12 tables in the Internet Appendix.
- The paper will make an important contribution to the growing literature on the role of politics/political ideology in economic outcome.
- ❖ My discussion will focus on:
  - The premise and prior literature => the mechanisms
  - Empirical analysis
    - Some data quibbles

# The premise

all emitting facilities located in a Congressional district (including private firms). Fourth, **federal pollution law applies equally to all firms**, allowing us to largely abstract from legislative channels of political influence, which often involve many actors. Finally, given firms' increased focus on climate

- ❑ Mattera and Baggaley (2021), “The Other Environmental Regulators: How States ***Unevenly Enforce*** Pollution Laws.”
- ❑ They say, “*Frequently overlooked is the fact that the country’s enforcement system is actually divided between the EPA and the states. This shared responsibility, which in the academic literature is known as **environmental federalism**, ...a source of tension between levels of government.*”

# The premise

- ❑ A 2011 report by the EPA's Office of Inspector General concluded that “*state enforcement programs frequently do not meet national goals, and states do not always take necessary enforcement actions...As a result, EPA's enforcement program cannot assure **equal** and sufficient protection of human health and the environment to all U.S. citizens...*”
  
- ❑ Others such as California have often argued that federal standards are not strict enough and have pushed more aggressive policies.
  
- ❑ The relationship between the EPA and the states is complicated by changes in federal administrations.
  - ❑ During the Trump years, the EPA shifted its emphasis from enforcement (penalizing parties found to be in violation) to compliance (helping those parties avoid violations). The pendulum is expected to swing back under President Biden.

# The premise

□ From EPA Compliance Monitoring Expectations:

*“EPA sets national goals for how frequently facilities should be evaluated by the authorized enforcement agency (which is typically the state or local agency, but in some cases is EPA). EPA offers flexibility to the states for many of the inspection frequency goals. Under the CAA and RCRA CMSs, **some states take advantage of this flexibility by submitting "alternative plans"** that provide for inspection frequencies that are aligned with other priorities within the specific state. EPA reviews and approves these alternative plans, which form the basis for compliance monitoring plans within these states.”*



# The primary hypothesis

Our primary hypothesis is that, all else equal, closely-elected Democrats will be more ideologically predisposed to pay attention to the monitoring and enforcement of existing federal environmental laws within their districts.<sup>8</sup> As a result, when a Democrat is elected, state and federal regulators may either implicitly or explicitly face incentives to strengthen their oversight of the toxic emissions produced by facilities located in the politician's district. Hence, we argue that the monitoring and en-

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<sup>12</sup>In most U.S. states, state and local regulators are the primary enforcers of federal environmental regulations, working in conjunction with a small regulatory team at the EPA. Our hypothesis is that representatives (and their staffs) are leaning on these regulators, many of whom likely work and reside in the representative's district.

- ❑ Comment: Given the shared responsibilities between EPA and state agencies, would the political affiliations of the head of state regulatory agencies and attorneys general also matter here?
- ❑ How does a closely-elected Democrat congressman shape either the state-level or the federal-level or both level enforcement of environmental laws at his specific electoral ***district*** (instead of at the ***state*** that he is representing)?
  - ❑ Suppose there are two congressmen of different parties representing the same state. How would the state and federal regulators support any one of those congressmen's environmental ideology based on the latter's residential address?

# The prior literature

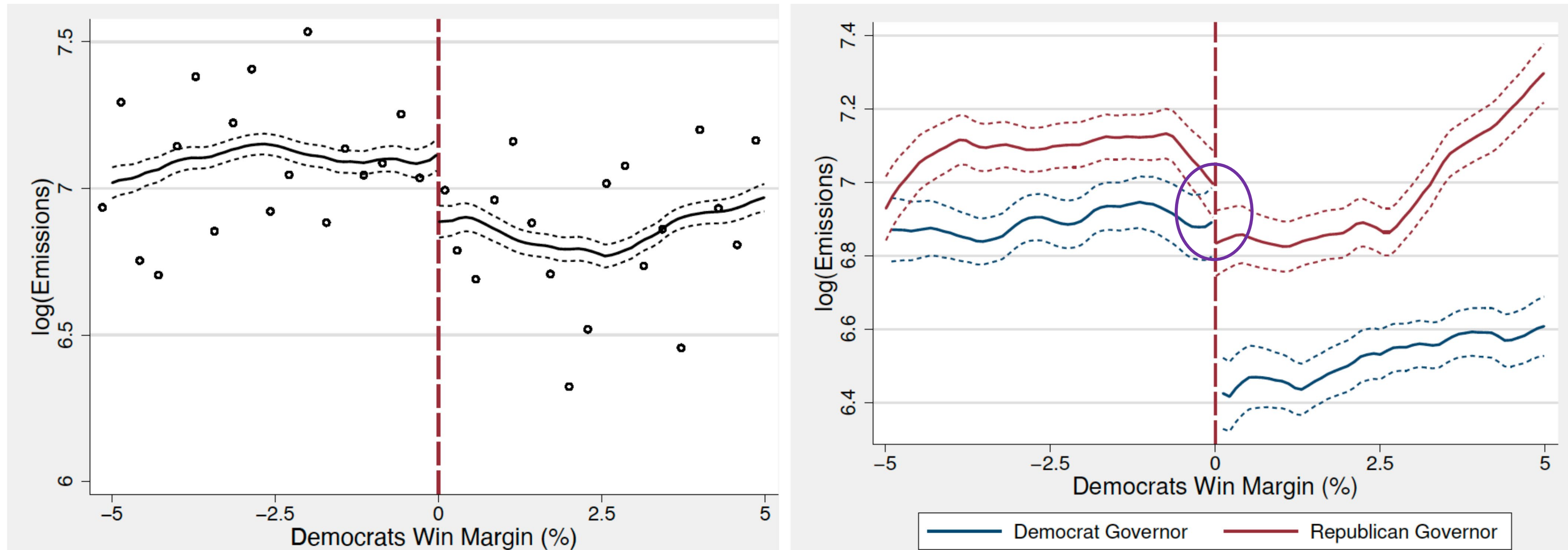
- ❑ **Gulen and Myers (2022)**, “The Selective Enforcement of Government Regulation: Battleground States, State Regulators, and the EPA.”
- ❑ The Electoral College creates incentives for politicians and regulators to direct policy favors toward “swing” states around the *presidential elections*.
- ❑ They find that enforcement of the *Clean Water Act* is more relaxed in those swing states than in non-swing states, partially because the permit limits for facilities in these states are less restrictive.

# The prior literature

- ❑ Innes and Mitra (2015) implement the same RDD design for the close ***House elections*** to similar data, focusing on the ***Clean Air Act***, and conclude that new Republican (vs. Democratic) Representatives significantly depress inspection rates for local polluting facilities in the first year after their election.
- ❑ Heitz, Wang, and Wang (2021) examine whether EPA uniformly enforces the ***Clean Air Act*** for politically connected firms and unconnected firms using the close ***Senate and House elections***. They find that politically connected firms are less likely to incur environmental penalties and realize smaller fines.
- ❑ Beland and Boucher (2015) find that air pollution is lower under Democratic governors using the same RDD design around the close ***governor elections***.



# This paper



- ❑ Fig 1 on the left employs the full sample of close elections, while Fig 5A on the right separates the sample by Democratic and Republican governors. It seems the governor effect is very large.
- ❑ Berland and Boucher (2015) find lower pollution under Democratic governors.

# Empirical analysis – relocating pollution

Dep. Variable: log(Emissions)

	(1)	(2)	(3)	(4)	(5)
Democrat Win	-0.059*** (0.02)	-0.042*** (0.01)	-0.020** (0.01)	-0.018* (0.01)	-0.020* (0.01)
Census District FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Firm × Chemical × Year FE	No	Yes	Yes	Yes	Yes
Census District × Chemical FE	No	Yes	No	No	No
Facility × Chemical FE	No	No	Yes	Yes	Yes
State × Year FE	No	No	No	Yes	No
State × Year × Chemical FE	No	No	No	No	Yes
R-Squared	0.076	0.850	0.929	0.929	0.938
Observations	1,329,508	790,904	782,632	782,632	739,229

Log(Emissions)

	(1)	(2)	(3)	(4)
Other Facilities' Democrat Share	0.028** (0.01)	0.063*** (0.01)		
Local Democrat	-0.018* (0.01)		-0.017* (0.01)	
High Other Facilities' Democrat Share			0.015** (0.01)	0.027** (0.01)
District × Chemical FE	Yes	Yes	Yes	Yes
Chemical × Year FE	Yes	Yes	Yes	Yes
Facility × Chemical FE	Yes	Yes	Yes	Yes
District × Chemical × Year FE	No	Yes	No	Yes
R-Squared	0.890	0.922	0.890	0.922
Observations	1,128,556	897,686	1,128,556	897,686

- ❑ In a thought experiment, suppose a firm only has two plants, and both are in (different) Democratic districts. How do you reconcile the results from the two tables? Table 5 would suggest both plants will reduce emission; while Table 6 would suggest one (focal) plant will increase while the other reduce emission.
- ❑ Might need to match the emission of same toxic chemicals across plants of the same firm; otherwise, it could be due to different production technologies instead of relocating pollution.



# Empirical analysis – firm-level pollution/outcome

trapolate to other firms. In contrast, **nearly all** goods-producing firms release emissions, thereby allowing us to estimate the effects of politicians' ideologies on a **larger and more representative sample**. Second, while most firm financial and operating variables such as leverage or investment are

- Comment: It would be informative to show how representative the sample used in the paper relative to the Compustat population as well as the industry distribution of the sample used.

## What industries are included in TRI?

Facilities that report to TRI are typically larger facilities involved in manufacturing, metal mining, electric power generation, chemical manufacturing and hazardous waste treatment. Not all industry sectors are covered by the TRI Program, and not all facilities in covered sectors are required to report to TRI.

Congress originally determined the industry sector scope of TRI, requiring reporting by facilities in the manufacturing sectors, as defined by Standard Industry **Classification (SIC) codes 20 through 39**. Congress also granted the EPA Administrator the authority to add sectors to or delete sectors from the scope of TRI. Via such authority, EPA added seven industry sectors <<https://epa.gov/toxics-release-inventory-tri-program/addition-facilities-certain-industry-sectors>> in 1997 and natural gas processing facilities <[UBC SAUDER  
SCHOOL OF BUSINESS](https://epa.gov/toxics-release-</a></p></div><div data-bbox=)

# Empirical analysis – firm-level pollution/outcome

- ❑ Given that TRI data might not cover all plants of a company, when implementing firm-level analysis, it might be important to focus on a subset of firms whose plants are most likely to be fully covered by TRI.
- ❑ Given that TRI coverage of industries and chemicals vary over time, it might be worthwhile to focus on a subset of firms whose chemical emissions receive constant coverage by TRI.

# Empirical analysis – firm-level pollution/outcome

	log(Emissions)		log(COGS)		Market-Book Ratio		Tobin's Q	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat Share	-0.040*		0.048***		-0.132*		-0.022*	
	(0.02)		(0.01)		(0.07)		(0.01)	
Emissions-Weighted Democrat Share		-0.062***		0.037***		-0.139**		-0.020*
		(0.02)		(0.01)		(0.06)		(0.01)
Chemical-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Chemical FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.863	0.864	0.951	0.951	0.519	0.519	0.668	0.668
Observations	189,858	189,858	189,313	189,313	155,413	155,413	162,633	162,633

- ❑ Democrat share is the share of a firm's plants operating in Democrat-controlled districts. The level of analysis is at firm-chemical-year.
- ❑ Given that most of the dependent variables such as COGS are at the firm-year level, it is hard for me to connect a particular chemical's emissions to firm-level outcome.
  - ❑ Is it possible to do it at firm-year level?
- ❑ The finding seems to suggest democratic winning in congressional elections is bad for their constituent firms?!



# Empirical analysis – respiratory illness

Panel A: Respiratory Diseases						
	log(Number of Discharges)			log(Total Payments)		
	(1)	(2)	(3)	(4)	(5)	(6)
Democrat Win	0.014 (0.02)	0.007 (0.02)		0.101*** (0.02)	0.021 (0.02)	
High Num. Plants	0.325*** (0.02)	0.288*** (0.02)	0.188*** (0.03)	0.350*** (0.02)	0.301*** (0.02)	0.189*** (0.03)
Democrat Win × High Num. Plants	-0.082*** (0.03)	-0.071** (0.03)	-0.066** (0.03)	-0.126*** (0.03)	-0.075** (0.03)	-0.073** (0.03)
ZIP FE	Yes	Yes	No	Yes	Yes	No
Census District FE	No	Yes	No	No	Yes	No
Year FE	Yes	Yes	No	Yes	Yes	No
District × Year FE	No	No	Yes	No	No	Yes
ZIP × District FE	No	No	Yes	No	No	Yes
R-Squared	0.187	0.239	0.273	0.207	0.264	0.299
Observations	60,351	60,349	60,336	60,351	60,349	60,336

- ❑ Respiratory illnesses are often related to air quality that might not be bounded by 3-digit Zip codes. Maybe examining other illnesses that are related to water/ground emissions is a tighter/cleaner analysis in this setting?
- ❑ Another way to establish the link between respiratory illness and polluting plants is to focus on specific chemicals - **CO, Ozone, NO2, SO2 and Particulate matter** that are known to result in respiratory illness instead of simply using a count of number of plants in the 3-digit ZIP code.

# Empirical analysis - enforcement

Panel A: Enforcement Dummies								
	Enforcement		Informal Enf.		Formal Enf.		Penalty	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat Win	0.064*	0.068***	0.080**	0.077***	0.003	0.027***	0.005	0.022***
	(0.03)	(0.01)	(0.03)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Method	Local OLS	NP	Local OLS	NP	Local OLS	NP	Local OLS	NP
Polynomial	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Kernel	–	Tri.	–	Tri.	–	Tri.	–	Tri.
Observations	9,419	132,989	9,419	132,989	9,419	132,989	9,419	132,989

- ❑ The RDD analysis is based on a two-year window post a close election. Given that there is typically a multi-year lag between the occurrence of offense, the detection, and the final outcome. I am not sure whether this analysis can generate sharp results to help identify whether
  - ❑ it is the firm/facility that changes behavior and/or
  - ❑ the enforcer changes behavior
 after a close election.



# Some data quibble

	Mean	SD	p10	p50	p90	Facilities	Observations
Emissions	30845.79	177340.99	0.00	369.00	43486.00	37,369	1,784,978
Democrats Win Margin	2.67	36.88	-41.26	0.96	50.43	.	5,304
Source Reduction Abatement	0.26	0.77	0.00	0.00	1.00	36,262	1,589,601
Post-production Reduction Ratio	0.50	0.45	0.00	0.55	1.00	37,369	1,535,051
log(COGS)	6.83	1.82	4.50	6.83	9.10	.	19,578
Market-Book Ratio	3.12	3.19	0.94	2.25	5.70	.	15,991
Tobin's Q	1.67	0.79	0.99	1.43	2.65	.	16,814
Discharges (Respiratory)	54.45	58.33	13.00	34.00	121.00	.	60,352
Total Payment (Respiratory)	0.48	0.54	0.10	0.30	1.10	.	60,352
Discharges (Placebo)	82.25	138.20	12.00	32.00	205.00	.	28,282
Total Payment (Placebo)	1.06	1.76	0.09	0.43	2.71	.	28,282
Inspections	0.80	1.67	0.00	0.00	2.00	37,333	438,272
Enforcement	0.15	0.53	0.00	0.00	0.00	37,333	438,272
Formal Enforcement	0.06	0.30	0.00	0.00	0.00	37,333	438,272
Informal Enforcement	0.09	0.35	0.00	0.00	0.00	37,333	438,272
Penalty	277.89	1889.76	0.00	0.00	0.00	37,333	438,272

- The reduction ratio has a mean/median of 0.50 (.55), suggesting each year the reduction is almost 50%, is that a too large number?
  - Li, Xu, and Zhu (2021) show the mean/median of % Waste Management is 35%/0% over the period 1992–2019

# Some quibbles

- Prior studies typically study election cycles of a longer duration (e.g. four years), while house elections take place every two years, are some of those effects in the paper too large too quick?

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.213** (0.08)	-0.397** (0.16)	-0.305*** (0.12)	-0.355*** (0.03)	-0.349*** (0.03)	-0.353*** (0.04)	-0.355*** (0.04)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP

- Table 2 shows emission at local plants can be reduced by up to 39.7% after a Democratic win.
- Figure 1 time period should be sync-ed with the overall sample period 1991-2016.
- Table 11, the dummy should be “High Ideology” not “Ideological”.
- ❖ Best luck with the paper!!!