Smokestacks and the Swamp*

*** PRELIMINARY. PLEASE DO NOT POST OR CITE. ***

Emilio Bisetti† HKUST

Stefan Lewellen‡ Penn State

Arkodipta Sarkar§ HKUST

Xiao Zhao¶ HKUST

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Abstract

We examine how politicians' party affiliations causally impact the industrial pollution decisions of firms. Using a regression discontinuity design involving election outcomes in close U.S. congressional races, we show that plants pollute more per unit of production when they are represented by a closely-elected Republican than by a closely-elected Democrat. We also find evidence of reallocation: firms shift pollution away from areas newly represented by a Democrat. Increased regulatory enforcement actions–particularly informal enforcement actions–are more common in districts represented by Democrats. Pollution-related illnesses spike around plants in areas represented by Republicans, suggesting that firms' pass-through of ideological differences across politicians can have real consequences for local communities.

Keywords: Political ideology, Industrial pollution, Enforcement, Reallocation, Health outcomes.

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†Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong. Contact: bisetti@ust.hk, +852 2358-7680.

‡Pennsylvania State University, 360 Business Building, University Park, PA 16802, USA. Contact: lewellen@psu.edu, +1 (814) 867-5848.

§Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong. Contact: asarkar@ust.hk.

¶Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong. Contact: xzhaoas@connect.ust.hk.

1 Introduction

Firms have become increasingly political organizations. Corporate political spending has dramatically risen in the past thirty years (Evers-Hillstrom, 2020), and a growing literature has shown that firms' political ideologies affect many corporate policies such as investment (Hutton, Jiang, and Kumar, 2014; Fos, Kempf, and Tsoutsoura, 2021) and corporate social responsibility (Di Giuli and Kostovetsky, 2014). However, less is known about how *politicians'* ideologies affect firms. For example, how do U.S. firms' operating decisions depend on whether the firm's representative in Congress is a Democrat or a Republican? The answer to this question is currently unclear.

In this paper, we examine whether the ideological beliefs of U.S. House members—as captured by their political party affiliations—affect firms' pollution decisions.[1] Identifying the effects of politicians' ideologies on firm outcomes is difficult because federal legislation generally affects all firms at the same time, most bills introduced by individual legislators never become law, and passed legislation generally reflects bicameral input from across the political spectrum. Using speeches or other forms of political voice to measure politicians' ideological impact on firms is also complicated by the lack of a measurable connection or time frame between the speech and firms' actions. Measuring firms' responses to politicians' ideological beliefs is also challenging because this information is difficult to disentangle from firm-level financial statements and requires detailed information about the firm's business decisions.

To overcome these challenges, we exploit variation in the enforcement of existing regulations that can plausibly be driven by politicians' ideological beliefs. A rapidly-growing literature has argued that politicians can intervene in the enforcement of federal regulations affecting firms (see, e.g., Fisman and Wang, 2015; Mehta, Srinivasan, and Zhao, 2020; Mehta and Zhao, 2020; Akey, Heimer, and Lewellen, 2021). Firms emitting toxic substances are subject to numerous federal environmental laws such as the Clean Air Act, Clean Water Act, and the Toxic Substances Control Act, and firms' compliance with these acts is routinely monitored by the U.S. Environmental Protection Agency (EPA) and various state and local regulators. Violations of these acts can be very costly; for example, Alpha

[1] Alesina (1988), Lee, Moretti, and Butler (2004), and List and Sturm (2006) (among many others) show that parties can select different policies in equilibrium for a variety of reasons. Here, we refer to such policy differences as candidates' or parties "ideologies."

Natural Resources was required to pay a $27.5 million fine and set aside $200 million for environmental remediation in 2014 for violations of the Clean Water Act. Hence, industrial firms are generally very sensitive to changes in the oversight posture of state and federal regulators. In addition, detailed facility-level emissions and production data is available from the EPA, allowing us to directly observe changes in firms' pollution and production decisions as a result of changes in the firms' political representation.

Environmental regulations are a long-standing, hot-button political issue with a clear partisan divide. For example, a 2017 survey by the Pew Research Center found that 63% of Republicans believed it is possible for the government to cut back on environmental regulations while still effectively protecting air and water quality, while 63% of Democrats rejected this statement.[2] Given the wide ideological gulf between the Democratic and Republican parties in the area of environmental regulation, it is reasonable to assume that most Democratic politicians support greater levels of environmental regulation than their Republican colleagues. As such, it is reasonable to think that the party affiliation of a politician (Democrat or Republican) might be a good proxy for the politician's interest in enforcing federal environmental laws.

Our main hypothesis relates politicians' party affiliations to firms' subsequent pollution decisions. We argue that, all else equal, elected Democrats are stronger supporters of environmental regulation and will be more likely to pay attention to the monitoring and enforcement of existing federal environmental laws within their districts.[3] 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 enforcement of existing federal industrial pollution regulations will be stronger in districts represented by Democrats than Republicans. Importantly, under this hypothesis, any change in regulatory posture as the result of a politician's election would not be driven by variation in political *power*, but rather by variation in political *ideology*.

How should firms respond to a revised regulatory posture that increases the monitoring and

[2]See https://www.pewresearch.org/science/2017/05/16/public-divides-over-environmental-regulation-and-energy-policy/ for details.

[3]This assumption mirrors that of Di Giuli and Kostovetsky (2014), who state that "[t]he Democratic Party platform places more emphasis on CSR-related issues such as environmental protection [and others]."

enforcement of industrial pollution laws? The answer depends on firms' objectives and existing pollution behavior. A firm that is already operating at or below its permitted emissions levels would not need to make any changes as a result of increased monitoring and enforcement. However, a firm that is currently operating above its permitted emissions levels would need to compute the expected costs and benefits of reducing pollution versus continuing to over-pollute and exposing the business to fines and other enforcement actions.[4] Hence, this is largely an empirical question: it is plausible that firms could maintain the status quo, reduce pollution levels, or maintain high pollution levels and accept higher enforcement probabilities as the result of a strengthened regulatory posture.

To examine these questions, we use the results of close U.S. Congressional elections to generate plausibly exogenous variation in the political party of U.S. Representatives whose districts contain one or more facilities that are subject to EPA toxic emission regulation. We then analyze firms' pollution and production decisions using detailed facility- and chemical-level data on firms' toxic emissions at a given point in time. By examining facilities' emissions per unit of production before and after close elections, we can determine how firms respond to shifts in the ideological beliefs of their elected U.S. Representative(s). Due to the granularity of our data, in some tests we can also examine how facility-level emissions evolve *within the same firm* when one facility gains a Democrat representative while another gains a Republican representative. Hence, our tests can also speak to the reallocation of pollution within firms based on the ideology of each facility's elected Representative.

For each district, following each Congressional election from 1991-2016, we begin by constructing an indicator variable that equals one if the election was won by a Democrat and equals zero if the election was won by a member of another party (nearly exclusively Republican). We then map individual facilities to Congressional districts and examine whether emissions change before and after elections in predictable ways. For most tests, we use a regression discontinuity design (RDD or RD design) that compares pre-election and post-election emissions across facilities in districts where a Democratic candidate just won or just lost their elections. The running variable in these regressions is the winning candidate's margin of victory. The key identifying assumption in these regressions

[4]This analysis assumes that firms subscribe to Friedman (1970)'s belief that firms' sole objective should be to maximize shareholder value. Firms that care about maximizing shareholder welfare rather than shareholder value (Hart and Zingales, 2017), or firms with different objective functions altogether, might respond in different ways.

is that the winning candidate was elected for reasons that are at least partly due to chance. This assumption seems reasonable; for example, many of the margins of victory in our sample involve only tens or hundreds of votes, and similar assumptions have been used elsewhere in many different contexts (see, e.g., Lee, Moretti, and Butler, 2004; Cuñat, Giné, and Guadalupe, 2012; Do, Lee, Nguyen, and Nguyen, 2012; Akey, 2015; Cuñat, Giné, and Guadalupe, 2020).

We present four main results. First, our regression discontinuity tests provide strong evidence that winning candidates' political party affiliations affect subsequent emissions in their districts. At the threshold, we find that emissions are approximately 20% higher when the facility is represented by a closely-elected Republican relative to a closely-elected Democrat. This effect holds in both directions: we find evidence of emissions increases following transitions from a Democratic to a Republican representative, and evidence of emissions decreases following transitions from Republicans to Democrats. Our main result is robust to our selection of bandwidth and estimation approaches and survives a stringent robustness test with the equivalent of district and state $\times$ chemical $\times$ year fixed effects. We also perform a variety of additional robustness checks and placebo tests to confirm the robustness of this main result. Overall, we find strong evidence that politicians' ideologies appear to affect the industrial pollution decisions of firms.

Second, we present evidence that firms reallocate pollution between their various facilities based on the party affiliation of the politicians representing each facility in Congress. We first find that pollution at the facility-chemical-year level declines following a Democratic victory based on OLS tests with firm $\times$ chemical $\times$ time fixed effects. We also find that there are no effects on pollution at the firm-year level despite strong findings at the facility level. Together, these within-firm-time tests are suggestive of reallocation. We then augments these tests with Bertrand and Mullainathan (2003)-style tests where we examine how a facility's pollution depends on the political party representation of the firm's other facilities. We find that a win by a local Republican is associated with relatively larger increases in pollution when a firm's other plants are represented by Democrats, supporting reallocation. These findings suggest that firms manage their environmental footprints as rigorously as they manage other parts of their production footprints.

Third, we find that the pass-through of political ideologies through firms' pollution decisions appears to have a significant impact on the health of local communities. We perform a median split on the number of plants per Zip code per year and then examine whether illness-by-Zip code-by-year measures of total patient count and total payments in high-plant versus low-plant Zip codes vary based on whether the local representative is a Democrat or Republican. We specifically examine respiratory illnesses (illnesses with a CMS Major Diagnostic Category code of 4), since these illnesses are more likely to be caused by exposure to emissions (see Hoek, Krishnan, Beelen, Peters, Ostro, Brunekreef, and Kaufman (2013) for a review).

We find that the incidence of respiratory illnesses increases by 7–8% after a district switches from Democrat to Republican in areas with a high numbers of plants. Payments for respiratory-related hospital visits also increase by 7–13% in high-plant areas within districts represented by a Republican versus a Democrat. In contrast, we find no differences in health outcomes in areas with fewer-than-median plants when a district switches from Democrat to Republican. These results provide evidence that the increase in plant-level emissions in Republican areas is causing adverse health consequences for the residents of communities located adjacent to the plants.

Why do facility-level emissions increase after the facility's Congressional representative switches from a Democrat to a Republican? Our main hypothesis is that these changes are a result of differences in political ideology between Democrats and Republicans. Democrats tend to be more supportive of environmental regulations than Republicans (Di Giuli and Kostovetsky, 2014). Hence, all else equal, a Republican representative taking office may be less likely to vote in favor of curbing emissions and may be less likely to care about the enforcement of existing emissions regulations than an otherwise-similar Democrat due to differences in political ideology.

Our main focus is on whether ideological differences affect the enforcement of existing regulations. Since U.S. representatives are responsible for federal legislation, and since all facilities should be subject to the same federal environmental requirements and protections, it is very difficult to isolate cross-sectional, ideologically-driven variation in federal regulations themselves. In contrast, politicians often have broad leeway over the monitoring and enforcement of federal laws within their own districts, and research has shown that politicians intervene with regulators in ways that affect the business decisions of constituent firms (see, e.g., Akey, Heimer, and Lewellen, 2021). While the existing literature has primarily studied the role of political power in explaining regulatory interventions, we study whether differences in politicians' ideological beliefs (as proxied for by their party affiliations) are driving cross-sectional differences in the monitoring and enforcement of federal regulations across districts.

Our setting also benefits from a number of appealing empirical properties. For example, our close-election RD setting captures competitive Congressional districts that are unlikely to be "deep red" or "deep blue" districts that share little in common. Second, our use of facility-level data allows us to include stringent fixed effects that allow us to isolate variation within district-time and even within firm-chemical-time. Finally, as noted above, any variation in outcomes we observe must be due to monitoring or enforcement as opposed to rule-making, since federal laws are presumably identical across all of the districts in our sample.

We find evidence that inspection propensities are higher, formal and informal enforcement actions are more common, and monetary penalties are steeper at facilities represented by closely-elected Democrats, even though pollution at these facilities is lower, on average, than otherwise-identical facilities represented by closely-elected Republicans. The magnitudes of the inspection and enforcement effects are large; for example, conditional on receiving at least one EPA inspection, inspections increase by approximately 20% after a Democrat wins a close election. We also find results along the extensive margin: firms are approximately 7% more likely to be inspected for the first time after a Democratic win.

In addition to increased inspection frequencies, enforcement actions also rise following close-election wins by Democratic candidates. Informal enforcement actions such as cease-and-desist letters rise by 46%, while formal enforcement actions ruse by 19%. Pecuniary penalties also rise, though these effects are more modest. Some of this increase in enforcement activity is caused by the increased number of inspections, but not all: there is also evidence of higher enforcement actions per inspection, suggesting that both the quantity and rigor of inspections increases after a closely-elected Democrat begins representing a facility.

Our empirical setting allows us to rule out a number of competing explanations. For example, the literature on political power has shown that powerful politicians can intervene to help constituent firms. However, we show that our results are present among even junior legislators and are hence not concentrated among powerful politicians. Another concern is that our results might reflect a firm's own political ideologies rather than the ideologies of the politician representing the firm. However, there is no reason to think that a firm's own political ideology would change as the result of a narrow election win by a single politician. A third concern is that our health results may be picking up other partisan changes that happen to affect high-plant areas more than low-plant areas. However, we run a similar test evaluating a selection of ailments that are unlikely to be caused by industrial pollution and find no evidence that these ailments systematically increased in high-plant areas of Congressional districts represented by Republicans. While other observable and unobservable factors could still contribute to our findings, we believe that the most likely explanation for our findings, given the evidence available, stems from differences in politicians' ideologies.

This paper contributes to the growing literature on firms' environmental policies and practices. Among other topics, the existing literature has shown that financial constraints (Cohn and Deryugina, 2018; Bartram, Hou, and Kim, 2019), limited liability (Akey and Appel, 2021), environmental activism by institutional holders (Akey and Appel, 2019; Naaraayanan, Sachdeva, and Sharma, 2020), the listing status of firms (Shive and Forster, 2020), and supplier networks (Schiller, 2018) can have a significant impact on firms' environmental policies and emissions. We add to this literature by suggesting that politicians – and in particular, the ideological beliefs of an individual facility's U.S. Representative – can also affect firms' environmental policies, emissions, and the health of surrounding communities. In this context, our paper adds to Ben-David, Jang, Kleimeier, and Viehs (2018), who highlight the role national climate policy plays in affecting multinationals' pollution decisions. Our paper also relates to the environmental economics literature on the relationship between political ideologies and firm pollution (see, e.g., Helland and Whitford, 2003; Neumayer, 2003; Fredriksson, Neumayer, Damania, and Gates, 2005).

Our paper also contributes to the literature on the political economy of regulatory enforcement. Researchers have shown that political power can shape usury laws and regulation (Benmelech and Moskowitz, 2010), banking regulation and enforcement (Dinç, 2005; Akey et al., 2021), and the enforcement of regulations affecting firms (Fisman and Wang, 2015; Mehta, Srinivasan, and Zhao, 2020;

Mehta and Zhao, 2020). In the context of environmental pollution, Heitz, Wang, and Wang (2020) highlight the role of political connections as a significant factor affecting EPA enforcement decisions. We contribute to this literature by showing that political ideology can also affect environmental regulators' inspection and enforcement decisions, and by showing how this effect impacts the health of local surrounding communities. More generally, our paper contributes to the literature on the political economy of pollution (see, e.g., Konisky and Woods, 2010; Monogan III, Konisky, and Woods, 2017; Lipscomb and Mobarak, 2017).

Our paper is most closely related to the work of Di Giuli and Kostovetsky (2014). Di Giuli and Kostovetsky (2014) show that firms run by Democrats or located in Democrat-leaning states invest more heavily in corporate social responsibility (CSR) measures. Thus, Di Giuli and Kostovetsky (2014) show that firms' own ideological beliefs affect their business decisions. In contrast, we show that firms also pass through the ideological beliefs of their local representatives, and that these passed-through beliefs can have significant consequences for local communities.

2 Data

Our main data source is a large database provided by Toxics Release Inventory (TRI) Program of the EPA that contains facilities' self-reported toxic chemical releases. To minimize TRI data errors (Akey and Appel, 2019; Hsu, Li, and Tsou, 2020), and to match the TRI data with congressional district shapefile data using the Lewis, DeVine, Pitcher, and Martis (2013), we limit the sample period to the years 1991-2016. We combine TRI data with election data for the U.S. House of Representatives by identifying facility locations in the Congressional district map.[5] We use compliance data from the EPA's Enforcement and Compliance History Online (ECHO) database, which includes information on inspections, enforcement actions, and penalties for various programs.[6] To identify the health hazards of toxic emissions on the public, we use hospital inpatient services data provided by Centers for Medicare & Medicaid Services (CMS). [7]

[5] http://cdmaps.polisci.ucla.edu.

[6] https://echo.epa.gov/tools/data-downloads

[7] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Inpatient

The Emergency Planning and Community Right-to-Know Act of 1986 and the Pollution Prevention Act of 1990 require plants that manufacture, process, or otherwise use toxic chemicals in amounts above established levels to report annually to the EPA's Toxics Release Inventory (TRI) about the chemicals they release. As we write, there are 770 individually listed chemicals and 33 chemical categories covered by the TRI Program. In general, chemicals covered by the TRI Program are those that cause cancer or other chronic human health effects, significant adverse acute human health effects, or significant adverse environmental effects. A release of a chemical includes emitting to the air or water, or placing waste in certain types of land disposals.

Plants are required to report the number of pounds released for each chemical listed in the TRI program and other plant information including plant coordinates, zip code, state, and other details about the parent firm. We use the reported plant coordinates to identify which congressional districts the plants are located in. Lewis et al. (2013) provide digital boundary definitions for every U.S. Congressional District in use between 1789 and 2016. We match the Congressional district election results to TRI and use the database to create an indicator for whether the plant is located in a district that was won by a Democratic Party candidate in its most recent election. The TRI database also includes information of a plant's production ratio, which indicates the year-on-year change in the the production process in which the toxic chemical is used. Specifically, the production ratio is the ratio of the quantity of output in any given year relative to the quantity of output in the previous year for each chemical usage.

The compliance data is obtained from the EPA's Enforcement and Compliance History Online (ECHO) dataset. To determine whether a plant is in compliance with the applicable laws, EPA conducts inspection activities such as interviewing plant representatives, reviewing records and reports, and taking photos. Discovered violations lead to enforcement actions. We combine several datasets of compliance activities for various programs including the Clean Air Act (CAA), the National Pollutant Elimination Discharge System (NPDES), NPDES Biosolids, and the Integrated Compliance Information System for Federal Civil Enforcement Case Data (ICIS FE&C). The datasets contain information on whether a given enforcement action is formal or informal, the agency that lead the action, and the amount of penalty imposed on the facility. Informal enforcement activities generally include warning letters or Notices of Violation, while formal enforcement activities may result in Administrative Compliance Orders (or state equivalent actions), and even in judicial referrals to the State Attorney General or to the Department of Justice.

Table 1 reports summary statistics for our main variables on emissions and compliance. Our sample consists of 37,369 distinct plants during the period 1991-2016. The emission variables are at the plant-chemical-year level, and the compliance-related variables are at the plant-year level. The average facility in our sample reports 30 thousand pounds of emissions for each chemical. The average facility experiences 0.8 inspections in a given year, and more than 50% of the facilities do not receive any inspection. The average number of enforcement actions for a facility is 0.15 per year, including both formal and informal actions. Most of the inspections and enforcement actions are related to the Clean Air Act (CAA) program and the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act (CWA) program.

Our main source of data for health-related variables is CMS. CMS provides a dataset that summarizes the utilization and payments for procedures provided to Medicare beneficiaries by more than 4,000 inpatient hospitals starting from 2011. The data contains the number of services provided by a hospital and their average payments for 622 Diagnosis Related Groups (DRG). We calculate the total payment for procedures in each DRG by multiplying the number of discharges by their average total payment. We then map DRG codes to Major Diagnostic Categories (MDC, 25 mutually-exclusive diagnosis areas) codes. Consistent with the literature on pollution and local health outcomes (see, e.g., Schwartz (1996) for an early study and Hoek et al. (2013) for a more recent review), we restrict our attention to MDC code 4 diseases (Disorders of the Respiratory System) as our main MDC of interest. We also compare our estimates in MDC code 4 with other diseases which are less-likely related to pollution including infectious and parasitic diseases and disorders (MDC code 18), mental diseases and disorders (19), alcohol/drug use or induced mental disorders (20), injuries, poison, and toxic effects of drugs (21), and burns (22).

We aggregate the number of discharges and total payments at the 5-digit zip code level for each DRG. We then match the 5-digit zip code level health data with information on zip code level number of plants and district information. To make sure that the district information is accurate after match-ing, we drop all the observations with 5-digit zip codes spanning two or more districts. To reduce noise in our estimates, we then aggregate the health data and plant number data at the 3-digit zip code-district pair level. Table 1 shows that the average number of discharges for respiratory diseases at the zip3-district-year level is 54, and the total amount paid for these respiratory diseases is around 485 thousand dollars.

3 Empirical Framework

The identification strategy in this paper exploits both spatial and time series variation of political affiliation across the congressional districts in the US to investigate the role it plays in firms' geographic decision to pollute. First, we start by comparing firm's decision to pollute across districts that experienced a switch to a Democrat vis-a-vis other districts using the following regression specification:

$$Y_{i(jd)t} = \beta_1 \text{Democrat Win}_{dt} + \beta_i^c + \beta_{jt}^c + \epsilon_{it} \tag{1}$$

In the above regression specification the primary dependent variable is emission of a chemical c by a plant i belonging to firm j located in congressional district d in time t. The primary explanatory variable takes a dummy 1 if the congressional election leads to a Democrat candidate in district d in the period t. The coefficient β_1 measures the difference in pollution by a firm in an establishment in district d that has a Democrat in power compared to a Republican. The fixed effects in the regression allows us to control for a large set of unobservable variables. β_i^c control for time invariant characteristics of an establishment for each chemical it produces. This also allows the identification of β_1 to come from time series variation in political affiliation in a district. β_{jt}^c allows for time varying controls for a firm for different chemicals that they emit and allows variation of β_1 to come from variation across establishments in districts where the same firm operates. Using the variations identified through the fixed-effects, the coefficient of β_1 looks at the difference in pollution decision by a firm in the districts that have a Democrat politician vis-a-vis a politician belonging to the Republican party.

However, the specification above raises two potential identification concerns: i) congressional district varying in political affiliation could be different in a large number of unobservable characteristics, and ii) political affiliation could be a manifestation of local preferences and any effect could be driven by the later and not the former.

To address these concerns, in our main results we use regression discontinuity design by looking at close elections. The methodology allows us to compare districts that are largely similar in characteristics with the variation coming from a district that marginally elected Democrat vis-a-vis Republican. Further, close elections imply that the voting pattern across the districts were largely similar and thereby allows us to control for difference in local preferences.[8] We define $\Delta voteshare$ as the difference in the vote share of the Democratic candidate minus the vote share of the Republican candidate, and we are interested in whether there is a discontinuity in pollution when $\Delta voteshare = 0$. To examine this question, we estimate the regression equation:

$$Y_{i(jd)t} = \beta_1 \text{Democrat Win}_{dt} + \theta f(\text{Win Margin}_{dt}) + \delta \text{Democrat Win}_{dt} \times f(\text{Win Margin}_{dt}) + \beta^c + \epsilon_{it}\ . \quad (2)$$

In the above equation the main dependent variable is pollution of establishment i at time t. Democrat Win_{dt} as in Equation (1) is an indicator if a district has a Democrat representative to the House. $f(\text{Win Margin}_{dt})$ are polynomials of different order of the variable Win Margin_{dt}. As is evident from Equation (2), Democrat $\text{Win}_{dt} \times f(\text{Win Margin}_{dt})$ allows the estimation of β_1 to be identified when the win margin is equal to zero. In line with Akey (2015) we restrict the sample to elections with an absolute vote margin less than 5%.

Next, to probe into the robustness of our result, we follow Calonico, Cattaneo, and Titiunik (2014) and Lowes and Montero (2020) by using non-parametric methods to compute the optimal bounds for the RD design using the following specification:

$$Y_{i(jd)t} = \beta_1 \text{Democrat Win}_{dt} + \theta g(\text{Win Margin}_{dt}) + \epsilon_{it} \quad (3)$$

Different from Equation (2), $g(\text{Win Margin}_{dt})$ is the RD polynomial. Our baseline specification is a local polynomial of order one in the vote margin estimated separately on each side of the zero

[8]Close elections have been used in the literature on political economy in conjunction with RD designs. Akey (2015), Ferreira and Gyourko (2009) among others use close elections as identification strategy in the context of politician characteristics and their impact.

margin cutoff. We use a triangular weighting kernel and calculate the optimal bandwidth by using the MSE-minimizing procedure suggested by Cattaneo, Idrobo, and Titiunik (2019). We also estimate the regression specifications with different polynomials and kernel definitions.

4 Results

4.1 Pollution

We use a regression discontinuity design to examine the effects of district political affiliation on plant-level emissions in a close-election setting. As described in Section 3, identification in this setting relies on quasi-random assignment of a plant's district to different political parties. In other words, we compare the emissions of plants located in districts where Democrats win an election by a very small margin, and plants located in districts where Democrats lose an election by a very small margin.

Figure 1 presents our main regression discontinuity result. We first rank districts-year observations in our sample by their Democrat win margin in the most recent electoral college election.[9] We restrict the sample to a narrow ±5% Democrat win margin window, and we construct 18 equally-spaced bins on either side of the zero win margin cutoff. In Figure 1, we report the average log-emissions in each Democrat win margin bin, as well as the fitted values and 95% confidence intervals of a local polynomial regression on each side of the cutoff. Figure 1 shows an economically and statistically significant drop in emissions for plants located in districts that are won by closely-elected Democrats. This drop in emissions is roughly constant away from the zero win cutoff, suggesting that our result is not driven by outlying observations just above or below the zero cutoff.

In Table 2, we formally test the visual evidence presented in Figure 1. In Columns (1)-(3), we again focus on a narrow 5% window around the zero margin cutoff, and regress the natural logarithm of plant-level emissions on a dummy equal to one if the district where the plant is located was won by a Democrat in its most recent election and equal to zero otherwise (Column (1)), as well as on an interaction term between this indicator and the Democrat win margin (Columns (2) and (3)). These local OLS specifications confirm the visual evidence from Figure 1, but reveal much larger effects

[9] For example, a 100% (-100%) Democrat win margin implies that the district was won by Democrats (Republicans) with a 100% margin, and a 1% Democrat win margin implies that the district was won by Democrats with a 1% margin.

relative to those in Table 7. Plants located in districts that are just-won by Democrats have on average 21.3% to 39.7% higher emissions than plants located in districts that are just-won by Republicans—the election of a Democrat representative causes firms to reduce pollution by up to 39.7% under our RDD identifying assumptions.

Our local linear regressions in Table 2 face the well-known trade-off between sample bandwidth size around the zero win margin cutoff and bias in the estimates of the RD coefficients. Intuitively, one would like to give relatively more weight to observations around the cutoff without sacrificing estimate precision. In the remainder of the table, we report the results of a non-parametric RD estimation procedure aimed at resolving this trade-off. This procedure allows the econometrician to specify a weighting method for each observation in the sample (i.e., a kernel) and a (possibly non-linear) functional form for the relationship between the outcome variable and the running variable on each side of the cutoff. The procedure jointly estimates the RD parameter of interest, its optimal bias-corrected standard error, and the optimal sample bandwidth around the zero cutoff (Calonico et al. (2014)).

In Columns (4)-(7), we report the results of this non-parametric local polynomial RD estimation, where we experiment with different polynomial functional forms (i.e., linear and quadratic) and with different kernel weighting methods (i.e., triangular and Epanechnikov). Our results are robust to different polynomial and kernel combinations, and highlight a quantitatively-similar effect to those documented in the first three columns: Democrat wins in a district are systematically associated with an average 35% reduction in plant-level emissions.

The magnitudes documented in Table 2 are large. The 35.5% reduction in emissions implied by our non-parametric specification (4) entails a reduction in firm-level emissions of approximately 10 thousand pounds relative to the unconditional sample mean of 30,846 pounds per plant-chemical, and approximately 130 pounds relative to the unconditional median of 369 pounds per plant-chemical. These results are quantitatively similar when focus only on the 5% close election sample. In this sample, the mean level of emissions is 30,675 pounds, and the median level of emissions is 455 pounds. Overall, the results of Figure 1 and Table 2 provide strong empirical evidence that district-level affiliation to the Democratic Party is associated with economically large reductions in toxic emissions.

4.2 Robustness

4.2.1 Residualized RD

One concern with our results in Table 2 is that many factors other than the close election might cause firms to pollute less following close election victories by Democrats. For these other factors to affect the validity of our inference, they would have to be correlated with both close election victories and facility-level emissions across a large number of districts and across a long sample period. While it is unlikely that such a factor meets this criteria, such concerns nonetheless deserve attention, particularly given the controversies that have emerged over the use of RD tests in the context of close elections (de la Cuesta and Imai, 2016).

To address this concern, we follow Lowes and Montero (2020) and perform an RD analysis on a residualized version of our main emissions variable after removing most variation that could plausibly be driven by confounding factors. Specifically, we first regress emissions on Congressional district fixed effects as well as a state $\times$ chemical $\times$ year fixed effect. We then perform our baseline RD tests on this residualized outcome variable. As such, our tests are effectively comparing outcomes across two facilities located in the same state in similar (but distinct) Congressional districts that produce the same chemical at the same point in time, but where one facility is represented by a closely-elected Democrat and the other is represented by a closely-elected Republican. Regardless of their veracity in the data, this empirical setup helps to rule out all confounding stories that rely on variation across districts, variation at the state-time level, or variation at the chemical-time level.[10]

Table 3 shows that our main results survive this stringent robustness test. In all columns except column (1) (a simple difference in means), we still find economically and statistically significant reductions in pollution when a close Democrat is elected. While magnitudes are lower than in Table 2, they are still quite sizable; for example, we find pollution reductions of approximately 4% and 7% in columns (4) and (6), which use non-parametric specifications with a triangular kernel. These tests suggest that even after removing most of the variation in pollution across geography, chemicals, and time, politicians' ideologies still have significant effects on firms' emission decisions.

[10]For example, these tests rule out the possibility that our pollution effects can be explained by (1) state-level economic conditions, (2) the governor or state agencies, (3) variation in plant makeup across districts, or (4) state-level supply or demand shocks.

4.2.2 Seat Pickups

If partisan ideology is a key driver of politicians' influence over emissions in their district, we would also expect to see strong effects on emissions when a district switches from being represented by a Democrat to being represented by a Republican (and vice versa; often known as a "pickup" for the winning party). Consistent with this hypothesis, Figures 4a and 4b and Table 4 show that emissions increase significantly in areas that move from a Democratic representative to a Republican representative, and vice versa. In particular, in Table 4, we start with all facilities that were represented by Republicans in the year prior to an election. We then break up these facilities into those that were represented by a Democrat after the election, and those that were represented by a Republican. Columns (1) and (2) show that, after a district moves from Republican to Democratic representation, relative emissions at facilities in that district decline by approximately 6%. Similarly, columns (3) and (4) show that, after a district moves from Democratic to Republican representation, relative emissions at facilities in that district rise by approximately 3%. Figures 4a and 4b displays these patterns graphically. Collectively, these findings support the idea that partisan ideological differences are at least partially responsible for the stark changes in emission levels in red versus blue districts during our sample period.

4.2.3 Governors and State Regulatory Agencies

We also examine whether politicians' impact on pollution differs depending on the political party of their governor. Since most EPA laws are enforced by states, and since state governors generally appoint the heads of the agencies responsible for the enforcement of environmental regulation, it is natural to think that the magnitudes of our effect might depend on who the governor is. In particular, we hypothesize that the effects would be larger when a Democrat is governor, since a Democratic governor will be more likely to appoint agency heads who care about the enforcement of environmental regulations, and since agencies under a Democratic governor might be more receptive to input and requests from members of Congress that relate to the enforcement of environmental regulations.

In addition, splitting the sample by the party of the governor allows us to determine whether we observe effects for governors of both parties, or whether the effect is exclusively concentrated among Democratic governors. The latter possibility is potentially worrisome, since, if Democratic close election victories are more likely in states represented by Democratic governors, then our main effect could be coming from increased oversight by Democratic governors rather than from increased scrutiny by members of Congress.

Figure 5 and Table 5 contains the results of these tests. The figure and table show two main findings. First, the effect is present under governors of both political parties. For example, in column (7) of Table 5, the effect is large and highly statistically significant for both Democratic and Republican governors. Second, the figure and table show that the effect is quantitatively larger for Democratic governors. This is most apparent in Figure 5, where the blue line represents the effect of close election victories by Democrats in states represented by Democratic governors, and the red line represents the same test but in states represented by Republican governors. The figure shows that the size of the discontinuity is much larger for the blue line than the red line, confirming that pollution reductions following close Democratic Congressional victories are stronger in states with Democratic governors.

4.2.4 Production

Another potential concern is that the variation in pollution we observe may stem from variation in production (with possible associated benefits for the local population). If facilities produce more products when their local representative is a Republican, then emissions may simply increase due to increases in production, not because of the ideology of the representative. To examine this possibility, we utilize the EPA's data on production, which is available at the facility-chemical-year level. Since output is only available as an annual growth rate, we follow Akey and Appel (2019) and Akey and Appel (2021) and construct a contemporaneous measure of plant emissions relative to production for each plant-chemical-year as

$$\begin{aligned}\log\left(\text{Cumulative Emissions}/\text{Production}\right)_{ijt} &= \log\left(\prod_{\tau=2}^{t}\frac{1}{\text{Prod. Growth}_{ij\tau}}\times\frac{\text{Emissions}_{ij\tau}}{\text{Emissions}_{ij\tau-1}}\right),\\ &= \log\left(\frac{\text{Emissions}_{ijt}}{\text{Production}_{ijt}}\right)-K_{ij}, \qquad (4)\end{aligned}$$

where Emissions_{ijt} are the emissions of chemical j by plant i in year t, $\text{Prod. Growth}_{ijt}$ is the ratio of year t's output and year $t-1$'s output associated with the production of chemical j in plant i (directly available from the EPA data), and K_{ij} is a plant-chemical constant.

In Table 6, we show that plant emissions in blue districts decrease even relative to production. In the first column of the table, we show that emissions decrease by around 10.2% relative to production when the district where the plant is located is just-won by a Democrat. In Column (2), we confirm that this result holds economically and statistically using a non-parametric specification and a flexible RD bandwidth choice. In Appendix Table A4, we also document no effects on plant-level production when a district is just-won by a Democrat politician.[11] Hence, while plant-level emissions clearly decrease following a close Democratic election, production at the same factories does not decrease.

4.3 Reallocation

Given our main finding, a natural question is whether firms with plants in multiple Congressional districts reallocate their pollution from one district to another. To examine this question, we switch to a sample containing data from all elections (not just close elections), as this provides us with the ability to add varying degrees of fixed effects that are not possible in the RD setting.

In Table 7, we regress the natural logarithm of plant-chemical-level emissions on an indicator equal to one if the district politician is a Democrat and equal to zero otherwise, and on different combinations of fixed effects. Columns (1) and (2) confirm that our main RD results in Table 2 hold within a much wider sample as well.

In Columns (3) to (5), we examine within-firm changes in emissions. In these tests, we are examining how emissions evolve after elections when plants of the same firm are located in districts served by different political parties at the same point in time. Columns (3) and (4) show that, in any given year, a firm produces 2%-2.6% lower emissions of the same chemical in facilities located in districts represented by Democrats relative to facilities located in districts represented by Republicans.

[11] Similar to (4), we compute cumulative plant-level production related to chemical j as

$$\log\left(\text{Cumulative Production}\right)_{ijt} = \log\left(\prod_{\tau=2}^{t}\text{Prod. Growth}_{ij\tau}\right) = \log\left(\text{Production}_{ijt}\right) - K'_{ij}, \tag{5}$$

with K'_{jt} another plant-chemical-specific constant.

In Column (5), we show that this within-firm result is economically and statistically robust when we control for differences in the relationship between emissions and victory margins for Democrat and Republican representatives (which is a close approximation to an RD test).

Of course, one possible reason for the within-firm difference in pollution is that output is increasing at plants located in Republican areas, perhaps because of increased economic activity. However, in Appendix Table A2, we find that there are no changes in firm-wide pollution when the fraction of plants located in Democratic districts increases or when firms have at least one plant located in a Democratic district. Hence, firms appear to be reallocating pollution between facilities.

To more formally test this proposition, we follow Giroud and Mueller (2019) and construct a measure of the extent to which the firm's other plants are represented by Democrats. We construct a firm-facility-chemical-year variable, *Other Facilities' Democrat Share*, that represents the fraction of all facilities owned by the firm (excluding the focal facility) that are located in districts represented by Democrats. This is similar to the empirical strategy used by Bertrand and Mullainathan (2003), but where we use an average of other plants' representation by Democrats instead of isolating shocks to the firm's headquarters location. We also construct an indicator variable, *High Democrat Share*, that equals one when the *Other Facilities' Democrat Share* variable exceeds the median level, and equals zero otherwise. Finally, we include a variable, *Local Democrat*, that is analogous to the *Democrat Win* variable from Table 7.

The results are reported in Table 8. Columns (1)–(2) report results for the *Other Facilities' Democrat Share* variable, while columns (4)–(6) report results for the *High Democrat Share* variable. Columns (1) and (3) include chemical $\times$ year and facility $\times$ chemical fixed effects, while columns (2) and (4) include facility $\times$ chemical and district $\times$ chemical $\times$ year fixed effects (which absorb the *Local Democrat* variable). Columns (1) and (3) show that, while pollution falls when a facility is represented by a local Democrat, this effect is smaller when the firm's other facilities are located in districts represented by Democrats. Columns (2) and (4) show that, even after completely absorbing time-varying factors at the local district level (including the local representative), pollution is higher at the local facility by as much as 3–6% when the firm's *other* facilities are represented by Democrats.

Figure 6 depicts these results visually. The figure plots pollution at a plant located in a given district as a function of the share of other facilities owned by the same firm in other Congressional districts that are represented by Democrats. Figure 6 shows that pollution in a given district is a monotonically increasing function of the degree to which the same firms' other plants are represented by Democrats.

Finally, while reallocation tests are very complicated in an RD design, we perform an RD test as similar as possible in spirit to the tests in Table 8. Specifically, we examine pollution differences across facilities after first sorting facilities on the fraction of other facilities belonging to the same company that are represented by Democrats. To ease interpretation, the running variable in these tests is the Republican win margin. Figure 7 shows that shows that pollution increases in Republican districts when there is a relatively larger share of Democratic politicians governing the districts of other plants belonging to the same firm. This provides yet another piece of evidence supporting the idea that firms reallocate pollution across plants due to the ideology of the politicians representing each plant.

4.4 Regulatory Inspections and Enforcement

What is the channel through which Democratic representatives reduce plant emissions in their home districts? In this section, we use the same close-election setting to show that EPA inspections and (informal) enforcements increase when a Democratic representative just-wins a district election. We begin by studying the effect of marginal Democratic district wins on EPA inspections at the plant-year level. In the interest of space, we keep only two specifications from Table 2: a local linear regression in the $\pm5\%$ win margin window, and a non-parametric RD estimate using a linear polynomial, a triangular kernel, and the optimal sample bandwidth selection method of Calonico et al. (2014). Our results are robust to alternative specifications.

In the first two columns of Table 9, we focus on the intensive margin. We show that, depending on the specification, marginal district wins by Democrats are systematically associated with a 17.7% to 21.4% increase in inspections for plants that are already subject to inspections (i.e., plants with non-zero annual inspections). Figure 2 displays this pattern graphically. To put the magnitudes in perspective, conditional on receiving at least one inspection, the average plant in our sample receives 2.44 inspections per year. A 20% increase in inspections—as implied by our estimates when a Democrat wins—leads to an extra 0.49 annual inspections relative to the mean.

In the last two columns of Table 9, we focus on the extensive margin. We show that district wins by Democrats lead to a 2.2% increase in the likelihood of getting at least one inspection. Again, this number is large, corresponding to a 6.7% increase relative to the unconditional probability of 32.64% of receiving at least one inspection for the average plant in our sample. Overall, the results of Table 9 provide strong evidence that Democrat district affiliation results in more EPA inspections, suggesting that Democrat representatives may induce environmental agencies to monitor firms' emissions more closely.

Does increased monitoring also result in stricter enforcement when a district is won by Democrats? In Table 10, we study enforcement actions and pecuniary penalties at the plant-year level. In Panel A, we start from the intensive margin of enforcement. Columns (1) and (2) show that the probability of an enforcement action (either formal or informal) increases by around 6.4% when the district where the plant is located is just-won by a Democrat. Figure 3 presents this pattern graphically. Again, this estimated effect implies a large increase in enforcement actions, given that the unconditional probability of an enforcement following an inspection is equal to 21.98%. In other words, Democrat wins increase the probability of an enforcement by 29.11% following an inspection.

In Columns (3)-(6) of Panel A, we show that the main effects from Columns (1) and (2) mainly comes from an increase in *informal* enforcement (e.g., cease and desist letters) as opposed to formal enforcement (e.g., civil legal actions). Marginal Democrat wins are associated with a 7.7% increase in the probability of an informal enforcement action (an increase of 47.65% relative to the unconditional probability of 16.16% of an informal enforcement after an inspection), and only with a 2.7% increase in the probability of a formal action (an increase of 24.59% relative to the unconditional probability of 10.98% of a formal enforcement after an inspection). Consistent with these estimates, in the last two columns of Panel A we also confirm that the probability of a monetary penalty increases by around 2.2% when a Democrat just wins a local district election.

In Panel B of Table 10, we confirm that our enforcement results also hold on the intensive margin—enforcement actions per inspection increase by around 0.05 (a 27% increase relative to the sample mean) and informal enforcement actions per inspection increase by around 0.055 (a 52% increase relative to the sample mean) when a Democrat representative just-wins the district. On the other hand, formal enforcement actions per inspection and penalties per inspection do not experience statistically significant changes when a Democrat gains control of the local district. Collectively, the results of Table 10 show that politicians may influence regulators' "soft" enforcement power, but not regulators' ability to bend formal enforcement rules. In Section 4.6, we show that the effects documented in Tables 9 and 10 mostly come from state regulators, as opposed to federal regulators. We use these results to argue that a politician's influence on regulators' monitoring and enforcement incentives is stronger when regulators reside in the politician's home state.

4.5 Real Effects

In this section, we document effects on local health outcomes, which we argue are the result of the politically-motivated changes in plant emissions documented in the previous sections.

In Table 11, we use our CMS panel to compare how health outcomes change when districts have different political affiliation. To directly link our tests to pollution-related health outcomes (as opposed to general health policies for which different parties may have different preferences), we study how, within the same district and year, health outcomes change in zip codes with high pollution exposure (i.e., a relatively high number of plants), and in zip codes with low pollution exposure (i..e, a relatively low number of plants) when Democrats win the district. As described in Section 2, we focus only on health outcomes related to respiratory diseases and therefore more sensitive to emissions (MDC category 4), and we conduct a placebo test using diseases that are likely less sensitive to emissions (MDC categories 18 to 21). Moreover, in Appendix Table A5 we show that our results hold in the full CMS sample.

In Panel A of Table 11, we study the effect of a Democrat win on respiratory health outcomes. As in the previous tables, the Democrat Win indicator is a district-level indicator equal to one if the district was won by a Democrat in the most recent election and zero otherwise, and the indicator for a high number of plants is equal to one if the zip code-level number of plants in a given year is above the sample median in that year and zero otherwise. As a result, the interaction between the Democrat win indicator and the high number of plants indicator captures the incremental change in respiratory health outcomes in emission-sensitive areas when a district is won by a Democrat.

In the first three columns of Table 11, we focus on zip3-level number of discharges related to respiratory diseases as a measure of the number of local treatments related to air pollution. These specifications show that zip codes with a relatively high number of plants feature between 18.8% and 32.5% higher discharges than zip codes with a relatively low number of plants, even within the same district and in the same year. More important for our purposes, these specifications show that this baseline effect decreases by up to one-third when the district is won by a Democrat. In our favorite specification (3), where we exploit cross-sectional variation between zip codes located in the same district in the same year, we find that zip codes with a high number of plants have 18.8% higher discharges when the district representative is a Republican, but only 12.2% higher discharges when the district representative is a Democrat.[12]

In Columns (4)-(6) of Panel A, we repeat the same experiment using zip3-district-year payments for respiratory disease discharges as our outcome variable. The results of these tests again confirm that the affiliation of a district to the Democratic Party reduces the negative health effects of pollution in areas that are pollution-sensitive. For example, zip codes with a high number of plants feature 18.9% higher respiratory disease-related payments when the district is red, but only 11.6% higher payments when the district is blue.

In Panel B of Table 11, we conduct a placebo test using discharges for diseases that are less-likely related to pollution. The main objective of these tests is to rule out that Democrat politicians are affecting health outcomes in our sample by means other than lower pollution. We argue that, if this was the case, improvements in health outcomes would materialize for all types of diseases, and not only for respiratory diseases. Panel B supports our conjecture. Unlike for respiratory diseases in Panel A, we find no incremental effects on health outcomes in pollution-sensitive areas when the district politician is a Democrat. In turn, these results suggest that our main findings in Panel A are indeed related to the politically-motivated changes in local pollution documented by our main tests.

[12]As described in Section 2, zip-3 codes can span multiple districts, which allows us to identify zip-district fixed effects.

4.6 Robustness

4.6.1 Political Power

In Table 12 we ask whether our main results are due to political power rather than ideology. We split our district elections sample into elections that are won by a junior representative (a representative whose number of years of service is below median in that particular Congress) and elections that are won by a senior representative (a representative whose number of years of service is above median), and we re-run our main RD tests in these two subsamples.[13] Table 12 shows that our results are almost entirely concentrated in elections won by junior politicians (Panel A), and documents little or no effects in the sample of elections won by senior politicians (Panel B), supporting the hypothesis that our main results are unlikely due to political power.

4.6.2 Additional Robustness

We also report the results of seven additional sets of tests that confirm the robustness of our main tests. First, in Appendix Table A1 we show that our local OLS specification in Table 2 produces statistically-similar results when we cluster our standard errors at the facility level or using 97 distinct vote bins around the zero vote margin (Lee and Card (2008)).[14] Second, we present the results of two placebo tests in Figures 8a and 8b that show that our results are not spuriously caused by sample selection or other issues. Third, in Table A3 we show that our results on inspections and enforcements are mostly driven by state (as opposed to federal) regulators, consistent with the idea that state regulators are the primary agencies responsible for enforcing EPA regulations. Finally, in Table A5, we show that the real effects on local health outcomes hold in the full CMS sample and not only in the subsample of respiratory diseases.

[13]Politicians' seniority data is obtained from Charles Stewart III's Congressional Data Page.

[14]The Lee and Card (2008) clustering is motivated by the presence of small mass points in the distribution of the outcome variable around the zero win margin cutoff.

5 Conclusion

We examine how politicians' party affiliations causally impact the industrial pollution decisions of firms using highly granular emissions and production data. We first show that firms pollute less when their Congressional representative is a Democrat. Using a regression discontinuity design involving election outcomes in close U.S. congressional races, we then show that plants pollute more per unit of production when they are represented by a closely-elected Republican than by a closely-elected Democrat. We also find evidence of reallocation: firms shift pollution away from areas newly represented by a Democrat. In addition, we find that pollution-related illnesses spike around plants in areas represented by Republicans, suggesting that firms' pass-through of ideological differences across politicians can have real consequences for local communities.

While more work is needed to fully flesh out the mechanism behind our results, we find strong evidence that inspections and enforcement increase once a plant is represented by a Democrat. Since Democrats in general are more supportive of environmental regulation, one plausible explanation for our findings is that regulators either explicitly or implicitly feel more emboldened to investigate facilities when a given facility's House member is a Democrat. We look forward to fully describing the mechanism in the next iteration of our paper.

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Figure 1

RD using Close Elections: Emissions

The figure shows the natural log of facility-chemical-level toxic emissions in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

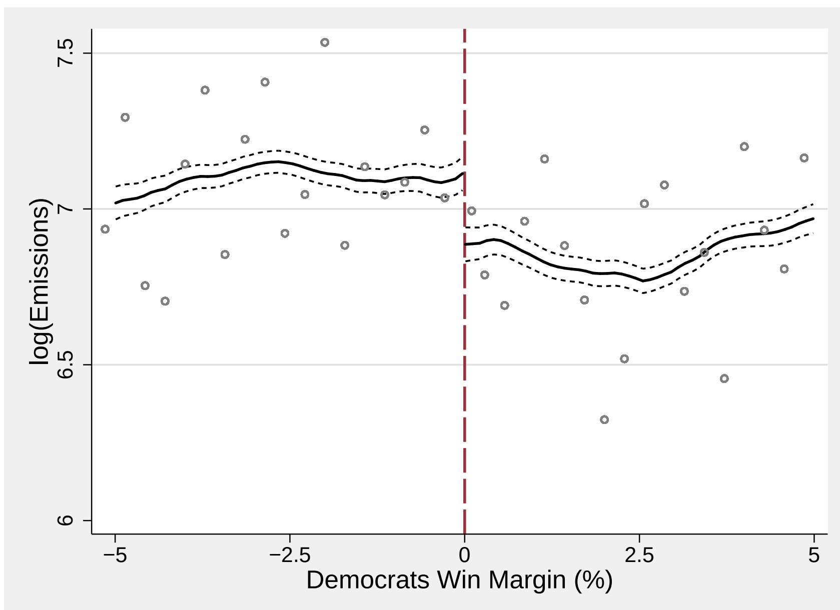


Figure 2

RD using Close Elections: Inspections

The figure shows the natural log of facility inspections in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

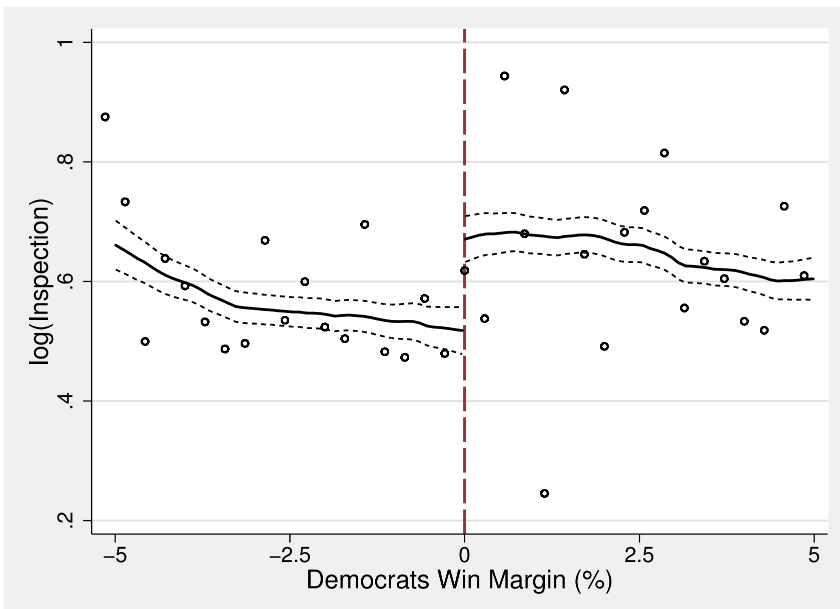


Figure 3

RD using Close Elections: Enforcement

The figure shows an indicator variable for facility-level enforcement actions in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

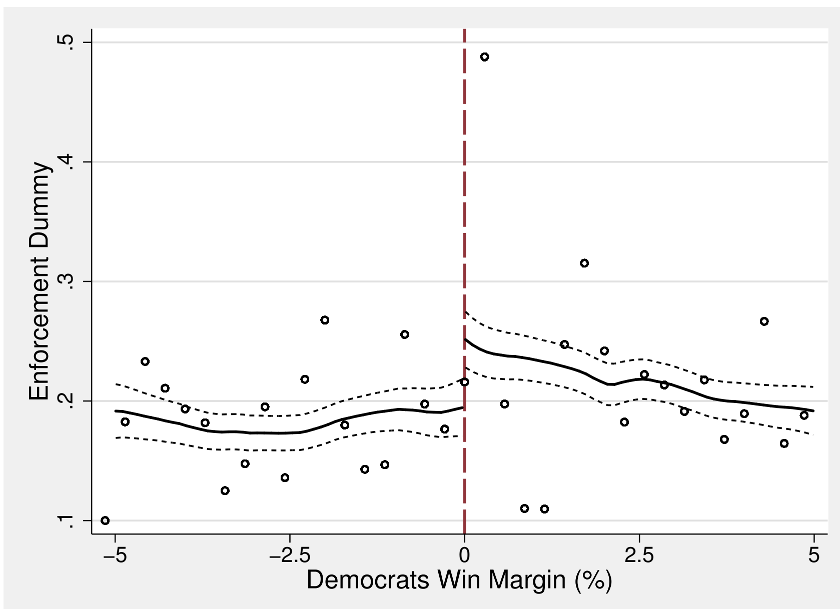
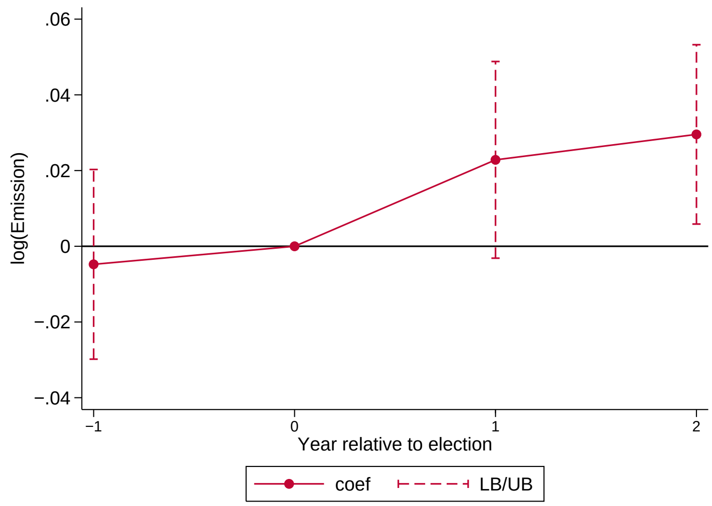


Figure 4

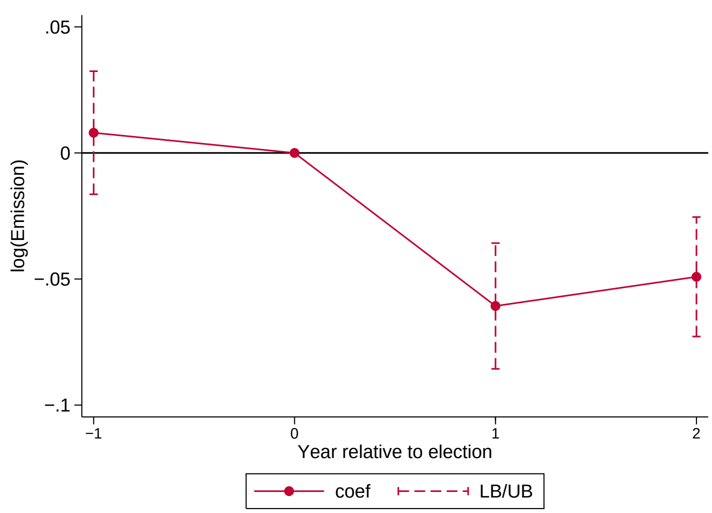
Examining "Switchers"

The figure shows the difference in the natural log of emissions for facilities located in areas that switch from a Democratic to a Republican representative, and vice versa. Emission differences are normalized to equal zero in the year of the (November) election. The first figure takes all facilities represented by Democrats and then examines emissions based on whether the *next* representative is a Democrat or Republican. The second figure takes all facilities represented by Republicans and then examines emissions based on whether the *next* representative is a Democrat or Republican.



(a)

Switch from Democrat to Republican



(b)

Switch from Republican to Democrat

Figure 5

Emissions RD based on Governor's Political Party

The figure splits the sample of close elections by the political party of the governor in the congressional districts' states. As in previous table, the table shows the natural log of facility inspections in the two years following Congressional elections as a function of the vote share margin of a Democratic candidate in a congressional district. The red line indicates states with a Republican governor and the blue line indicates states with a Democratic governor. Vote share margin is the percentage by which a candidate won (lost) the election. The sample uses elections won or lost by a margin of 5% or less.

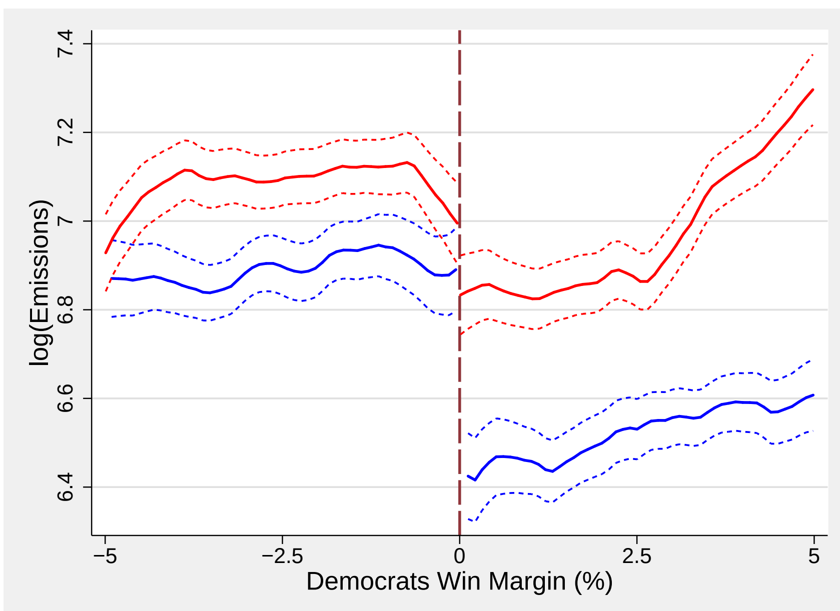


Figure 6

Reallocation of Toxic Emission

This figure plots the relationship between pollution and share of Democrat politicians governing the districts of other plants belonging to the same firm. We remove any time-invariant chemical fixed effects from the pollution levels of a facility and plot a bin scatter, with 25 bins. We sort the share of democrats into 25 bins and take the average of the share and pollution in each of this bins.

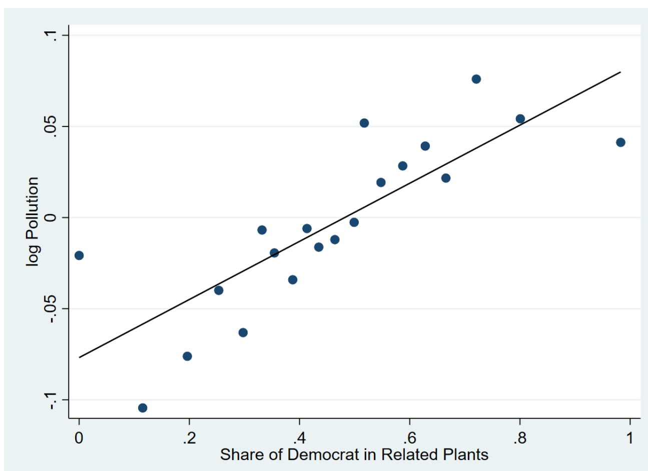


Figure 7

Reallocation of Toxic Emission

This figure shows that pollution increases in Republican districts when there is a relatively larger share of Democratic politicians governing the districts of other plants belonging to the same firm.

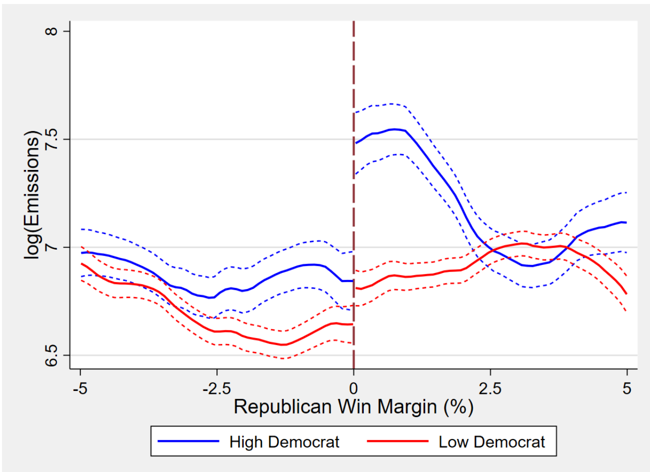
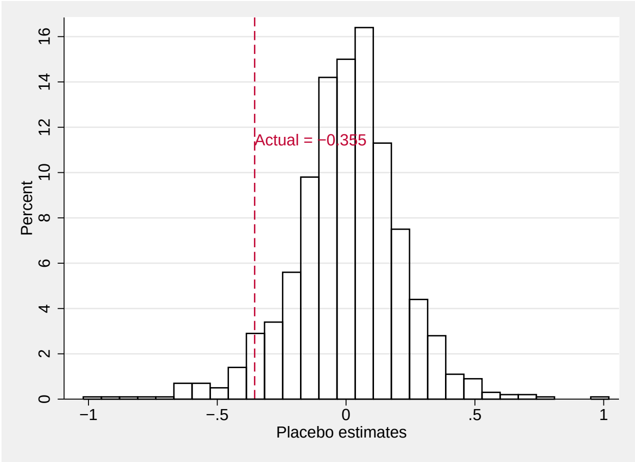


Figure 8

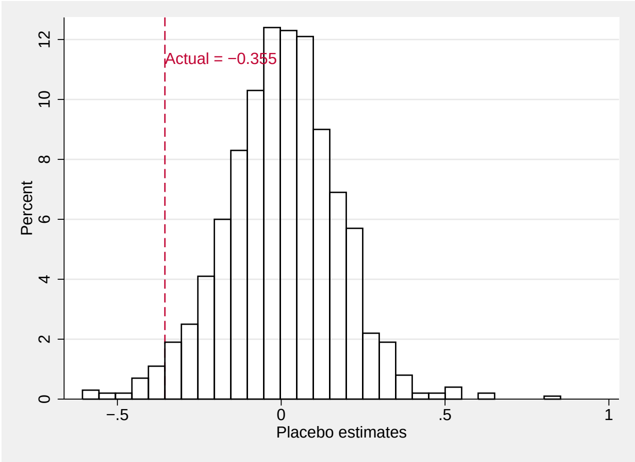
Placebo Tests

Both figures show placebo tests for the nonparametric specifications in Table 2. The first figure shows the distribution of coefficients from 10,000 specifications where the margin of victory was randomly assigned and all other data was left unchanged. The second figure shows the distribution of coefficients from 10,000 specifications where the politician's political party was randomly assigned and all other data was left unchanged. In both figures, our actual coefficient from Table 2 is plotted for comparison.



(a)

Randomized Vote Margin



(b)

Randomized Political Party

Table 1

Summary Statistics

This table presents summary statistics for the main variables in the paper. Emission is annual toxic chemical releases at facility-chemical-year level over the period 1991-2016, available on U.S. Environmental Protection Agency's website. Compliance data including inspection, enforcement and penalty are from EPA's Enforcement and Compliance History Online (ECHO) dataset. Congressional election data are from MIT Election Data and Science Lab. Health data including number of discharges and total payment for respiratory disease or non-pollution related disease are from Centers for Medicare & Medicaid Services (CMS). All the data is publicly-available.

	Mean	SD	p10	p50	p90	Facilities	Observations
Emissions	30845.79	177340.99	0.00	369.00	43486.00	37,369	1,784,978
Inspections	0.80	1.67	0.00	0.00	2.00	37,332	438,271
Enforcement	0.15	0.53	0.00	0.00	0.00	37,332	438,271
Formal Enforcement	0.06	0.30	0.00	0.00	0.00	37,332	438,271
Informal Enforcement	0.09	0.35	0.00	0.00	0.00	37,332	438,271
Penalty	277.99	1890.06	0.00	0.00	0.00	37,332	438,271
Democrats Win Margin	-1.47	36.80	-44.16	-5.17	47.48	37,369	1,674,577
Discharges (Respiratory)	54.45	58.33	13.00	34.00	121.00	.	60,352
Total Payment (Respiratory)	484797.62	536745.54	96069.00	302581.50	1097060.88	.	60,352
Discharges (Placebo)	82.25	138.20	12.00	32.00	205.00	.	28,282
Total Payment (Placebo)	1064948.34	1761292.47	87198.00	433993.00	2711063.00	.	28,282

Table 2

Main Result: Emissions

In this table, we study the effect of marginal district wins by Democratic Party candidates on emissions by local plants. In Column (1), we regress the natural logarithm of plant-level emissions on a dummy equal to one if the district where the plant is located was won by a democrat in its most recent election, and equal to zero otherwise. In Columns (2)-(3), we augment this specification with a linear interaction term between the dummy and democrat margin votes in a local OLS regression framework. In Columns (4)-(7), we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014), experimenting with linear and quadratic polynomials and triangular and Epanechnikov kernels. In Columns (1)-(3), we report standard errors clustered at the district-year level. In Columns (4)-(7), we report robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014). The sample contains all district elections during the period 1991-2016. In Columns (1)-(3), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.213**	-0.397**	-0.305***	-0.355***	-0.349***	-0.353***	-0.355***
	(0.08)	(0.16)	(0.12)	(0.03)	(0.03)	(0.04)	(0.04)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	94,140	94,140	94,111	1,329,508	1,329,508	1,329,508	1,329,508

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 3

RD results: Residuals

This table runs the same regressions as in Table 2, but using the residuals of log(Emissions) as dependent variable. The residuals of log(Emissions) are obtained from OLS regressions of log(Emissions) on congressional district fixed effects and state $\times$ year $\times$ chemical fixed effects.

	Dep. Variable: Residuals of log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.007	-0.030	-0.035	-0.003	0.000	-0.012	-0.012
	(0.02)	(0.04)	(0.04)	(0.01)	(0.01)	(0.02)	(0.02)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	87,761	87,761	87,743	1,245,558	1,245,558	1,245,558	1,245,558

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 4

Emissions and Seat Pickups

This table splits our (full) sample into four groups around election periods: (1) cases where a Democrat held the seat before and after the election, (2) cases where a Democrat held the seat before the election but a Republican held the seat after the election, (3) cases where a Republican held the seat before and after the election, and (4) cases where a Republican held the seat before the election and a Democrat held the seat after the election. The first two columns compare groups (1) and (2), while the second compare groups (3) and (4). The dependent variable is log(emissions), as in Table 2.

	log(Emissions): R-D Switchers		log(Emissions): D-R Switchers	
	(1)	(2)	(3)	(4)
Switchers × Post Election	-0.059***		0.029***	
	(0.01)		(0.01)	
Switchers × Election Year -1		0.008		-0.005
		(0.01)		(0.01)
Switchers × Election Year +1		-0.061***		0.023*
		(0.01)		(0.01)
Switchers × Election Year +2		-0.049***		0.030**
		(0.01)		(0.01)
Low-Order Terms	Yes	Yes	Yes	Yes
District × Election Year FE	Yes	Yes	Yes	Yes
Facility × Chemical FE	Yes	Yes	Yes	Yes
Observations	1,516,595	1,516,595	1,407,224	1,407,224

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 5

RD Split on Governors' Political Parties

This table runs the same regressions as in Table 2, but splits the sample between close elections in states represented by Democrats versus Republicans. The governor political affiliation data is obtained from Congressional Quarterly (CQ) Press U.S. Political Stats.

Panel A: Democratic Governors

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.353***	-0.438*	-0.341*	-0.406***	-0.471***	-0.348***	-0.370***
	(0.13)	(0.26)	(0.19)	(0.05)	(0.04)	(0.07)	(0.08)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	45,446	45,446	45,404	551,241	551,241	551,241	551,241

Panel B: Republican Governors

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.089	-0.389**	-0.302**	-0.325***	-0.342***	-0.308***	-0.291***
	(0.11)	(0.19)	(0.14)	(0.05)	(0.05)	(0.05)	(0.05)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	48,694	48,694	48,666	778,267	778,267	778,267	778,267

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 6

Emissions and Plant Production

In this table, we study the effect of marginal district wins by Democratic Party candidates on plant toxic emission per production. The dependent variable is the natural logarithm of cumulative emissions per production which is the cumulative product of emissions per production at plant-chemical level. In column (1), we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

	log(Cumulative Emissions/Production)	
	(1)	(2)
Democrat Win	-0.102*	-0.073***
	(0.06)	(0.02)
Method	Local OLS	NP
Polynomial	Linear	Linear
Kernel	–	Tri.
Chemical FE	Yes	–
Observations	84,304	1,178,094

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 7

Toxic Emissions and Political Affiliations

This table uses OLS regressions to examine the relationship between plant toxic emissions and political affiliations. The dependent variable is the natural logarithm of emissions at plant-chemical-year level. Democrat Win is an indicator that takes the value of one if candidate from democratic party wins the election of the district in which the plant is located. The Linear Interaction term is the product between district margin votes and the Democrat Win indicator. Standard errors are clustered at district-year level. The sample period is 1991-2016.

	Dep. Variable: log(Emissions)				
	(1)	(2)	(3)	(4)	(5)
Democrat Win	-0.058***	-0.044***	-0.026*	-0.020**	-0.025**
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Linear Interaction	No	No	No	No	Yes
District FE	Yes	Yes	No	No	No
Year FE	Yes	No	No	No	No
Firm × Year FE	No	Yes	No	No	No
District × Chemical FE	No	No	Yes	No	No
Firm × Chemical × Year FE	No	No	Yes	Yes	Yes
Facility × Chemical FE	No	No	No	Yes	Yes
Observations	1,329,508	1,293,847	796,544	782,632	782,632

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 8

Reallocation of Toxic Emissions

This table presents the result of regressing toxic emission on the share of Democratic politicians governing the districts of other plants belonging to the same firm. The sample period is 1991-2016.

	log(Pollution) (1)	log(Pollution) (2)	log(Pollution) (3)	log(Pollution) (4)
Other Facilities' Democrat Share	0.028**	0.063***		
	(0.013)	(0.015)		
Local Democrat	-0.018*		-0.017*	
	(0.011)		(0.010)	
High Democrat Share			0.015**	0.027***
			(0.007)	(0.008)
Chemical × Year	Yes	No	Yes	No
Facility × Chemical	Yes	Yes	Yes	Yes
Dustrict × Chemical × Year	No	Yes	No	Yes
Adj.-R^2	0.890	0.922	0.890	0.922
Obs.	1,128,556	897,686	1,128,556	897,686

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 9

Inspections

In this table, we study the effect of marginal district wins by Democratic Party candidates on inspections by the EPA. The dependent variable in columns (1)-(2) is the natural logarithm of inspections for plants in a year. The dependent variable in columns (3)-(4) is an indicator variable that takes the value of one if a plant gets EPA inspection and zero otherwise. In columns (1) and (3), we regress inspection on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In Columns (2) and (4), we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1) and (3), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

	log(Inspections)		Inspection Dummy	
	(1)	(2)	(3)	(4)
Democrat Win	0.214***	0.177***	0.029	0.022***
	(0.07)	(0.02)	(0.03)	(0.01)
Method	Local OLS	NP	Local OLS	NP
Polynomial	Linear	Linear	Linear	Linear
Kernel	–	Tri.	–	Tri.
Observations	9,418	132,987	30,773	414,341

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 10

Enforcement

In this table, we study the effect of marginal district wins by Democratic Party candidates on enforcement and penalty by EPA. The dependent variables in panel A are indicator variables that takes the value of one if a plant gets EPA enforcement, informal enforcement, formal enforcement or penalty and zero otherwise. The dependent variables in panel B are enforcement, informal enforcement, formal enforcement or penalty conditional on inspection. In columns (1), (3), (5), and (7) of both panels, we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), (4), (6), and (8) of both panels, we use non-parametric local polynomial RD estimators (Calonico, Cattaneo, and Titiunik, 2014) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico, Cattaneo, and Titiunik (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), (3), (5) and (7), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

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

Panel B: Enforcement per Inspection

	$\frac{\text{Enforcement}}{\text{Inspections}}$		$\frac{\text{Informal Enf.}}{\text{Inspections}}$		$\frac{\text{Formal Enf.}}{\text{Inspections}}$		$\frac{\text{Penalties}}{\text{Inspections}}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat Win	0.050	0.055***	0.058**	0.055***	-0.005	0.009*	-47.603	28.617
	(0.04)	(0.01)	(0.03)	(0.01)	(0.02)	(0.00)	(61.21)	(23.84)
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

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 11

Real Effects: Local Health Outcomes

This table uses OLS regressions to examine the relationship between local health outcomes and political affiliations. The dependent variable is the natural logarithm of discharges and total payments for respiratory diseases in Panel A and pollution-unrelated diseases in Panel B. Democrat Win is an indicator that takes the value of one if a Democratic candidate wins the election of the district in which the plant is located. High Num. Plants is an indicator that takes the value of one if the number of plants in the area is above median. ZIP is the three-digit zip code. MDC is major diagnostic category code that divides all possible principal diagnoses into 25 mutually exclusive diagnosis areas. Standard errors are clustered at district-year level. The sample period is 2011-2016.

Panel A: Respiratory Diseases

	log(Number of Discharges)			log(Total Payments)		
	(1)	(2)	(3)	(4)	(5)	(6)
Democrat Win	0.014	-0.009		0.101***	0.023	
	(0.02)	(0.02)		(0.02)	(0.02)	
High Num. Plants	0.325***	0.308***	0.188***	0.350***	0.322***	0.189***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Democrat Win × High Num. Plants	-0.082***	-0.078***	-0.066**	-0.126***	-0.088***	-0.073**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
ZIP FE	Yes	Yes	No	Yes	Yes	No
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	0.221	0.273	0.207	0.246	0.299
Observations	60,351	60,351	60,336	60,351	60,351	60,336

Panel B: Placebo, Pollution-Unrelated Diseases

	log(Number of Discharges)			log(Total Payments)		
	(1)	(2)	(3)	(4)	(5)	(6)
Democrat Win	0.023	-0.042		0.131***	-0.042	
	(0.02)	(0.03)		(0.03)	(0.03)	
High Num. Plants	0.212***	0.166***	0.112***	0.259***	0.194***	0.124***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)
Democrat Win × High Num. Plants	0.035	0.035	0.004	-0.041	0.012	0.004
	(0.03)	(0.03)	(0.05)	(0.04)	(0.04)	(0.05)
ZIP FE	Yes	Yes	No	Yes	Yes	No
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
MDC FE	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.216	0.235	0.275	0.431	0.455	0.493
Observations	28,276	28,275	28,227	28,276	28,275	28,227

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table 12

RD Split on Representatives' Seniorities

This table runs the same regressions as in Table 2, but splits the sample between close elections by representative's seniorities. The seniority is defined by the median of the number of terms they have served in the House and the data is obtained from Charles Stewart's Congressional Data Page.

Panel A: Junior Representatives

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.337***	-0.351*	-0.229*	-0.385***	-0.395***	-0.349***	-0.348***
	(0.10)	(0.18)	(0.13)	(0.03)	(0.03)	(0.04)	(0.05)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	70,819	70,819	70,787	662,701	662,701	662,701	662,701

Panel B: Senior Representatives

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	0.420*	-0.262	-0.598**	0.161*	0.185**	0.141	0.143
	(0.24)	(0.34)	(0.26)	(0.09)	(0.09)	(0.10)	(0.11)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	16,163	16,163	16,138	570,676	570,676	570,676	570,676

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Appendix: For Online Publication

Table A1

Robustness: OLS Standard Error Clustering

In this table, we conduct additional robustness on the OLS results from Table 2 with additional clustering at facility level or in 1% equally-spaced bins. In Column (1) and (4), we regress the natural logarithm of plant-level emissions on a dummy equal to one if the district where the plant is located was won by a democrat in its most recent election, and equal to zero otherwise. In Columns (2)-(3) and (5)-(6), we augment the specification with a linear interaction term between the dummy and democrat margin votes in a local OLS regression framework. The sample contains district elections with an absolute vote margin of less than 5% during the period 1991-2016.

	Dep. Variable: log(Emissions)					
	(1)	(2)	(3)	(4)	(5)	(6)
Democrat Win	-0.213***	-0.397***	-0.305***	-0.213*	-0.397*	-0.305*
	(0.06)	(0.12)	(0.11)	(0.12)	(0.23)	(0.17)
Method	Local OLS	Local OLS	Local OLS	Local OLS	Local OLS	Local OLS
Polynomial	Zero	Linear	Linear	Zero	Linear	Linear
Chemical FE	No	No	Yes	No	No	Yes
SE Clustering	Facility	Facility	Facility	L-C Bins	L-C Bins	L-C Bins
Observations	94,140	94,140	94,111	94,140	94,140	94,111

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table A2

Firm-Level Tests

This table uses OLS regressions to examine the relationship between firm-level toxic emissions and political affiliations. The dependent variable is the natural logarithm of emissions at firm-chemical-year level. Democrat Win Ratio is the ratio of plants that located in districts where democratic party candidates win the election over the total number of plants within the firm. Democrat Win Dummy is an indicator that takes the value of one if any plant of the firm is located in a district where candidate from democratic party wins the election. The Linear Interaction term is the product between district margin votes and the Democrat Win indicator. Standard errors are clustered at district-year level. The sample period is 1991-2016.

	log(Emissions)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat Win Ratio	0.028	0.026	0.014	0.016				
	(0.04)	(0.03)	(0.03)	(0.03)				
Democrat Win Dummy					0.015	0.023	0.004	0.014
					(0.03)	(0.03)	(0.03)	(0.02)
Firm FE	Yes	No	Yes	No	Yes	No	Yes	No
Chemical FE	Yes	No	No	No	Yes	No	No	No
Year FE	Yes	Yes	No	No	Yes	Yes	No	No
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chemical × Year FE	No	No	Yes	Yes	No	No	Yes	Yes
Firm × Chemical FE	No	Yes	No	Yes	No	Yes	No	Yes
Facility Number FE	No	No	No	No	Yes	Yes	Yes	Yes
Observations	769,168	756,218	767,251	754,210	769,146	756,196	767,229	754,188

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table A3

State and Federal Regulators

In this table, we study the effect of marginal district wins by Democratic Party candidates on inspections and enforcements led by state or federal regulators. The dependent variable in columns (1)-(2) is the natural logarithm of inspections for plants in a year. The dependent variable in columns (3)-(4) is an indicator variable that takes the value of one if a plant gets EPA inspection and zero otherwise. The dependent variable in columns (5)-(6) is an indicator variable that takes the value of one if a plant gets EPA enforcement and zero otherwise. The dependent variable in columns (7)-(8) is the enforcement action conditional on inspections. In columns (1), (3), (5), and (7) of both panel, we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), (4), (6), and (8) of both panel, we use non-parametric local polynomial RD estimators (Calonico et al. (2014)) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico et al. (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), (3), (5) and (7), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

Panel A: State Regulators

	log(Inspections)		Insp. Dummy		Enf. Dummy		$\frac{\text{Enforcement}}{\text{Inspections}}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat Win	0.071*	0.058***	0.030	0.021***	0.084**	0.077***	0.063**	0.058***
	(0.04)	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(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	30,773	414,341	30,773	414,341	9,418	132,987	9,418	132,987

Panel B: Federal Regulators

	log(Inspections)		Insp. Dummy		Enf. Dummy		$\frac{\text{Enforcement}}{\text{Inspections}}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democrat Win	0.008	0.007***	0.011	0.010***	-0.014	-0.007	-0.010	-0.005
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
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	30,773	414,341	30,773	414,341	9,418	132,987	9,418	132,987

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table A4

Cumulative Plant Production

In this table, we study the effect of marginal district wins by Democratic Party candidates on plant production. The dependent variables is the natural logarithm of cumulative production which is the cumulative product of production ratio at plant-chemical level. Production ratio is the ratio of the quantity of output using a specific chemical in any given year relative to the quantity of output in the previous year. In column (1), we regress on a dummy equal to one if the district where the plant is located is marginally won by a democrat together with a linear interaction term between the dummy and democrat margin votes. In columns (2), we use non-parametric local polynomial RD estimators (Calonico et al. (2014)) with linear polynomials and triangular kernels. We report standard errors clustered in 1% equally-spaced bins for local linear OLS regressions and robust bias-corrected standard errors as in Calonico et al. (2014) for non-parametric regressions. The sample contains all district elections during the period 1991-2016. In Columns (1), we restrict the sample to district elections with an absolute vote margin of less than 5% during the same period.

	log(Cumulative Production)	
	(1)	(2)
Democrat Win	0.000	0.010
	(0.02)	(0.01)
Method	Local OLS	NP
Polynomial	Linear	Linear
Kernel	–	Tri.
Chemical FE	46,618	630,875

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table A5

CMS Inpatient Data, Full Sample

This table uses OLS regressions to examine the relationship between local health outcomes and political affiliations. The dependent variable is the natural logarithm of discharges and total payments for all types of procedures. Democrat Win is an indicator that takes the value of one if candidate from democratic party wins the election of the district in which the plant is located. High Num. Plants is an indicator that takes the value of one if the number of plants in the area is above median. ZIP is the three-digit zip code. MDC is major diagnostic category code that dividing all possible pricipal diagnoses into 25 mutually exclusive diagnosis areas. Standard errors are clustered at district-year level. The sample period is 2011-2016.

	log(Number of Discharges)			log(Total Payments)		
	(1)	(2)	(3)	(4)	(5)	(6)
Democrat Win	0.021	-0.011		0.113***	0.011	
	(0.02)	(0.02)		(0.02)	(0.02)	
High Num. Plants	0.215***	0.204***	0.121***	0.240***	0.223***	0.127***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Democrat Win × High Num. Plants	-0.039*	-0.045**	-0.043*	-0.084***	-0.052**	-0.041*
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
ZIP FE	Yes	Yes	No	Yes	Yes	No
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
MDC FE	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.174	0.195	0.226	0.267	0.294	0.323
Observations	369,610	369,610	369,606	369,610	369,610	369,606

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.

Table A6

RD Results: Excluding Power Plants

This table runs the same regressions as in Table 2, but using a sample that excluding power plants in the data. Power plant is defined by NAICS code 22 Utilities industry.

	Dep. Variable: log(Emissions)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democrat Win	-0.203**	-0.271*	-0.160	-0.308***	-0.319***	-0.348***	-0.289***
	(0.09)	(0.16)	(0.11)	(0.03)	(0.04)	(0.03)	(0.04)
Method	Local OLS	Local OLS	Local OLS	NP	NP	NP	NP
Polynomial	Zero	Linear	Linear	Linear	Linear	Quadratic	Quadratic
Kernel	–	–	–	Tri.	Epa.	Tri.	Epa.
Chemical FE	No	No	Yes	–	–	–	–
Observations	87,245	87,245	87,214	1,237,932	1,237,932	1,237,932	1,237,932

Note: Standard errors in parentheses. ***, **, and * respectively denote statistical significance at the 1%, 5%, and 10% levels.