Losing the Shield: How Political Connections Shape Environmental Enforcement*

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September 12, 2025

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Abstract

This paper provides novel evidence on how political connections distort environmental regulatory enforcement in Maharashtra's Sugar Industry, using a unique natural experiment that creates simultaneous bidirectional variation in political access. We exploit a political crisis in Maharashtra, India, which caused some sugar mills to suddenly lose political connections while others gained it. Combining novel data on regulatory punishment, environmental & operational outcomes for sugar mills, we find that mills losing political access experience significantly higher enforcement rates, while mills gaining connections face no change in regulatory pressure. This effect is driven entirely by discretionary enforcement rather than complaint-driven inspections. Using granular emissions monitoring data, we show that this is not driven by changes in environmental performance by mills who lose political connections, while mills gaining connections significantly increase pollution-hiding behavior yet face no regulatory consequences. These findings demonstrate systematic heterogeneity in environmental enforcement in a weak institution setting.

Keywords: Political connections, Environmental Regulation, Weak Institutions, Sugar industry

*We thank Meghan Busse, Dean Karlan, Filippo Mezanotti, Ameet Morjaria, Jacopo Ponticelli, Mar Reguant, & seminar participants at the Kellogg School of Management Strategy Brownbag for their feedback. We especially want to thank Sandip Sukhtankar for multiple insightful meetings with helpful comments. We also thank Dr. Avinash Dhakne & officers at the MPCB for providing the data, the Vasantdada Sugar Institute for providing data on the sugar mill outcomes, Shekhar Gaikwad for numerous insightful discussions and Kapil Upadhye for helping us understand the environmental regulatory setting. Financial support provided by the Weiss Fund is gratefully acknowledged.

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1 Introduction

Evidence from both emerging and advanced economies shows that firms who have political ties enjoy material advantages unrelated to their underlying efficiency. Firms may benefit from political connections in a variety of ways; this includes cheaper or easier access to credit, preferential treatment in government contracts, and regulatory forbearance. Regulatory forbearance operates through inspection targeting, sanction severity, and compliance timelines — politically connected firms are more likely to avoid audits, have violations downgraded, or secure extensions. Environmental regulation is especially susceptible because compliance hinges on regulatory monitoring, complex compliance standards and periodic permits that involve substantial discretion. Because pollution creates large externalities, even brief noncompliance can shift sizable costs onto households & downstream users, so lenient oversight produces outsized social losses. As a result, political access can lower inspection intensity and raise tolerance for noncompliance, with outsized consequences for public health and ecosystems.

In developing countries, the stakes of politically influenced enforcement are especially high. Pollution levels often far exceed international health guidelines, and the resulting damages—higher mortality, lower labor productivity, and degraded natural resources—constrain economic development (Fuller et al. (2022)). Water pollution is a particularly severe and persistent problem: in India, nearly 70% of surface water is unfit for human consumption, and less than one-third of wastewater is treated before discharge (Damania et al. (2019)). Yet most research on political connections examines access to credit, procurement, or taxation, with little attention to environmental regulation. Examining how political access shapes regulatory decisions in pollution-intensive industries can reveal how governance affects both the distribution of compliance costs and the broader social costs of pollution.

We study this market failure in the context of Maharashtra's sugar industry. An important attribute of environmental regulation in developing countries is that it is often weakly enforced, leading to skepticism about whether regulatory actions have real consequences for firms. For our research question to have bite, we first demonstrate that punishment by the

environmental regulator imposes significant costs on sugar mills. We then show our main finding: enforcement patterns of environmental regulations depend on the political connection status of mills. Specifically, mills which lose their political connections face increased scrutiny and enforcement actions. To understand the mechanism, we test whether this reflects regulatory capture versus deteriorating environmental performance after connection loss, hence attracting higher enforcement. Our findings reveal that partisan access distorts enforcement—not environmental behaviour or compliance—spotlighting captured regulation as a hidden cost of political patronage.

The sugar industry in the Indian state of Maharashtra provides an ideal setting to study the role of political connections in environmental enforcement. The state is India's second-largest sugar producer, with over 230 cooperative and private mills that process cane from more than one million farmers. Mills are deeply embedded in politics: mill boards often double as political platforms, and many mill directors hold or have held elected office. In 2023-24, over 68% of the mills were connected to a politician. This close overlap between industrial and political leadership creates clear, observable links between mills and parties, and makes shifts in political power readily translatable into changes in mills' political access. These ties are directly relevant to enforcement. The core regulatory pressure concerns water pollution, since mills generate substantial effluent during the crushing season under stringent discharge standards. The local environmental regulator is responsible for monitoring and enforcing these standards, with powers to issue "directions" for violations, mandate capital upgrades and to require refundable bank guarantees whose forfeiture penalizes noncompliance. These features—numerous comparable firms, large and measurable environmental externalities, detailed regulatory records, and well-documented political affiliations—make the industry a rich environment for examining how partisan access influences both enforcement and environmental performance.

Our identification strategy exploits the 2022 split in the Shiv Sena party, which led to the existing cabinet being replaced by a new one mid-term. Since this split happened in the middle of the election cycle, it provides an exogenous shock to the political connection status of mills, as mills connected to the Nationalist Congress Party (NCP), Indian National Congress (INC), and Shiv Sena (Uddhav Balasaheb Thackeray faction) suddenly lost access to the cabinet, while mills connected to the Bharatiya Janata Party (BJP) gained access. This shock creates 4 buckets of

mills: those who gained access to the cabinet through the 2022 split, those who lost access through the 2022 split, those who stayed connected through the split, and those who were neither connected before or after the split. We compare mills in the first two buckets to identify the impact of losing or gaining cabinet access on outcomes.

We find that mills which lose access to the cabinet face increased regulatory scrutiny and enforcement actions, with an 11.0 percentage point increase in the probability of receiving directions by the local environmental regulator—nearly doubling their baseline enforcement rate. This effect is driven primarily by discretionary visits by the environmental regulator. Mills losing connections experience an 8.4 percentage point increase in visit-triggered directions,but complaint-driven inspections show no significant change for either treatment group. Mills that gained political connections, in contrast, experience no change in regulatory pressure across any enforcement category.

However, the above finding in itself is not sufficient evidence of regulatory capture. Mills losing connections may lose access to other resources, which may lead them to change their pollution behaviour post-shock, attracting higher regulatory scrutiny. We disentangle these two effects by using granular emissions data from mills' Online Continuous Emissions Monitoring System (OCEMS). In our setting, mills may tamper with actual emissions readings, but they can shut down the monitoring system to avoid detection during high pollution times. We find that mills losing connections show no statistically significant increase in OCEMS shutdowns, indicating that their increased regulatory scrutiny is not driven by worse environmental performance. In contrast, mills that gained political connections increase their OCEMS shutdown frequency by 8.4 percentage points and are significantly more likely to migrate from good compliance days to poor compliance days. This suggests that the observed increase in regulatory scrutiny is not due to worse environmental performance of mills losing connections, but rather a consequence of partisan access distorting enforcement while enabling moral hazard among politically protected mills.

An extensive literature documents that political connections provide substantial economic advantages to firms across diverse institutional settings. Following the theoretical framework of Shleifer and Vishny (1994), empirical research has identified multiple channels through which

political ties create value. The seminal work of Fisman (2001) finds that politically connected firms in Indonesia traded at significant premiums relative to unconnected firms. Subsequent work has documented that connected firms enjoy preferential access to credit (Khwaja and Mian (2005)) and government resources (Schoenherr (2019)), face weaker regulatory enforcement (Fisman and Wang (2015)), receive more government contracts and infrastructure investments (Lehne, Shapiro, and Eynde (2018)). Recent global evidence suggests that political connections yield benefits especially in highly regulated environments, which is consistent with the idea of regulatory capture in weak institution settings (Fisman et al. (2024)).

However, important gaps remain in our understanding of how political ties specifically affect environmental outcomes. Existing work has shown that political connections influence environmental outcomes through various channels, including electricity subsidies (Mahadevan (2024)), favorable environmental regulatory treatment (Heitz, Wang, and Wang (2023), Costa, Szerman, and Assunção (2025)) and lax enforcement of regulations Burgess et al. (2012)). However, this literature has been methodologically constrained by identification strategies, since political connections are not randomly assigned, and existing work typically looks at variation in only one direction — either firms gaining or losing political connections — limiting understanding of the symmetric and asymmetric effects of political access.

Our paper contributes to this literature by exploiting a unique natural experiment not used in the literature previously that creates simultaneous bidirectional variation in connection status, allowing us to estimate both the costs of losing and benefits of gaining political access within the same regulatory framework. Specifically, we leverage the unexpected 2022 political crisis in Maharashtra that caused some sugar mills to lose cabinet access while others gained it, creating variation in political access within the same setting. This enables us to test whether the impact of political connections is asymmetric or not i.e., does the impact works via losing a connection, or gaining a connection or both. Additionally, we can distinguish between regulatory capture and endogenous changes in environmental performance by using granular Online Continuous Emissions Monitoring System (OCEMS) data. This approach allows us to provide direct evidence that political connections distort enforcement patterns rather than reflecting underlying environmental

compliance behavior.

Maharashtra's sugar industry provides several methodological advantages that address key limitations in the existing literature on political connections and environmental outcomes. First, as documented in previous research, industry (Benerjee et al. (2001), Sukhtankar (2012)), political connections in Maharashtra's sugar industry are unusually salient and direct—mill chairmen and board members are often themselves politicians or their immediate family members, creating clear, observable links that avoid the measurement challenges common in studies of indirect political influence. Second, the industry's classification as "grossly polluting" subjects mills to intensive regulatory oversight with substantial discretionary enforcement powers, creating ample opportunities for political influence to manifest in ways that have meaningful environmental and social consequences. Third, focusing on a single industry and state eliminates concerns about cross-industry differences or varying regulatory frameworks. The combination of observable political ties, intensive regulation with discretionary enforcement, significant compliance costs, and large environmental externalities makes this an ideal environment for examining how partisan access influences both enforcement patterns and environmental outcomes.

2 Institutional Details

2.1 Sugar Industry in Maharashtra

India is one of the world's largest sugar producers and consumers; as of 2024, it is the second-largest producer globally producing almost 20% of the world's sugar. Maharashtra is India's second-largest sugar producer, with over 230 sugar mills. Production is seasonal: factories typically crush from October through April or May, operating at high utilization during the campaign and idling in the off-season. The industry's structure reflects a long policy history: cooperative mills spread across western Maharashtra from the 1950s under the "sahakar" model, supported by concessional cooperative credit and cane-area reservation. Since the late 2000s, private mills have proliferated, competing with the traditional cooperatives for cane.

Due to India being the world's largest consumer of sugar, and price spikes feeding quickly into food inflation, the industry is heavily regulated. The Fair and Remunerative Price (FRP), quoted at a base sugar recovery rate, sets a statutory floor price for cane each season. On the output side, the regulations continue. Historically, mill sugar sales were controlled via various mechanisms. Although the industry was partially deregulated in 2013, prices continued to be controlled through trade measures and stock limits, and since 2018 through an ex-mill minimum selling price (MSP) and mill-wise monthly release orders that cap domestic sales. Sugar is a homogeneous product traded in an integrated wholesale network. With hundreds of mills, any single mill supplies a negligible share of national output, and the remaining policy controls set floors and ration quantities. Taken together, these features leave individual mills with little pricing power in the output market.

Because output prices are regulated and the product is homogeneous, competition among mills happens primarily on the input market. Cane is the primary input, accounting for over 80% of total costs. Since cane is bulky and has to be crushed within 24hrs after harvest, farmers can only sell to mills within a limited distance. Competition is also limited by the fact that mills cannot enter within a 25-km radius of an existing mill, resulting in only a handful of mills in an area. Although farmers are free to sell to any mill, they have to register before the start of the crushing season with the mill to whom they want to supply cane. Competition primarily happens in the form of cane prices - mills offer a premium over the FRP to attract farmers. They sometimes also compete on non-price terms: timely FRP payments, reliable lifting and transport & harvest scheduling. The result is a local monopsony, where mills in an area fiercely compete for the same cane. Because margins are thin, even small increases in unit costs can wipe out the premium a mill can offer or delay payments, prompting growers to switch supply.

2.2 Political Connection in Maharashtra's Sugar Industry

Sugar has long been intertwined with party politics in Maharashtra. as of 2024, more than 2/3rd of sugar mills have a political connection (Figure 1). Historically the industry has been dominated by cooperative mills, with the first cooperative sugar mill established in 1950. These mills are owned by cane-grower members and governed by a board made of a chairman,

vice-chairman and board of directors elected every five years. Mill chairmen became powerful because each factory coordinates thousands of growers and a web of local contracts, eventually getting recruited into politics for their influence over local constituencies (Baviskar (1968), Baviskar (1981)). Over time, sugar mills became a significant source of political power and patronage, with many politicians using their influence to secure positions in the state cabinet and vice-versa.

While ownership diversified after delicensing and a wave of distress sales of sick cooperative mills led to the emergence of private players, political control of the sugar industry continues. Many cooperatives are still helmed by a politician as the chairman, and many private mills are owned by politician-run companies. Sometimes, a politician will not formally appear as the chairman, but will sit on the board as an advisor. We classify a mill as politically connected when a board member (chair, managing director, director, advisor etc.) has ever contested a state or national election, or when a board seat is held by a family member of such a politician. To capture indirect ties, we also employ LLMs to complete the connections.

This institutional setting provides an ideal laboratory for studying how political connections influence environmental enforcement. Political connections in Maharashtra's sugar industry are unusually salient and direct — mill chairmen and board members are either themselves politicians or their immediate family members, creating clear, observable links that avoid the measurement challenges common in studies of indirect political influence. The sugar industry's classification as grossly polluting subjects mills to intensive regulatory oversight with substantial discretionary enforcement powers, creating ample opportunities for political influence to manifest. The combination of observable political ties, intensive regulation with discretionary enforcement, and significant compliance costs provides an unusually clean setting to identify how political access distorts environmental enforcement patterns.

2.3 Environmental Regulation of Sugar Industry

India's environmental regulatory framework evolved from limited sectoral legislation in the early post-independence period to comprehensive pollution control following the 1972 Stockholm

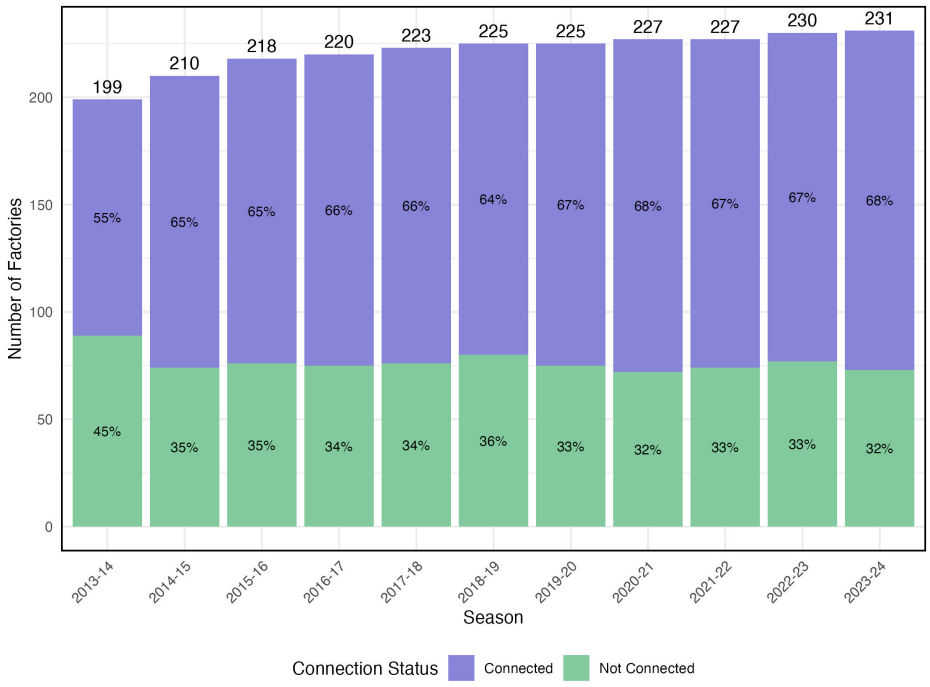


Figure 1: Proportion of mills having political connections

Conference and 1984 Bhopal gas tragedy. Constitutional amendments in 1976 established environmental protection as both a fundamental duty and directive principle, followed by landmark legislation including the Water Act (1974), Air Act (1981), and the Environment Protection Act (1986). The current system operates under a dual structure where the Central Pollution Control Board (CPCB) sets environmental standards, while State Pollution Control Boards (SPCBs) handle direct enforcement, creating significant scope for local variation in enforcement intensity that has important implications for political influence on regulatory outcomes.

The sugar industry's production process is inherently water-intensive and pollution-generating, making it one of the most environmentally challenging manufacturing sectors. Sugar mills generate massive volumes of wastewater because sugarcane contains about 70% moisture on average, and the majority of this water must be discharged as factory wastewater during processing. The multi-stage production process—involving cane crushing, juice extraction, clarification with lime treatment, concentration through multiple-effect evaporators, and crystallization—generates wastewater streams with extremely high organic loads at each stage. The resulting pollution profile includes elevated levels of biological oxygen demand (BOD), chemical oxygen demand (COD), Total

Suspended Solids (TSS) among others, that can severely degrade water bodies if left untreated.

This substantial pollution footprint has led to the sugar industry's classification under the CPCB's *17 Grossly Polluting Industries*, a designation that subjects mills to significantly enhanced regulatory oversight compared to other industries. For the sugar industry, the grossly polluting classification requires installation of advanced pollution control systems (like effluent treatment plants and air pollution control devices), frequent operational consent reviews, stricter effluent discharge standards, mandatory environmental clearances for new projects or expansions, more frequent mandatory inspections. Mills must also renew their operation permits more frequently compared to industries, and require clearance from higher authorities within MPCB rather than local offices, reflecting the heightened scrutiny these facilities receive. Additionally, the industry's strategic location near water sources and rural farming communities amplify environmental concerns and justify the heightened regulatory scrutiny.

To increase monitoring of the grossly polluting industries, the CPCB introduced the Online Continuous Emission Monitoring Systems (OCEMS) policy, which was implemented in 2016. All industries falling in the *17 Grossly Polluting Industries* category were required to install OCEMS, which transmitted real-time emissions data every 15 minutes directly to CPCB and SPCB servers, enhancing transparency and accountability in emissions reporting. If a mills' emissions exceeds the standards, they might be subject to visit by regulators or penalties. This represents a major regulatory innovation, which attempted to eliminate the ability of mills to selectively report only favorable measurements.

Within this framework, the Maharashtra Pollution Control Board (MPCB) serves as the primary regulatory authority for sugar mills in Maharashtra, wielding comprehensive enforcement powers through a multi-tiered system of permits, inspections, and sanctions. All sugar mills must obtain Consent to Establish before construction, and subsequently, Consent to Operate before commencing production, with mandatory annual renewals. The MPCB conducts intensive monitoring during the crushing season with mandatory inspections twice per month, where MPCB officers collect Joint Verification Samples (JVS) for both effluent and air emissions to test for compliance with standards.

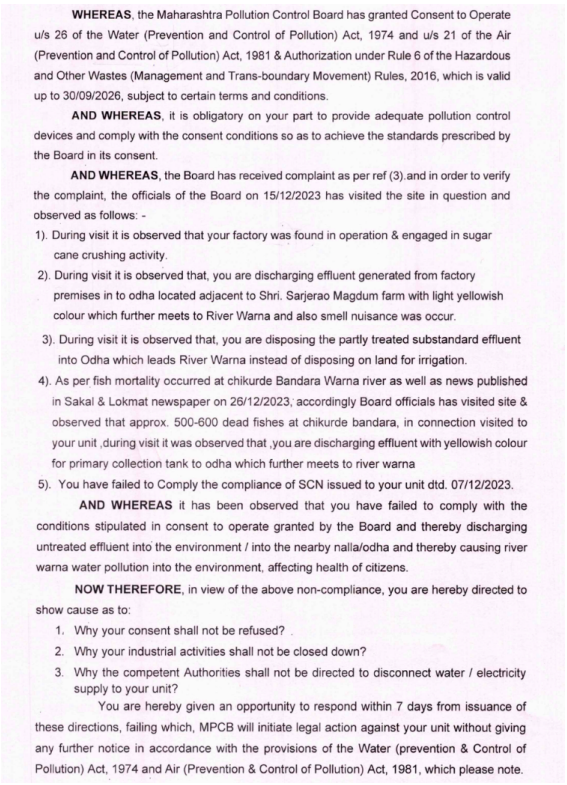
However, MPCB officials exercise considerable discretion in conducting *surprise visits* to check for compliance, determining the frequency and intensity of these unscheduled inspections based on their assessment of mill risk profiles and past compliance history. Similarly, while visits triggered by complaints, news reports mentioning violations, or environmental court cases are mandatory, officials retain significant discretionary authority over the timing, scope, and follow-up actions of these investigations, creating multiple decision points where subjective judgment may influence enforcement outcomes.

When violations are detected through these monitoring mechanisms, the MPCB issues *Proposed Directions*, which are formal regulatory orders that legally compel mills to take specific corrective actions within stipulated timeframes. The directions can be triggered through multiple channels including routine JVS sample failures, surprise visits by MCPB officials, public complaints, media reports, judicial interventions from environmental courts etc. The mills have a deadline to respond to the direction, and depending on the reply of the mill to the Proposed Directions, MPCB usually issues *Interim Directions* next, which mandate immediate compliance actions with specific deadlines and often include costly remedial measures as well as a monetary penalty (often called "Bank Guarantee"), all of which significantly increase either fixed costs, marginal costs or both for mills. Bank Guarantees (BGs) acts as performance security; on non-compliance MPCB can forfeit (encash) the BG and require a top-up. While distinct from statutory fines or Environmental Compensation, BG forfeiture imposes an immediate cost that sharpens incentives to comply. In the rare case of persistent non-compliance, the MPCB will issue *Closure Directions*, which can lead to temporary or permanent shutdowns of sugar mills (Figure 2). The high costs associated with compliance make mills particularly vulnerable to enforcement decisions, and create incentives for regulatory capture.

3 Data

3.1 Data on Political Connections

We hand-construct a data set on political connections of sugar mills by combining information on mill's Board of Directors and politicians. Specifically, we use the *Technical Performance of Sugar*



WHEREAS, the Maharashtra Pollution Control Board has granted Consent to Operate u/s 26 of the Water (Prevention and Control of Pollution) Act, 1974 and u/s 21 of the Air (Prevention and Control of Pollution) Act, 1981 & Authorization under Rule 6 of the Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016, which is valid up to 30/09/2026, subject to certain terms and conditions.

AND WHEREAS, it is obligatory on your part to provide adequate pollution control devices and comply with the consent conditions so as to achieve the standards prescribed by the Board in its consent.

AND WHEREAS, the Board has received complaint as per ref (3).and in order to verify the complaint, the officials of the Board on 15/12/2023 has visited the site in question and observed as follows: -

1). During visit it is observed that your factory was found in operation & engaged in sugar cane crushing activity.

2). During visit it is observed that, you are discharging effluent generated from factory premises in to odha located adjacent to Shri. Sarjerao Magdum farm with light yellowish colour which further meets to River Warna and also smell nuisance was occur.

3). During visit it is observed that, you are disposing the partly treated substandard effluent into Odha which leads River Warna instead of disposing on land for irrigation.

4). As per fish mortality occurred at chikurde Bandara Warna river as well as news published in Sakal & Lokmat newspaper on 26/12/2023, accordingly Board officials has visited site & observed that approx. 500-600 dead fishes at chikurde bandara, in connection visited to your unit ,during visit it was observed that ,you are discharging effluent with yellowish colour for primary collection tank to odha which further meets to river warna

5). You have failed to Comply the compliance of SCN issued to your unit dtd. 07/12/2023.

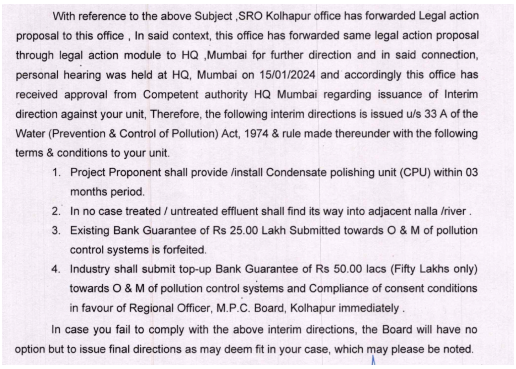
AND WHEREAS it has been observed that you have failed to comply with the conditions stipulated in consent to operate granted by the Board and thereby discharging untreated effluent into the environment / into the nearby nalla/odha and thereby causing river warna water pollution into the environment, affecting health of citizens.

NOW THEREFORE, in view of the above non-compliance, you are hereby directed to show cause as to:

1. Why your consent shall not be refused?
2. Why your industrial activities shall not be closed down?
3. Why the competent Authorities shall not be directed to disconnect water / electricity supply to your unit?

You are hereby given an opportunity to respond within 7 days from issuance of these directions, failing which, MPCB will initiate legal action against your unit without giving any further notice in accordance with the provisions of the Water (prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981, which please note.

(a) Proposed Direction

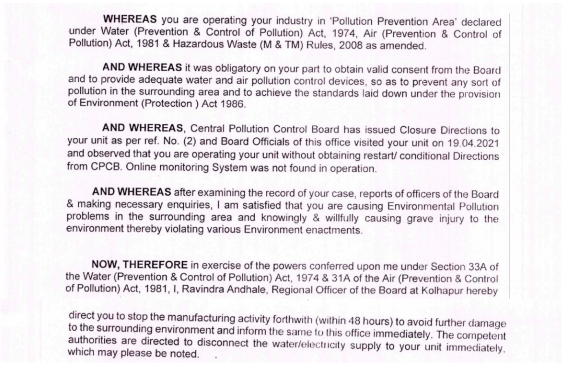


With reference to the above Subject ,SRO Kolhapur office has forwarded Legal action proposal to this office , In said context, this office has forwarded same legal action proposal through legal action module to HQ ,Mumbai for further direction and in said connection, personal hearing was held at HQ, Mumbai on 15/01/2024 and accordingly this office has received approval from Competent authority HQ Mumbai regarding issuance of Interim direction against your unit, Therefore, the following interim directions is issued u/s 33 A of the Water (Prevention & Control of Pollution) Act, 1974 & rule made thereunder with the following terms & conditions to your unit.

1. Project Proponent shall provide /install Condensate polishing unit (CPU) within 03 months period.
2. In no case treated / untreated effluent shall find its way into adjacent nalla /river .
3. Existing Bank Guarantee of Rs 25.00 Lakh Submitted towards O & M of pollution control systems is forfeited.
4. Industry shall submit top-up Bank Guarantee of Rs 50.00 lacs (Fifty Lakhs only) towards O & M of pollution control systems and Compliance of consent conditions in favour of Regional Officer, M.P.C. Board, Kolhapur immediately .

In case you fail to comply with the above interim directions, the Board will have no option but to issue final directions as may deem fit in your case, which may please be noted.

(b) Interim Direction



WHEREAS you are operating your industry in 'Pollution Prevention Area' declared under Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981 & Hazardous Waste (M & TM) Rules, 2008 as amended.

AND WHEREAS it was obligatory on your part to obtain valid consent from the Board and to provide adequate water and air pollution control devices, so as to prevent any sort of pollution in the surrounding area and to achieve the standards laid down under the provision of Environment (Protection) Act 1986.

AND WHEREAS, Central Pollution Control Board has issued Closure Directions to your unit as per ref. No. (2) and Board Officials of this office visited your unit on 19.04.2021 and observed that you are operating your unit without obtaining restart/ conditional Directions from CPCB. Online monitoring System was not found in operation.

AND WHEREAS after examining the record of your case, reports of officers of the Board & making necessary enquiries, I am satisfied that you are causing Environmental Pollution problems in the surrounding area and knowingly & willfully causing grave injury to the environment thereby violating various Environment enactments.

NOW, THEREFORE in exercise of the powers conferred upon me under Section 33A of the Water (Prevention & Control of Pollution) Act, 1974 & 31A of the Air (Prevention & Control of Pollution) Act, 1981, I, Ravindra Andhale, Regional Officer of the Board at Kolhapur hereby

direct you to stop the manufacturing activity forthwith (within 48 hours) to avoid further damage to the surrounding environment and inform the same to this office immediately. The competent authorities are directed to disconnect the water/electricity supply to your unit immediately, which may please be noted.

(c) Closure Direction

Figure 2: Examples of MPCB directions

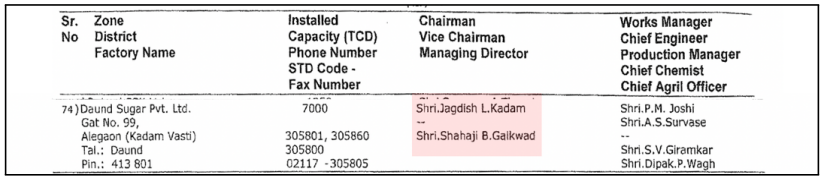
Mills in Maharashtra books published annually by the Vasantdata Sugar Institute, which report information on the ownership and management structures of sugar mills. We combine this with information of politicians, using a tiered approach. First, we consider all candidates who ran for either State or National elections, and match them to the mill board of directors using first and last name. However, direct name matching often fails to capture indirect political connections, such as when mills are managed by politicians' family members, close associates, or when control is exercised through informal channels. To address this limitation, we employ large language model (LLM)-based approaches to identify these more nuanced political relationships. The LLM analysis searches through news articles, mill websites (when available), government records, and public documents to identify family relationships, business partnerships, and other forms of political affiliation that link mill management to political figures. This methodology allows us to capture a broader spectrum of political connections beyond formal board positions, including cases where politicians exercise influence through relatives or trusted associates who hold official positions in mill management.

Example: Politically Connected Mill

We provide an example demonstrate the kind of connections the LLM catches, but would be missed by the direct approach of matching board of directors with politicians. The Indian Express, which is one of the leading newspapers in India, reports on 16th November 2024 about the connections between the management of Daund Sugar Pvt. Ltd. and political figure Ajit Pawar ([1]). However, since Pawar doesn't sit on the board officially, we would miss this connection if we only looked at the board of directors (Figure 3). The article mentions that Ajit Pawar's family members are part of the mill's management, highlighting a significant indirect connection. This example illustrates how our LLM-based approach captures these nuanced relationships that traditional methods might overlook.

Even bigger are the six mills — Daund (Pune), Jarandeshwar (Satara), Karjat (Ahmednagar), Omerga and Bhum (Dharashiv), and Samsherpur (Nandurbar) — linked to senior Pawar's estranged nephew, Ajit Pawar, who controls the Nationalist Congress Party (NCP) founded by his uncle. These mills have a total capacity of 58,000 tcd and crushed 66.96 lt in the last season, making him arguably the biggest of the sugar barons.

(a) The Indian Express (16 November 2024)



Sr. No	Zone District Factory Name	Installed Capacity (TCD) Phone Number STD Code - Fax Number	Chairman Vice Chairman Managing Director	Works Manager Chief Engineer Production Manager Chief Chemist Chief Agril Officer
74)	Daund Sugar Pvt. Ltd. Gat No. 99, Alegaon (Kadam Vasti) Tal.: Daund Pin.: 413 801	7000 305801, 305860 305800 02117 -305805	Shri.Jagdish L.Kadam -- Shri.Shahaji B.Gaikwad	Shri.P.M. Joshi Shri.A.S.Survase -- Shri.S.V.Giramkar Shri.Dipak.P.Wagh

(b) Board of Directors for Daund Sugar Pvt. Ltd.

Figure 3: Example of Indirect Connections

3.2 Data on Environmental Directions & Performance

We collect novel data on environmental regulatory actions by the MPCB against sugar mills between 2021-2024 (Figure 4). This is the universe of MPCB directions issued to sugar mills, i.e., Proposed Directions, Interim Directions and Closure Directions, in this time period. We specifically focus on Proposed Directions, which is the first notice a mill gets in the enforcement process. From these direction documents, we extract rich information including mill name, date of the direction

1. The article is linked here: https://indianexpress.com/article/long-reads/sugar-mills-maharashtra-9672320/

issued, the specific violations cited, the triggering mechanism for each direction (routine inspections, complaint-driven visits, surprise inspections, media reports, court interventions etc.). This granular data allows us to distinguish between different types of enforcement actions and identify the discretionary elements of regulatory decision-making that may be influenced by political connections.

We also collect granular data at the 15-minute level on mill-level emissions, which are available from the mills' Online Continuous Emissions Monitoring Systems (OCEMS) . We use the OCEMS data for the universe of sugar mills from 2016 onwards. We do not use the emission numbers directly as our outcome variable due to concerns about data manipulation and tampering with the OCEMS system. Mills may manipulate OCEMS data through various means, including tampering with instrument parameters and sensors (dipping sensors in freshwater), mixing clean water with treated wastewater before its fed into the OCEMS, or strategically turning off the OCEMS when a pollutant's concentration is expected to exceed the limit.

Instead, we use the frequency of missing data—indicated by NA values in the OCEMS dataset as our primary measure of environmental compliance behavior. This approach is well-supported by academic research documenting systematic patterns of strategic OCEMS shutdowns across multiple countries. Studies have found that facilities coordinate maintenance schedules, calibration failures, and system outages to coincide with periods when emissions would be highest, including startup operations and adverse meteorological conditions (Wang et al. (2022)). Research analyzing CEMS data quality has revealed that approximately one-third of firms fail to meet official data completeness guidelines, with missing data events often strategically timed rather than randomly distributed Karplus, Zhang, and Almond (2018). This body of evidence supports our approach of using OCEMS data gaps as a more reliable indicator of strategic non-compliance than potentially manipulated emissions readings themselves.

3.3 Miscellaneous Data

We supplement our main analysis with data on the mills' operational characteristics, including their production capacity & output, capacity utilization, operational status, cane crushed etc.

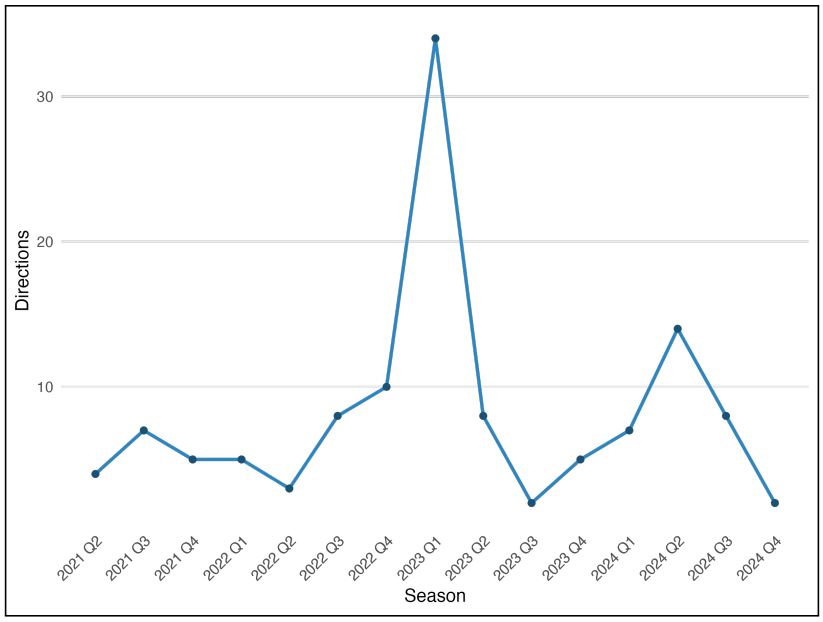


Figure 4: Time-Series of MPCB Proposed Directions against sugar mills in Maharashtra

We also collect new data on government-backed credit extended to cooperative mills; this helps us understand whether political connections influence access to credit, which may in turn affect environmental performance. This additional data allows us to control for potential confounding factors and better isolate the impact of political connections on environmental performance.

4 Empirical Strategy

A key challenge in identifying the causal effect of political connections on environmental enforcement lies in the endogenous nature of these relationships. Political connections are not randomly assigned, as mills strategically cultivate relationships with politicians to secure regulatory advantages, while politicians selectively associate with mills that can provide electoral support and resources. This creates a fundamental selection problem where politically connected mills may systematically differ from unconnected mills in unobservable ways that independently affect environmental outcomes. For instance, larger and more profitable mills may be better positioned to develop political connections while simultaneously having greater resources to invest in pollution control or, conversely, greater influence to avoid compliance costs.

To overcome this identification challenge, we exploit an unexpected political crisis in Maharashtra that created exogenous variation in mills' political connection status. Our identification strategy leverages the sudden collapse and reconstitution of the state government in June 2022, which abruptly altered the political access of mills without any direct relationship to their environmental performance or characteristics. This approach allows us to isolate the causal impact of political connections on environmental enforcement by comparing mills that experienced sudden changes in political access to those whose connection status remained unchanged.

4.1 The 2022 Maharashtra Political Crisis

Our identification strategy leverages an unforeseen political realignment in Maharashtra, that provides a unique empirical experiment to study political connections. Our identification strategy leverages the sudden collapse and reconstitution of the state government in June 2022, which abruptly altered the political access of mills without any direct relationship to their environmental performance or characteristics.

Background of the Political Shock

Following the November 2019 Maharashtra Assembly Elections, the Maha Vikas Aghadi (MVA) coalition government was formed, consisting of Shiv Sena (under Uddhav Thackeray), the Nationalist Congress Party (NCP), and the Indian National Congress (INC). This government was expected to serve its full five-year term until 2024. However, the crisis began midway through the electoral cycle in June 2022 when a faction of the Shiv Sena party, led by Eknath Shinde, rebelled against the sitting MVA government. Shinde, who held a prominent position in the state cabinet as a senior Shiv Sena leader and cabinet minister, led a faction that broke away from the party citing grievances over resource allocation, being denied key positions including the deputy chief minister role, and frustrations over the party's alliance with traditional rivals. This rebellion led to the immediate collapse of the MVA government, with the Shinde faction aligning with the Bharatiya Janata Party (BJP) to form a new government mid-term (Mahayuti Alliance), completely bypassing the normal electoral process. Crucially, this political realignment occurred two and a half years

into the government's term and was widely viewed as unanticipated by political observers and market participants. The split was driven by internal party dynamics, rent allocation disputes, and personal ambitions rather than any policy disagreements related to environmental regulation or industrial policy. The mid-cycle timing and nature of the crisis provides the exogenous variation necessary for causal identification.[2]

This political shock represents an empirical opportunity that provides a significant methodological advance over the existing literature on political connections and regulatory capture. Unlike existing studies that typically examine either the acquisition or loss of political connections in isolation, the June 2022 crisis created a simultaneous reallocation of political capital across sugar mills, generating four distinct treatment groups within the same institutional and temporal setting: mills that lost political connections, mills that gained connections, mills who remain connected throughout and mills who remain unconnected throughout. This combination presents us a rare opportunity to study the reallocation of political connections in a market, whereas most existing studies are forced to rely on binary comparisons between connected and unconnected.

Treatment Definition and Sample Restrictions

We define treatment status based on mills' political connections and the specific political parties that gained or lost power during the 2022 crisis. *Lost Connection* mills are those that were politically connected before June 2022 but lost their cabinet access when their affiliated politicians fell out of power. This group includes mills connected to the Indian National Congress (INC), the Nationalist Congress Party (NCP), and the Shiv Sena (Uddhav Thackeray faction). *Gained Connection* mills are those that were connected to parties that gained power in the new government. This group are mills connected to the Bharatiya Janata Party (BJP) and some smaller regional parties that supported the Shinde-led coalition. Our control group includes 2 sets of mills - those who are

2. There was another political crisis the following year, in July 2023, where the Nationalist Congress Party (NCP) split into two. Ajit Pawar, a senior leader in the NCP, broke away from the NCP along with eight MLAs, creating NCP (Ajit Pawar faction) and NCP (Sharad Pawar faction). NCP (Ajit Pawar faction) immediately joined the ruling BJP-Shiv Sena (Shinde) coalition, and Ajit Pawar was soon appointed as the deputy chief minister of Maharashtra. Since this creates an issue for us, as to how to tag NCP (Ajit Pawar faction) mills post-2023, we only use observations pre-NCP split for these mills.

Always Connected and mills who are *Never Connected*. Mills connected to the Shiv Sena (Shinde) faction make up the *Always Connected* group, since they sat in the cabinet pre and post-crisis. Mills who are *Never Connected* are either mills who are connected to political parties which didn't sit in the cabinet pre or post-crisis, or mills who were never connected to any politician.

To ensure clean causal identification, we exclude mills that switch their political connection status during our observation period from our main analysis sample. Mills that change their political affiliations in response to the government crisis would violate our identifying assumption that treatment assignment is exogenous to unobservables. For instance, if mills connected to losing parties rapidly established new connections with winning parties, or if previously unconnected mills strategically cultivated relationships with the new ruling coalition, such endogenous switching would confound the coefficient of political connection. This restriction ensures that our treatment groups remain stable and that observed differences in regulatory outcomes can be attributed to the exogenous political shock rather than strategic repositioning by mills themselves.

Additionally, we restrict our analysis to a single electoral cycle (2019-2024) to avoid contamination from endogenous political realignments that occur through normal electoral processes. Extending our sample across multiple election cycles would confound our estimates because political connections naturally evolve during elections as parties gain or lose power, which could be correlated with their policy positions on environmental regulation. By focusing on the mid-cycle political crisis within a single electoral term, we ensure that observed differences in regulatory outcomes can be attributed to the exogenous political shock rather than strategic repositioning by mills or systematic policy changes associated with normal democratic transitions.

Main Empirical Specification

Our primary empirical strategy employs a difference-in-differences framework that compares environmental outcomes for mills that experienced changes in political connection status to those that remained unconnected. The main specification is:

$$y_{it} = \alpha + \beta_1 \, LostConnection_i \times \text{Post}_t + \beta_2 \, GainedConnection_i \times Post_t + \gamma_i + \delta_t + \varepsilon_{it}. \quad (1)$$

where y_{it} represents mill outcomes for mill i in season t [3], including MPCB directions received, compliance with OCEMS monitoring requirements, and other measures of environmental & mill performance. $LostConnection_i$ is an indicator variable equal to one for mills that lost political connections in the 2022 crisis, while $GainedConnection_i$ identifies mills that gained political access. $Post_t$ is an indicator for the period after June 2022 when the new government took power. We include mill fixed effects γ_i to control for time-invariant characteristics that may be correlated with both political connection status and environmental outcomes. Season fixed effects (δ_t) account for common shocks that affect all mills simultaneously. We cluster standard errors at the mill level to account for serial correlation in outcomes within mills over time. The error term is denoted by ε_{it}.The coefficients of interest are β_1 and β_2, which capture the differential change in mill outcomes among mills that lost or gained political connections, respectively, relative to mills that don't change their connection status throughout the sample period.

5 Results

Table 1 presents summary statistics by treatment group for the sample (season 2021-22 to 2023-24). The sample consists of 193 sugar mills: 63 mills (32.6%) that lost political connections, 44 mills (22.8%) that gained connections, and 86 mills (44.6%) serving as controls (consisting of Always connected & Never connected mills). The data reveal systematic differences between politically connected and unconnected mills, with both Lost Connection and Gained Connection mills being significantly larger and more efficient than controls. Lost Connection mills average 4,435 tonnes of cane per day (TCD) in installed capacity compared to 3,550 TCD for controls, produce nearly 50% more sugar annually (766,754 vs 515,137 metric tonnes), and achieve higher capacity utilization (93.3% vs 78.3%). These patterns are consistent with theoretical expectations that larger, more

3. The sugar industry is seasonal; crushing season for the sugar industry typically runs from October/November to March/April. E.g., for the season beginning in Nov'2023 and ending in Mar'2024, will be tagged as 2023-24.

Table 1: Summary Statistics by Political Connection Status

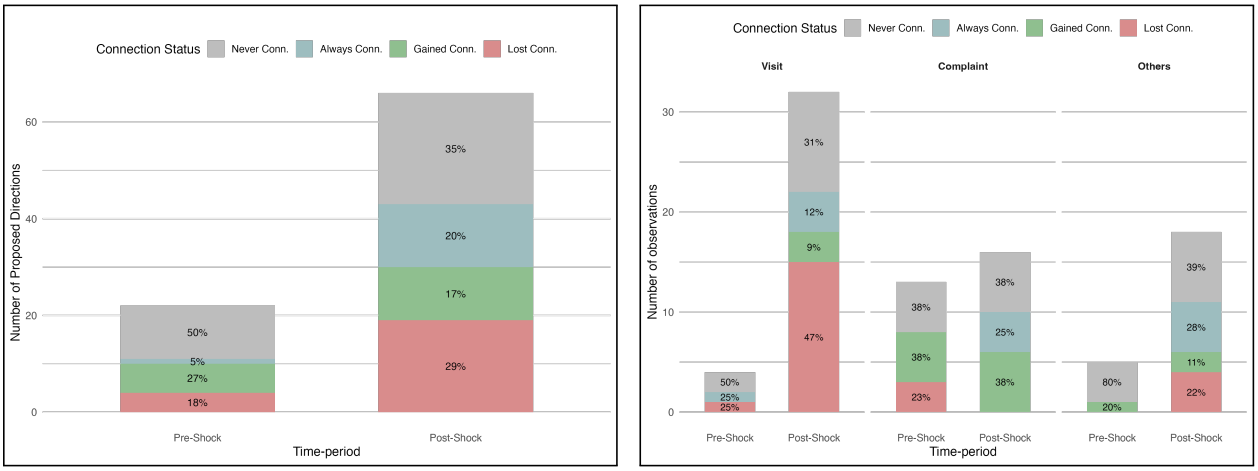
	Never conn.	Lost Conn.	Gained Conn.	Always conn.	Total
Treatment Variables					
Number of mills	67	63	44	22	196
Mills in group (%)	0.342	0.321	0.224	0.112	1.000
	(0.034)	(0.033)	(0.030)	(0.023)	
Cooperative (1/0)	0.344	0.669***	0.523***	0.852***	0.541
	(0.034)	(0.036)	(0.044)	(0.046)	(0.021)
Regulatory Variables					
Any MPCB Direction	0.144	0.110	0.106	0.131	0.123
	(0.025)	(0.024)	(0.027)	(0.044)	(0.014)
Visit-Triggered Directions	0.062	0.081	0.023	0.049	0.057
	(0.017)	(0.021)	(0.013)	(0.028)	(0.010)
Complaint-triggered Directions	0.041	0.006*	0.068	0.049	0.037
	(0.014)	(0.006)	(0.022)	(0.028)	(0.008)
News/NGT-triggered Directions	0.036	0.023	0.015	0.066	0.030
	(0.013)	(0.012)	(0.011)	(0.032)	(0.007)
Operational Variables					
Installed Capacity	3695	4435***	4359**	3086**	4012
	(159)	(189)	(235)	(219)	(102)
Production (Net)	513973	766754***	555331	518858	601894
	(34123)	(37662)	(42889)	(48464)	(20617)
Capacity Utilization (%)	72.613	93.290***	72.739	96.573***	81.603
	(2.948)	(1.982)	(3.129)	(4.817)	(1.560)
Not in Operation	0.169	0.017***	0.114	0.033**	0.095
	(0.027)	(0.010)	(0.028)	(0.023)	(0.012)

*Notes: This table presents summary statistics by political connection status. Standard errors are reported in parentheses below the means. Statistical significance is indicated by *, **, and *** for the 10%, 5%, and 1% levels, respectively, based on comparisons with the control group.*

successful mills are better positioned to develop political connections.

Critically for our identification strategy, regulatory outcomes in the pre-treatment period show no systematic differences that would violate parallel trends assumptions. Any MPCB Direction rates are similar across groups (11.0% for Lost Connection, 10.6% for Gained Connection, and 14.1% for controls), providing confidence that treatment groups faced comparable regulatory environments before the shock. Interestingly, Lost Connection mills exhibit significantly better environmental monitoring compliance pre-treatment (39.9% missing OCEMS data vs 46.2% for controls), while Gained Connection mills show the worst compliance (57.8% missing). This pattern strengthens our interpretation that post-treatment regulatory responses reflect political influence rather than underlying environmental performance, since any increase in scrutiny of Lost Connection mills cannot be attributed to worse baseline compliance behavior.

Figure 5 presents the distribution of MPCB directions by treatment group and direction type across the pre-shock (2021-June 2022) and post-shock (July 2022-2024) periods. In Figure 5a, we see clearly that mills which lost connection has the biggest jump in the number of directions issued to them post-shock, while mills which gained connection saw a decline. The control groups (always connected and never connected) saw little change. Most importantly, the composition of enforcement actions shifts markedly across treatment groups and direction types as seen in Figure 5b. *Visit-triggered directions*—which represent the most discretionary form of enforcement where regulators have substantial latitude in targeting—show the clearest evidence of political influence. In the pre-shock period, visit-triggered directions were rare across all groups. However, post-shock, the number of such inspections explode, and mills that lost political connections bear a disproportionate share of this increase. In contrast, *complaint-triggered directions* which are less discretionary since they respond to external complaints show a more stable distribution across treatment groups. This suggests that the differential treatment of Lost Connection mills is not driven by worse environmental performance that would trigger more public complaints, but rather by regulatory discretion in inspection targeting. The *Others* category (primarily news/CPCB visits/NGT-driven directions) shows that mills which lost connection experience some increase in visibility-driven enforcement, consistent with the theoretical prediction that losing political protection can expose mills to broader scrutiny beyond just regulatory visits.



(a) MPCB Directions by period, stacked by Connection Status

(b) MPCB Directions by period & Type, stacked by Connection Status

Figure 5: Enforcement intensity across political connection groups

5.1 Impact of Political Connections on Regulatory Outcomes

Table 2: Effects of Gaining/Losing Political Connection on Regulatory Actions

Panel A: All Directions

	(1)	(2)	(3)	(4)
Lost × Post	0.115**	0.108*	0.109*	0.110*
	(0.056)	(0.056)	(0.058)	(0.058)
Gain × Post	-0.0126	-0.0126	-0.0126	-0.0127
	0.068	0.068	0.07	0.069
Controls				
Year FE	No	Yes	Yes	Yes
District FE	No	No	Yes	No
Factory FE	No	No	No	Yes
Observations	557	557	557	557
R^2	0.019	0.032	0.071	0.390

Panel B: Visit

	(1)	(2)	(3)	(4)
Lost × Post	0.094**	0.091**	0.091**	0.084**
	(0.042)	(0.042)	(0.043)	(0.041)
Gain × Post	0.001	0.001	0.001	0.001
	0.032	0.032	0.033	0.032
Controls				
Year FE	No	Yes	Yes	Yes
District FE	No	No	Yes	No
Factory FE	No	No	No	Yes
Observations	557	557	557	557
R^2	0.034	0.038	0.080	0.371

Panel C: Complaint

	(1)	(2)	(3)	(4)
Lost × Post	−0.010	−0.011	−0.010	−0.013
	(0.032)	(0.033)	(0.034)	(0.034)
Gain × Post	0.006	0.006	0.006	0.005
	0.056	0.056	0.058	0.056
Controls				
Year FE	No	Yes	Yes	Yes
District FE	No	No	Yes	No
Factory FE	No	No	No	Yes
Observations	560	560	560	560
R^2	0.016	0.017	0.039	0.309

Panel D: Other

	(1)	(2)	(3)	(4)
Lost × Post	0.060*	0.057*	0.057*	0.062*
	(0.031)	(0.031)	(0.032)	(0.033)
Gain × Post	0.047	0.047	0.046	0.046
	0.03	0.03	0.03	0.03
Controls				
Year FE	No	Yes	Yes	Yes
District FE	No	No	Yes	No
Factory FE	No	No	No	Yes
Observations	560	560	560	560
R^2	0.011	0.020	0.054	0.428

Notes: SEs clustered at the mill level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 2 presents our main results examining the causal impact of political connections on environmental regulatory enforcement. Panel A shows the effect on overall MPCB directions, revealing a striking asymmetric pattern in how political access influences regulatory scrutiny. Mills that lost political connections following the June 2022 crisis experienced a statistically significant 11.0 percentage point increase in the probability of receiving regulatory directions ($p<0.10$ in our preferred specification with factory fixed effects). Given that the baseline probability of receiving a direction is approximately 12.3% in our sample, this represents nearly a doubling of enforcement intensity for mills losing political protection. In sharp contrast, mills that gained political

connections show no statistically significant change in regulatory pressure, with the coefficient of -1.27 percentage points being both economically small and statistically indistinguishable from zero across all specifications. This asymmetric pattern suggests that political connections primarily serve as a protective shield against regulatory scrutiny rather than actively facilitating violations, and that losing this protection exposes mills to significantly heightened enforcement attention.

We next look at the impact on different direction types in Panels B-D, which reveals the specific mechanisms through which political influence operates in environmental enforcement. Visit-triggered directions (Panel B)—representing the most discretionary form of enforcement where regulators have substantial latitude in targeting decisions—show the clearest evidence of political capture. Mills losing connections face an 8.4 percentage point increase in visit-triggered directions ($p<0.05$), while mills gaining connections experience essentially no change (coefficient of 0.001). This pattern is particularly important because visit-based enforcement represents purely discretionary regulatory decisions that are most susceptible to political influence, unlike complaint-driven inspections that respond to external pressure.

Complaint-triggered directions (Panel C) show markedly different patterns, with neither treatment group experiencing statistically significant changes in complaint-driven enforcement. The coefficients for both Lost Connection and Gained Connection mills are small and statistically insignificant, suggesting that public complaints about environmental violations—which reflect actual environmental performance observable to local communities—do not systematically differ across treatment groups. This finding is crucial for our interpretation because it indicates that the increased scrutiny of mills losing political connections is not driven by deteriorating environmental performance that would naturally trigger more public complaints, but rather by changes in regulatory behavior independent of underlying compliance.

The "Other" category (Panel D), consisting primarily of directions triggered by news reports and environmental court (National Green Tribunal) interventions, provides additional evidence of how political connections influence regulatory outcomes through visibility channels. Mills losing connections face a 6.2 percentage point increase in news/NGT-triggered directions ($p<0.10$),

consistent with the theoretical prediction that losing political protection can expose mills to broader public scrutiny beyond just regulatory inspections. Interestingly, mills gaining connections also show a positive but statistically insignificant increase in this category, suggesting that heightened political visibility—whether positive or negative—may attract some degree of attention from media and environmental courts.

5.2 Distinguishing Environmental Performance from Capture

We now want to understand whether the increased punishment on mills which lost a connection reflects deteriorating environmental performance or simply the removal of political capture. It is possible that because of mills losing connection, they may also lose access to favourable government credit and other resources, and as a result pollute more. If mills losing connections were actually polluting more, the increased enforcement would represent appropriate regulatory response rather than political capture. To distinguish between these competing explanations, we examine mills' strategic behavior using their Online Continuous Emissions Monitoring Systems (OCEMS) data, focusing on the frequency of monitoring system shutdowns rather than reported emissions levels themselves. We collapse the 15-min data to the daily level, constructing our main outcome variable as the percentage of time out of the 96 time-blocks in a day that the monitoring system was non-operational. This allows us to capture any strategic behavior by the mills in response to changes in their political connections.

Table 3: Effect of Political Connection Changes on Compliance

	Dependent variable: OCEMS shutdown %			
	(1)	(2)	(3)	(4)
Lost Connection × Post	0.075*	0.076*	0.068	0.061
	(0.043)	(0.043)	(0.044)	(0.042)
Gained Connection × Post	0.090*	0.092*	0.076	0.084*
	(0.050)	(0.050)	(0.051)	(0.048)
Controls				
Year FE	No	Yes	Yes	Yes
District FE	No	No	Yes	No
Factory FE	No	No	No	Yes
Observations	118,045	118,045	118,045	118,045
R^2	0.024	0.035	0.067	0.313

Notes: SEs clustered at the mill level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

OCEMS shutdown patterns provide a more reliable indicator of strategic environmental behavior than actual emissions readings, because mills may manipulate reported pollution levels through various means—including sensor tampering, diluting waste streams, or feeding clean water through monitoring points. However, it is hard to hide the fact that monitoring systems are offline. In our context, mills that are struggling with environmental compliance would be expected to increase their strategic shutdown behavior to avoid detection of violations. Table 3 presents results examining changes in OCEMS shutdown behavior following the political shock. The findings provide compelling evidence against the environmental performance explanation for our main results. Both treatment groups show positive coefficients for OCEMS shutdown frequency, with Lost Connection mills increasing shutdowns by 6.1 percentage points, although this increase is not significant, and Gained Connection mills by 8.4 percentage points (significant at p<0.10). In the most conservative interpretation, both groups may be engaging in somewhat more pollution hiding behavior post-shock. However, this pattern actually strengthens our regulatory capture interpretation: even if mills losing political connections are hiding pollution at similar or lower rates than those gaining connections, only the politically unprotected mills face increased regulatory scrutiny.

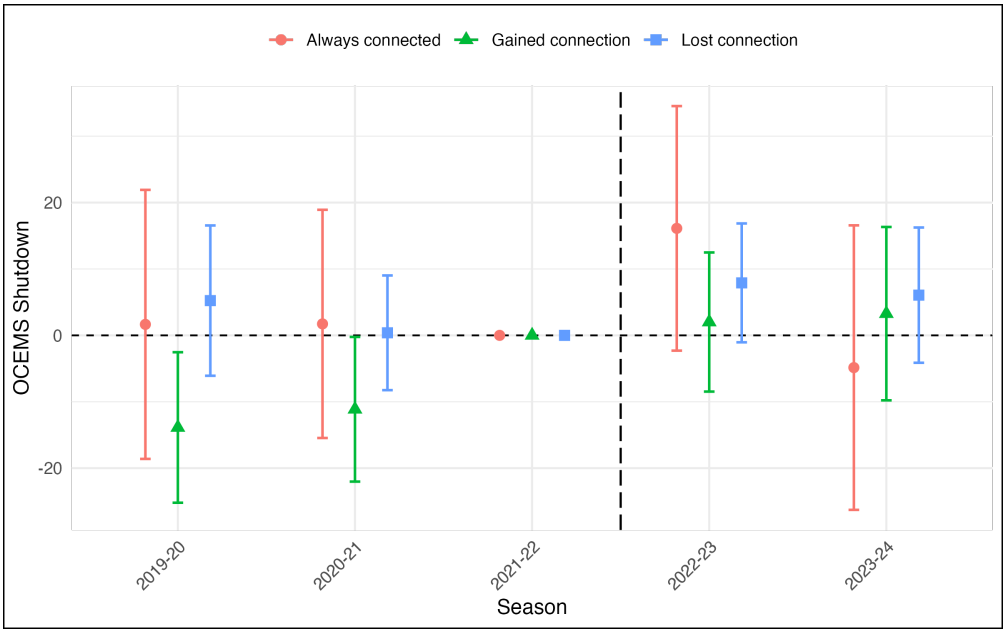


Figure 6: OCEMS Shutdown Behavior by Political Connection Status

Figure 6 provides further evidence of this by tracing the trajectory of behavioral changes around the policy shock. The event study plot shows that mills gaining political connections exhibited better-than-average environmental monitoring compliance in the pre-treatment period. However, following the political shock, these same mills deteriorate toward the compliance levels of never-connected mills, with their OCEMS shutdown rates rising to approximately zero. This superior pre-treatment performance likely reflects the reality that mills outside the ruling coalition cannot afford to engage in non-compliance, knowing they lack political protection from regulatory consequences. However, following the political shock that brings them into the cabinet, the compliance rate of these same mills deteriorates. In contrast, mills losing political connections maintain stable compliance behavior throughout the entire period, consistent with the aggregate finding that higher directions aren't driven by worse environmental compliance. This temporal pattern is consistent with moral hazard behavior: mills that gain political protection appear to relax their previously superior environmental monitoring practices, converging toward the baseline compliance behavior of never-connected mills, confident that their new political connections will shield them from regulatory consequences for this deterioration.

We next want to understand what happens to the distribution of compliance. Specifically, we want to see if mills which gain a connection become worse across the board, or they have less "good compliance" days, or more "bad compliance" days. We do this by tagging a mill-day observation according to the percentage of missing data in that day. E.g., *Daily Miss.≤ 10%* takes value 1 for a mill-day observation if it had at most 10% missing data. Table 4 shows the results for different such thresholds, for our preferred specification with mill-season fixed effects. The results suggest that bad behaviour from both sides of the distribution increases: mills gaining political connections are significantly less likely to achieve good monitoring compliance (7.9 percentage points decrease in days with ≤25% missing data) and significantly more likely to have poor compliance days (9.5 percentage points increase in days with ≥75% missing data).

Table 4: Do mills gaining connections become worse across the distribution?

	Daily missing share (OCEMS)			
	≤ 10%	≤ 25%	≥ 75%	≥ 90%
	(1)	(2)	(3)	(4)
Lost Connection × Post	−0.065	−0.065	0.056	−0.055
	(0.040)	(0.042)	(0.045)	(0.046)
Gained Connection × Post	−0.066	−0.079*	0.095*	−0.087
	(0.042)	(0.047)	(0.052)	(0.053)
Controls				
Season & Factory FE	Yes	Yes	Yes	Yes
Observations	118,045	118,045	118,045	118,045
R^2	0.245	0.263	0.306	0.314

Notes: SEs clustered at the mill level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

6 Conclusion

This paper provides novel evidence on how political connections distort environmental regulatory enforcement in settings with weak institutions. Exploiting the unexpected 2022 political crisis in Maharashtra as a natural experiment, we find that mills losing cabinet access experience nearly

double their baseline enforcement rate while mills gaining political protection face no change in regulatory scrutiny. This asymmetric pattern is driven entirely by discretionary enforcement actions rather than complaint-driven inspections. Critically, our analysis using granular emissions data reveals that these enforcement patterns reflect regulatory capture rather than genuine environmental performance differences—mills that gained political connections are significantly more likely to engage in strategic monitoring shutdowns yet face no regulatory consequences, while mills losing protection show no deterioration in compliance behavior despite increased scrutiny.

Our findings have important implications for environmental policy in developing countries, where weak institutions and extensive political influence over regulatory agencies are widespread. The results suggest that standard approaches to environmental regulation—relying on discretionary enforcement by agencies subject to political pressure—may be systematically undermined by political capture with substantial social costs. Even well-designed technological solutions like Online Continuous Emissions Monitoring Systems—implemented precisely to reduce information asymmetries and improve regulatory oversight—can be undermined when enforcement remains subject to political capture, as firms can strategically circumvent monitoring requirements without facing consequences. This highlights the weakness of the current regulatory regime in controlling pollution. To counter this, the Central Pollution Control Board has recently begun conducting its own direct inspections of grossly polluting industries, potentially as a response to concerns about local regulatory capture of the type we document. As environmental challenges become increasingly urgent, understanding and addressing the political economy obstacles to effective regulation remains a critical priority.

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