Bureaucratic Overload and Policy Triage: Evidence from the Introduction of the Acid Rain Program in the United States

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Recent research has shown that additional public policies do not always improve the problem-solving capacity of the state but sometimes even decrease overall policy effectiveness. The key argument in this context is that more policies, if not backed up by additional administrative capacities, may easily result in an overburdening of the administration. Public authorities manage the increased workload resulting from the need to execute and enforce next policies by engaging in so-called "policy triage." This process involves redirecting resources from the implementation of "old" policies to "new" ones. While this argument appears straightforward, we so far lack a systematic understanding of these dynamics. This paper addresses this gap by examining the introduction of the Acid Rain Program by the U.S. Environmental Protection Agency (EPA). We exploit the fact that the Acid Rain Program was gradually introduced across various EPA regions. A difference-in-differences analysis reveals a robust and significant effect of introducing the Acid Rain Program on the number of inspections conducted by the EPA. Administrators systematically reduced the enforcement activities in industrial plants not covered by the Acid Rain Program. Our finding holds when controlling for a range of alternative explanations, such as the transfer of enforcement from the federal to the state level. These findings suggest that inherent trade-offs emerge in the public sector when policy and administrative expansion are not thought in combination.

1 Introduction

The standard response of governments to arising problems and societal demands is adopting new policies. Recent research has shown, however, that additional policies do not always improve the problem-solving capacity of the state but, quite contrarily, sometimes even decrease overall policy effectiveness. The key argument presented in this context is that more policies, if not backed up by additional administrative resources, may easily result in an overburdening of the administration in charge of policy implementation. Several reasons suggest that this scenario of bureaucratic overload constitutes a growing, not yet fully acknowledged pathology of public administrations that undermines the problem-solving capacities of advanced democracies. First, there is ample evidence that policies pile up, implying that national policy stocks are growing over time, both across countries and sectors (see e.g. Jakobsen and Mortensen 2015; Daugbjerg and Swinbank 2016). Second, while governments effectively adopt more rules and policies than they abolish, this development is not matched by corresponding expansions in administrative resources. By contrast, we observe a growing "gap" between increasing policy-induced implementation workload and the administrative capacities available (Fernández-i-Marín et al. 2023; Fernández-i-Marín et al. 2023). Third, recent research demonstrates that bureaucratic overload resulting from the combination of policy growth and stagnating implementation capacities is a major and increasingly important cause of implementation deficits (Dasgupta and Kapur 2020; Gratton et al. 2021). When facing a growing implementation burden but limited capacities, the administration seem to engage in so-called "policy triage" (Knill, Steinebach, and Zink 2024). This means that to manage their increased workload, administrative authorities make trade-off decisions in allocating their constrained resources while carrying out their work.

While this argument is plausible and straightforward, we so far lack a systematic understanding and empirically rigorous assessment of these dynamics. This paper addresses this gap by examining the implementation of the Acid Rain Program by the U.S. Environmental Protection Agency (EPA). Here, we exploit the fact that the Acid Rain Program was gradually introduced and hence varied in the administrative burdens it created for different EPA regions. A difference-in-differences (DiD) analysis reveals a robust and statistically significant effect of introducing the Acid Rain Program on the number of inspections conducted by the EPA. Administrators systematically reduced the enforcement activities in industrial plants not related to the Acid Rain Program. Our finding also holds when controlling for a range of alternative explanations, such as the transfer of enforcement from the EPA to the state level or the use of more advanced monitoring technologies. These findings suggest that inherent trade-offs emerge in the public sector when there is a failure to simultaneously contemplate new policies and capacity considerations.

We contribute to the existing literature in several ways. First, we contribute to the theoretical discussion on policy triage and bureaucratic overload by focusing on the distinctive effects of additional burdens resulting from adding new policies to existing policy portfolios. Second, we empirically test the theoretical argument on policy triage in a large-scale quantitative analysis. This way, we move beyond the (qualitative) single case-study approaches dominating the study of policy implementation and coping practices.

The remainder of this article is structured as follows: We begin with a short overview of the literature on policy implementation and discuss the remaining shortcomings in this research strand (Section 2). In the next step, we hypothesize how the uncompensated allocation of new policy tasks on implementation agencies leads to redirections of administrative resources (Section 3). In Section 4, we introduce the context of our empirical case before presenting data and empirical strategy in Section 5. In Section 6, we present the results of our statistical analysis regarding the impact of the Acid Rain Programme on EPA's inspections, while Section 7 investigates the plausbility and robustness of these effects. Section 8 concludes.

2 The Neglect of Trade-offs and Bureaucratic Overload in Implementation Research

Although there is a large body of scholarly work on policy implementation and street-level bureaucracy, the linkage between policy growth, bureaucratic overload, and policy triage has hardly been on the analytical radar of existing research. This can be traced to varying reasons. First, the dominant unit of analysis of implementation studies has been on individual policies rather than authorities, implying that trade-offs between implementing different policies have remained outside the analytical radar of the existing research. Yet, in view of capacity limitations, effective implementation of a newly adopted policy 'A' might come with the poor implementation of already existing policies 'B' or 'C', as implementers shift their priorities, thereby decreasing the overall implementation performance of an administrative agency (Knill, Steinebach, and Zink 2024). Since the pioneering study of Pressman and Wildavsky (1984), the process of transforming political programs into concrete actions of administrative agencies in charge of executing, monitoring, controlling, and enforcing public policies has emerged as a major research topic. Research has identified a broad range of potential factors that determine the success or failure of individual policies, such as the choice and design of policy instruments (Howlett and Ramesh 2016; Jordan and Moore 2023); the institutional design of implementation structures (Hjern and Porter 1981; Lundin 2007; B. Guy Peters 2014; Sager and Gofen 2022); as well as administrative capacities (May 2003; Dimitrova 2002). Although these findings have significantly enhanced our understanding of individual implementation processes, the literature still neglects the challenging balancing act that administrative agencies must maintain between different policies.

Second, although implementation research has largely overlooked the phenomenon of bureaucratic overload, overload problems implicitly form the core premise of research on "street-level bureaucracy". In this body of work, these front-line public servants are considered key actors who shape policy outcomes by executing public policies (Cohen 2021; Hupe 2019). As Lipsky (2010) points out, street-level work is typically restricted by the scarcity of resources; at the same time, they possess great discretionary freedom and autonomy in their daily work. Against this background, frontline implementers develop elaborated coping practices that allow them to handle their large case- and workloads (Tummers et al. 2015). For instance, they can strategically allocate their attention by giving precedence to more straightforward cases, which can be resolved with greater speed and efficiency, or they might concentrate their efforts on particularly high-impact cases, such as dedicating their inspections to especially hazardous industrial plants (Kaplaner and Steinebach 2024). Ultimately, though, these coping strategies, while practical, carry substantial implications for the acceptance and proper functioning of the policies in question as they typically imply an "unequal" treatment of the target group (citizens, businesses, etc.). Coping strategies thus constitute a major source of implementation deficits and emerge as an unavoidable consequence of chronic overload (Gofen 2014; Sager et al. 2014). Yet, by simply assuming that street-level bureaucrats are constantly and generally overloaded, research does not consider variation in overload levels, nor does it assess the impact of changes in these overload levels over time.

Finally, the current body of research focuses on street-level bureaucrats and thus predominantly adopts a micro-level perspective. This emphasis limits the analytical insight into meso-level behaviours within administrative organizations and their approaches to implementation. Recent evidence, however, indicates that both individual implementers and entire organizations take deliberate steps to manage their workload and that trade-off decisions can be taken both at the "top" and "bottom" of an organization. For instance, the UK Environment Agency implemented an "incident triage" project to decrease the inspectors' workload. This initiative was designed to strategically prioritize environmental incidents with the most significant impact while assigning less urgency to those with minimal effects, thus providing a pragmatic approach to resource allocation within the entire agency (Knill, Steinebach, and Zink 2024).

In sum, the existing body of literature looks at different aspects of the link between bureaucratic overload and trade-off decisions in the administration. However, the research tends to neglect the significant impact that the introduction of new policies and variations in workload have as drivers of these dynamics. Additionally, a considerable portion of the studies focuses only on the individual level without extending the analysis to encompass organizational behaviors. As a result, there remains a notable deficiency in our understanding of how additional workloads impact administrative organizations' conduct and effectiveness.

3 Theoretical Discussion: Policy Growth and Policy Triage

From a theoretical perspective, several reasons render bureaucratic overload a likely and increasingly serious pathology of public administrations in advanced democracies. Democratic systems provide politicians with strong incentives to engage in policy production. Policy growth is not only driven by vote-seeking politicians who aim to demonstrate their responsiveness to public and interest group demands by addressing the challenges citizens care about (Gratton et al. 2021). It is also because policies are governments' main problem-solving tool allowing them to deal "with issues and problems as they arise" (Orren and Skowronek 2019, 3). (Boushey and McGrath 2020) demonstrate that this dynamic persists even when legislative branches experience lawmaking gridlock, as the policy-making bureaucracy will pursue policy goals through executive rule-making. However, while there are strong political incentives to produce new policies, it is hardly rewarding politically to dismantle existing policies, even when they have been found to be ineffective (Burns, Eckersley, and Tobin 2020). The dominant political incentive structures, therefore, result in governments typically adopting more policies than they eliminate over time, and this more or less regardless of the exact policy sector in question (Fernández-i-Marín et al. 2023; Fernández-i-Marín et al. 2023).

In many ways, new policies can be considered positive as they imply that public demands are met and critical issues and problems are addressed. Yet, other arguments suggest that the relationship between policy growth and performance is more difficult and nuanced. For instance, the production and implementation of environmental policies has clearly contributed to reducing air and water pollution. Yet, studies have also revealed that the positive correlation between policy growth and performance is not always straightforward, particularly when an expansion in administrative capacities for implementation does not accompany policy growth. Research by Limberg et al. (2021) illustrates that improvements in sectoral policy performance resulting from new policies are contingent upon a simultaneous increase in administrative capacities. Similarly, Fernández-i-Marín et al. (2023) demonstrate that a widening "gap" between policies up for implementation and the available implementation capacities tends to decrease the effectiveness of public policies. This implies that there is a certain "tipping point" beyond which the introduction of further policies yields no significant improvement or may even lead to a decline in the effectiveness of the collective suite of measures within the sector.

While effective implementation thus presumes sufficient administrative capacities to handle new tasks and responsibilities, political incentives to compensate implementation agencies for the additional workload are limited. Apart from facing fundamental ideological and fiscal constraints against continuously enlarging the public sector and enduring political pressure to achieve more with fewer resources, politicians face minimal repercussions for overlooking the negative implications of policy production for the administration (Gratton et al. 2021). Due to diffuse responsibilities and unclear causal attributions stemming from the involvement of various administrative agencies and institutional levels in policy implementation, politicians have ample opportunities to shift blame for policy failures onto other actors (Hood 2002). Although enhancing bureaucratic capacities should improve implementation effectiveness, voters often struggle to attribute such improvements to the actions of specific political figures. Consequently, within democratic governance, the prevailing political incentive structures tend to prioritize policy production over the enhancement of bureaucratic capacities. As outlined by Dasgupta and Kapur (2020), this dynamic results in bureaucratic "overburdening" as an inherent dysfunction of democratic systems.

Based on these considerations, we can generally assume that the adoption of new policies will rarely come with parallel expansions of implementation. This implies that policy growth that is matched by corresponding increases in administrative resources is the exception rather than the rule. This confronts us with the question of how administrative agencies respond to scenarios of uncompensated burden expansions. As mentioned in the previous section, this question has been largely neglected in existing research. While it is generally assumed that implementation bodies are chronically overloaded and hence always engage in coping practices, the concrete effect of uncompensated burden increases has not been analysed. To address the above question, we depart from the assumption that any agency is equipped with a given set of administrative resources, in particular staff, expertise, and money, to carry out a given set of tasks. These tasks are defined by the policy portfolio the agency oversees. The tasks include specifying guidelines on policy implementations across different contexts, enforcing compliance through monitoring, conducting investigations and imposing sanctions for regulation violations. They may also involve issuing licenses and permits, providing guidance to stakeholders impacted by policies, data collection and reporting.

These tasks are highly diverse in nature, and they might vary in their urgency, or the extent to which they are legally obligatory. It is exactly this variety agencies might exploit when developing their practices to cope with overload and hence prioritize some tasks over others. However, even with these coping strategies, taking on new tasks from recent policies can strain resources, hindering the implementation of current policies if additional support is not provided. The uncompensated adoption of new policies should hence come with policy triage: the implementation of new policies results in deficits in the fulfillment of existing tasks.

4 The Empirical Case

To study the trade-offs resulting from the addition of new tasks on the implementation of existing tasks, we focus on the adoption of the US Acid Rain Program. More precisely, we check whether the need to implement the US Acid Rain Program led to changes in implementation activities in areas unrelated to the US Acid Rain Program. We are thus interested in whether the implementation of the US Acid Rain Program had negative consequences for other policies under the responsibility of the US Environmental Protection Agency (EPA).

The US Acid Rain Program has been established under Title IV of the Clean Air Act Amendments of 1990 and introduced new policy targets and instruments to the already existing stock of US clean air policies. The primary aim of the program was to reduce the emissions of SO and NO from fossil-fired power plants, which had been identified as major contributors to acid rain formation. For SO emissions, the program entailed a departure from previous regulatory approaches because it set an overall emissions cap and allowed trading of emission allowances between facilities, thereby creating flexibility for the regulated entities to find the lowest cost approach to reducing total emissions. NO reductions, by contrast, should be achieved by setting emission rate limits based on available control technologies (Chestnut and Mills 2005). The main responsibility for implementing the Acid Rain Program lies with the EPA, which is generally in charge of administering and enforcing federal environmental laws. To carry out its work, the EPA is organized into ten different regions, each responsible for implementing environmental programs within a specific geographic area, issuing permits, conducting inspections, and collaborating with state and local governments to address environmental challenges specific to its geographic area. These regions play a crucial role in ensuring the enforcement of environmental laws and regulations across the US (Demortain 2020).

This ambitious and novel federal program came with a range of implementation tasks that had to be addressed by the EPA and its regional branches. These tasks include in particular (1) the development of regulations that define the requirements of the Acid Rain Program, including emissions limits, compliance mechanisms, monitoring, reporting, and enforcement provisions; (2) the allocation of emission allowances to covered sources based on established criteria, such as historical emissions levels and other factors; (3) monitoring and reporting activities to track emissions of SO and NO from covered sources and verify compliance with program regulations; and (4) enforcing compliance with the Acid Rain Program regulations through various enforcement mechanisms, including inspections, audits, and enforcement actions (Hanna and Oliva 2010; Pedersen 2021)

The Acid Rain Program was implemented in two phases. Phase 1 began in 1995, focusing primarily on reducing emissions from the largest and most polluting power plants. During this phase, affected sources were required to meet specified emissions limits or acquire emission allowances to cover their emissions. This first stage captured 263 combustion units in 21 states that were listed in table 1 of the 1990 law. Phase 2 of the Program commenced in 2000, expanding the scope of emissions reductions to include additional sources and further lowering the overall emissions cap, virtually including all fossil-fuelled electric generating plants (Joskow and Schmalensee 1998).

A key point of interest in our analysis lies in the fact that because the regulatory targets (industrial plants) differed between the two phases, each phase had a distinct effect on various EPA regions. Phase 1 was directed mainly at the largest and most polluting industrial plants, which are, for the most part, located in the Northeastern and Midwestern United States, including states like Pennsylvania, Ohio, Indiana, Georgia, Tennessee, Illinois, Missouri, Kentucky, and West Virginia. Consequently, during Phase 1, only six out of the ten EPA regions had to implement the Acid Rain program and thus encountered the increased implementation burden discussed above. Transitioning to Phase 2, the policy's scope extended to encompass a wider array of smaller combustion plants. This included facilities in states that had previously not been impacted, spreading the regulatory responsibilities to other EPA regions.

This constellation provides us the opportunity to rely on a quasi-experimental design for studying potential implementation trade-offs resulting from the Acid Rain Program. This design allows us to compare the number of site inspections for plants that are not affected by the Acid Rain Program across EPA regions that faced new implementation tasks (Phase 1) versus regions that remained unaffected in the initial implementation stage (Phase 2).

5 Data and empirical strategy

To evaluate the impact of the Acid Rain Program's implementation on unrelated enforcement activities, we analyzed data from the Integrated Compliance Information System for Air (ICIS-AIR) (U.S. Environmental Protection Agency 2024). The dataset includes information about which agency (EPA, local, or state) conducted each inspection, providing valuable insights for our assessment.

For our analysis, we transformed the raw data into a panel dataset, identifying each facility subjected to at least one EPA inspection between 1985 and 2005[1]. To test for robustness, we also construct a secondary dataset identifying each facility subjected to at least one inspection irrespective of the leading level (federal, state, and local) and authority. In this context, given that we are interested in trade-off caused by the Acid Rain program, we excluded all inspections

[1]The time period from 1985 to 2005 was selected to minimize the risk of inadvertently excluding locations that could be subject to examination. We control for the possibilities of wrongfully inclusion in Online Appendix A6.

that were carried out *only* in relation to the Acid Rain Program itself. We then reduced the data to contain the period of interest between 1990 and 2001. The constructed panel data contains 52,056 obervations from 4,338 sites at least once inspected by EPA and 991,992 observations from 82,666 sites for all inspected sites, independent from the governmental level in charge of inspections.

Our outcome variable ($Y_(t,i)$) is a binary indicator of whether a site was inspected by the EPA in a particular year. For the binary treatment variable, we code whether a site is located within an EPA region that had facilities included in Phase 1 of the Acid Rain Program ($Treatment = 1$) or not ($Treatment = 0$). We code the treatment variable based on the facilities listed in *42 U.S. Code § 7651c*. Figure 1 plots all the industrial plants being inspected by EPA and divides them intro region that were part of Phase 1 of the acid rain program versus those that were not. Additionally, Figure A1 in the Online Appendix shows all sites inspected by either EPA or other agencies in the time frame.

We leverage the fact that Phase 1 only affected certain EPA regions to employ a Difference-in-Difference event study design that could be expressed in classical Two-Way Fixed Effects (TWFE) notation in the following way:

$$Y_{i,t} = \beta_t + \beta_i + Treatment_i \times \sum_{y=-5}^{6} \beta_y I(t - t_s^* = y) + \epsilon_{i,t}$$

Since our constructed panel data contains information on the site-year level, our outcome variable, $Y_{i,t}$, captures whether a specific site i underwent EPA inspection within a particular year t. The variable $Treatment$ is coded as described above. The terms $I(t - t_s^* = y)$ serve as temporal indicators relative to the year of the implementation of Phase 1 ($t_s^* = 1995$), taking a value of 0 for EPA regions not included in Phase 1. Lastly, β_t represents the fixed effects for calendar years, while β_i encapsulates the fixed effects specific to each site.

Every calculation of β_y indicates the variation in inspection probability between sites that are in Phase 1 regions and those that are not during the year y, relative to the year right before the expansion $y = -1$. If, before the introduction of the Acid Rain Program, inspections in both groups of sites were following a similar trend, we anticipate that the coefficients for the periods $y = -5$ to $y = -1$ will be close to zero and statistically insignificant.

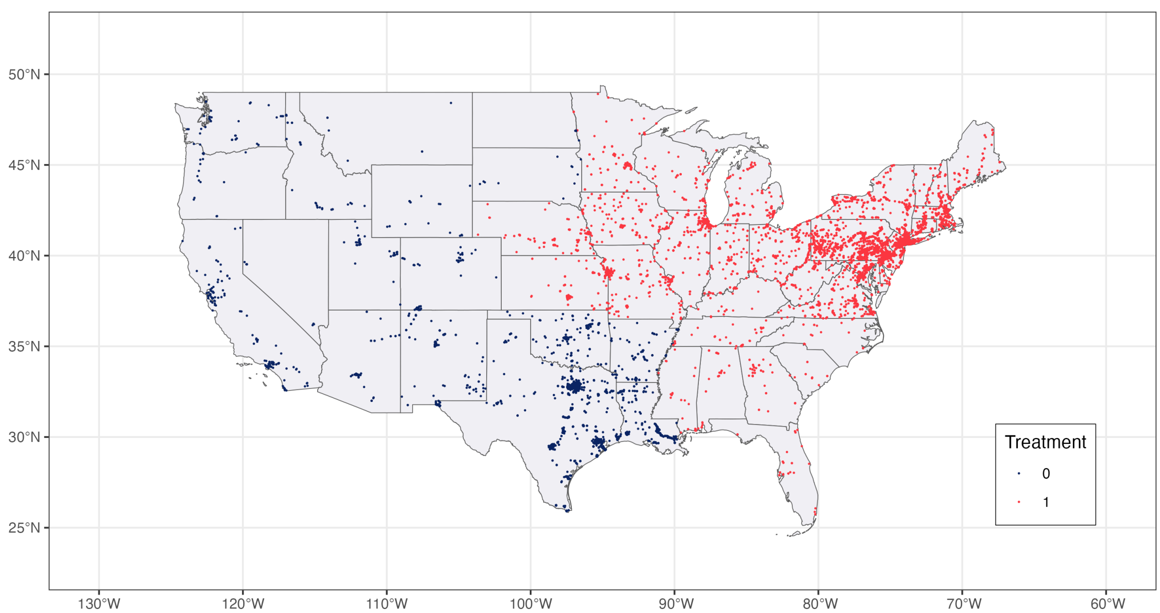

Figure 1: Sites inspected by EPA under Clean Air Act between 1990 and 2001, color indicates if the sites are situated within Phase 1 regions. *Note*: The figure is cropped to the conterminous United States.

To estimate the model, we rely on the approach outlined by Callaway and Sant'Anna (2021) and implemented in the r package *did* additionally we test for the sensitivity of the results using the framework of Rambachan and Roth (2023).

6 Results

In the following, we delve deeper into the question of how the implementation of the Acid Rain Program changed the EPA's implementation practice. We expect that the introduction of the Acid Rain Program led to a shifting of resources causing overall fewer implementation activities (inspections) in areas unrelated to the Acid Rain Program. In this context, our analysis and theoretical reasoning rests on two central assumptions: First, we expect that the regions in charge of implementing Phase 1 did not receive additional capacities that allow them to compensate for the additional implementation burden. In fact, it is the additional "uncompensated" workload increase that makes us believe that organizations must make policy triage decisions.

To this end, we utilize a dataset of U.S. Office of Personnel Management (2014) encompassing information on all employees of the EPA during the relevant period. We geographically referenced the duty stations of the employees using the Duty Station Locator System (U.S. Office of Personnel Management 2024) and aggregated the data to show the number of EPA employees per region[2] and year.

Figure 2 shows the mean yearly percentage changes in the number of employees for the treated and untreated regions. While we can observe some fluctuations, there are no significant differences between the regions that were part of Phase 1 and those that were not. In other words, aside from the general fluctuations in employment figures, we do not observe any remarkable compensation for the areas that had to undertake additional work.

The second assumption is that the observed changes can be attributed predominantly to the implementation of the acid rain program where one region was required to comply with the policy and another was not. To verify this, Figure 3 maps the evolution of US environmental policy portfolio from 1985 to 2005. The data is sourced from Fernández-i-Marín et al. (2023),

[2]We excluded the District of Columbia from this analysis since employees here cannot be reliable assigned to specific EPA regions.

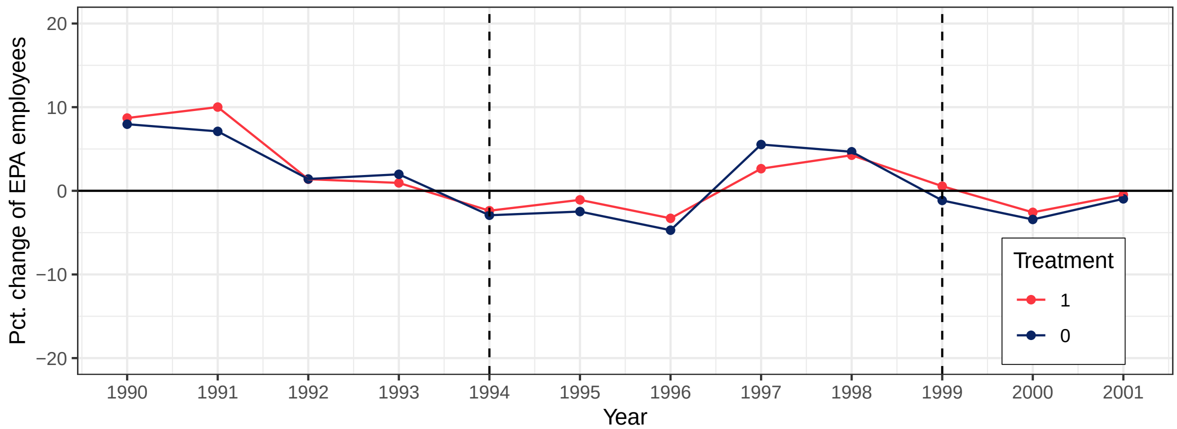

Figure 2: Mean percentage change of employee numbers per year and divided by Treatment

who have categorized the number of policy-instrument-combinations over time. As a result, a single law may encompass multiple policy measures.

Notably, the significant uptick in the early 1990s can be largely ascribed to the enactment of the Clean Air Act that established the acid rain program and set multiple emission standards for light-duty vehicles. For the remainder of our investigation period, however, no other major policy changes can be observed.

We have shown that the introduction of the Acid Rain Program has not come with more resources for the regions affected by it. Moreover, we have demonstrated that no other major policy reforms occurred in the respective time period so that any effects observed should be attributable to the step-wise introduction of the Acid Rain Program. But do the additional workloads actually lead to differences in the implementation patterns, and if so, how significant are these variations? Our analysis first assesses the Acid Rain Program's impact on EPA inspections. Figure 3 illustrates the resulting coefficient estimates alongside their 99% confidence intervals.

We use the year preceding the program's introduction ($y = -1$) as the baseline for the post-treatment effects, with the year 1995 ($y = 0$), marking the commencement of Phase 1. Before the program's initiation, the trends between the control and treatment groups were running close to parallel, as evidenced by coefficient estimates that remained close to the zero line.

Looking at the effects after the program's introduction, we detect a modest decline in the

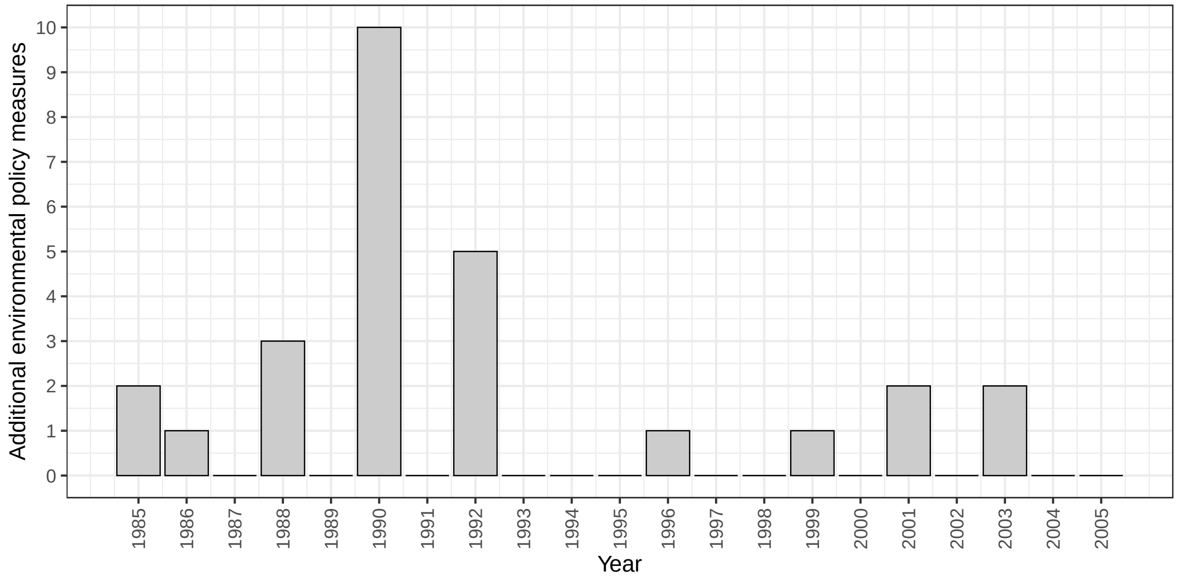

Figure 3: Number of additional environmental policies measures in the US per year from 1985 to 2005, data from Fernández-i-Marín et al. (2023)

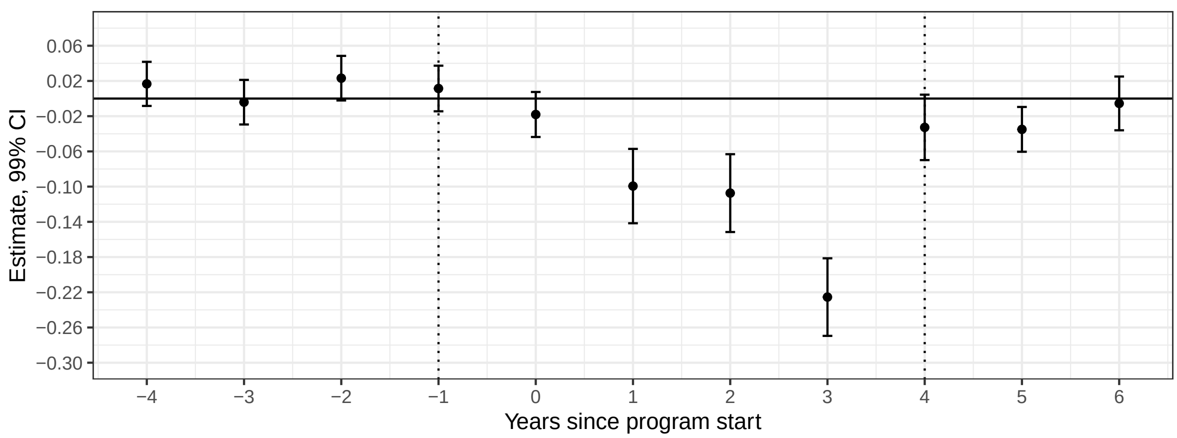

Figure 4: Effect of the Phase 1 of the Acid Rain Progam on the probability of EPA inspections. *Notes*: Figure represents the results of the specifciation outlined in Section 5. Estimates are based on sites at least inspected once by EPA. Bootstraped standard errors clustered on the site level. Pre-treatment effects are expressed relative to the previous period (pseudo-ATTs). The second dotted line represents the last period before the beginning of Phase 2

probability of enforcement actions during the initial year relative to unaffected regions, which is then succeeded by a significant downturn. The relative probability of an inspection diminishes by about 22.6 percent in the third year following the program's launch. In essence, this means that one out of five industrial plants is no longer inspected as before, highlighting a significant reduction in the EPA's focus. The same pattern can be identified when using the full sample (Online Appendix A3), albeit with smaller coefficient estimates due to large number of zero cases.

To assess the sensitivity of our findings, we employ the Relative Magnitudes Bound ($\Delta^{RM}(\bar{M})$) approach developed by Rambachan and Roth (2023). The approach advocates for a transparent ("honest") examination of how impactful an unobserved pre-treatment violation would need to be for it to nullify the observed treatment effect. Essentially, it quantifies how potent an alternative explanatory factor must be to render the estimated treatment effect statistically insignificant. In the context of our study, the relative breakdown parameters are 1.4 for the first year, 1 for the second, and 1.7 for the third post-treatment year.

We assess the sensitivity of the results using the relative magnitudes bounds ($\Delta^{RM}(\bar{M})$) approach by Rambachan and Roth (2023). The approach advocates for a transparent ("honest") examination of how impactful an violation of the parallel trends assumption would need to be for it to nullify the observed treatment effect. Essentially, it quantifies how potent an alternative explanatory factor must be to render the estimated treatment effect statistically insignificant. In the context of our study, the relative breakdown parameters are 1.4 for the first year, 1 for the second, and 1.7 for the third post-treatment year. This implies that the magnitude of any unobserved influence would need to range from being equal to, up to nearly double the strength of the maximum pre-treatment violation.

The intriguing aspect of our case is that there was a distinct five-year interval during which only some EPA regions were subjected to the "treatment," i.e., required to implement the Acid Rain Program, while others were not obligated to do so. After the year 1999 (marked with the second dotted line in Figure 4), the initial policy expanded to include additional plants, ensuring that *all* EPA regions were compelled to implement the Acid Rain Program. This expansion enables us to also examine the "inverse" scenario: once all public administrations are required to engage in policy triage and prioritization to manage the increased workload, the initial differences between the regions should disappear again.

Figure 4 illustrates that the differences between the EPA regions disappear once the mandate to implement the Acid Rain Program is extended to all regions. Interestingly, we observe a convergence of the effects one year before the stipulated deadline for the remaining regions to enact the Acid Rain Program. This may suggest the presence of an anticipation effect. We posit that the authorities slated for Phase 2 began their preparatory actions well in advance of their official implementation date, possibly leveraging insights gained from the experiences gained by other EPA regions in Phase 1.

7 Robustness and plausibility

Several alternative explanations might account for the observed patterns. One possibility is that the Acid Rain Program introduced technological advancements that simplified the implementation of other policies. Specifically, within the Acid Rain Program, the EPA extensively utilized what is known as Continuous Emission Monitoring Systems (CEMS). These systems measure flue gases, including oxygen, carbon monoxide, and carbon dioxide levels, providing critical information for combustion control in industrial settings and reporting data directly to the EPA. Consequently, the installed technologies might have aided the EPA in enforcing other clean air policies, which previously required inspections.

To eliminate this potential confounding factor, we excluded all facilities from our sample that were subjected to multiple regulatory programs, including the Acid Rain Program. By implementing this approach, we aim to ensure that the observed differences are not driven by plants that were initially regulated by the EPA for purposes other than the Acid Rain Program, but subsequently ceased to be inspected as a direct result of technological advancements brought about by the program. As shown in Figure A4 in the Online Appendix, these modifications do not affect our results.

To further investigate changes in implementation practices, we can examine the type of implementation actions conducted. The dataset provided by the EPA enables us to distinguish between on-site and off-site monitoring activities. On-site activities include compliance inspections, evaluations, and investigations, which involve reviewing permits, data, and other documentation directly at the facility. Off-site activities typically involve the EPA requesting data from industrial plants which are then reviewed remotely by the respective authorities at their offices. When we separate the data, a notable trend emerges: as shown in Figure 5, the most significant decline occurs in on-site visits, while there is (even) a slight increase in off-site activities.

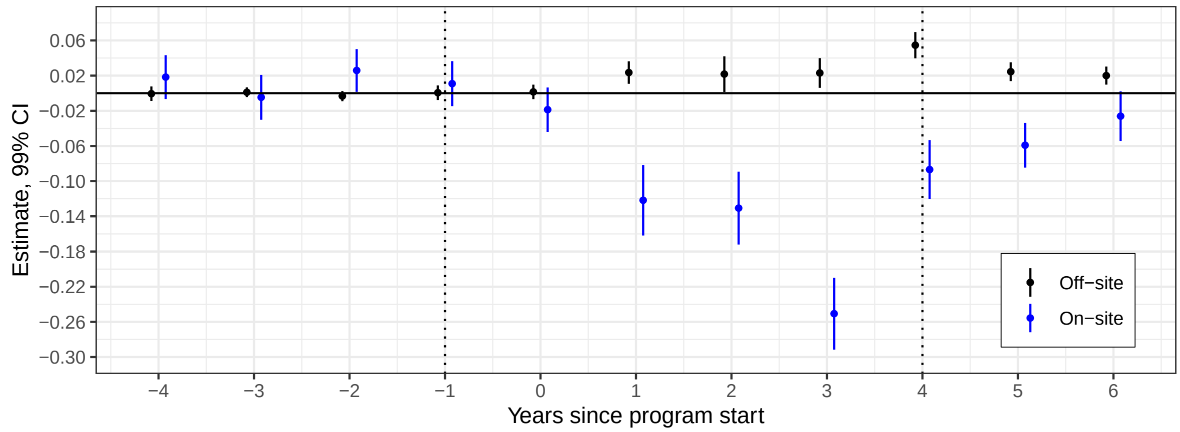

Figure 5: Effect of the Phase 1 of the Acid Rain Progam on EPA inspections. Outcome is varied and captures if an off-site inspection (blue) or an on-site inspection (black) was conducted or not. *Notes*: Figure represents the results of the specifciation outlined in Section 5 but with a different outcome variable. Estimates are based on sites at least inspected once by EPA. Bootstraped standard errors clustered on the site level. Pre-treatment effects are expressed relative to the previous period (pseudo-ATTs). The second dotted line represents the last period before the beginning of Phase 2.

However, this increase in off-site monitoring does not compensate for the observed decrease in on-site visits. This observation corroborates our prior claim that administrators, burdened with the heightened workload from the Acid Rain Program implementation, tend not only to curtail their engagement in other implementation activities but particularly in those that are more resource-intensive and time-consuming.

Another concern that we need to consider is the possibility that implementation activities are not, as we argue, suspended but are instead simply shifted to other levels of government. It could be the case that the EPA undertakes fewer implementation activities unrelated to the Acid Rain Program, but this reduction is compensated for or taken over by other levels of government. From this perspective, the policy triage effect might remain apparent at the level of the EPA but would not impact the implementation effectiveness on a broader scale. To explore this possibility, we replicated our analysis focusing on the inspections carried out by state-level or local authorities. If there is a shift in responsibilities, we would expect to see a corresponding and significant increase in state inspections in regions where the Acid Rain Program was implemented after 1995. As shown in Figure 6, this is not case.

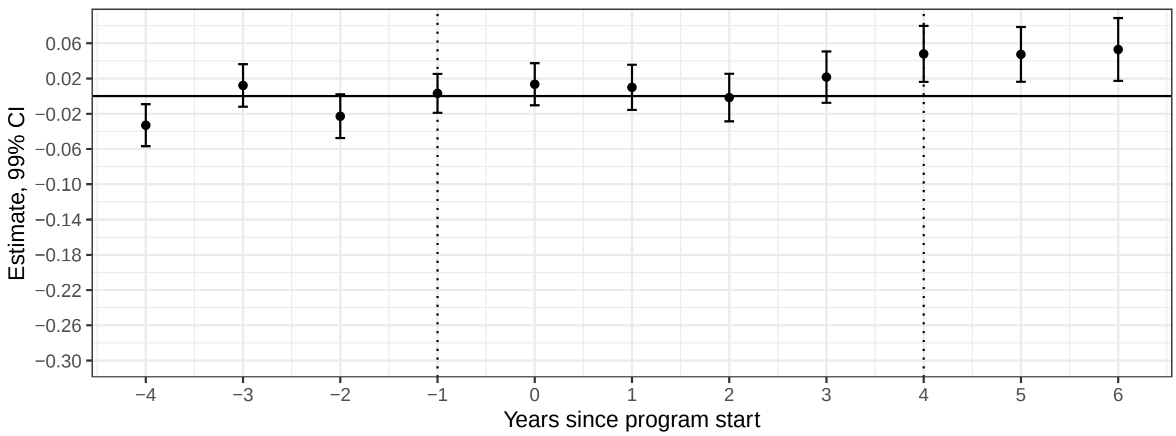

Figure 6: Effect of the Phase 1 of the Acid Rain Progam on other inspections. *Notes*: Figure represents the results of the specifciation outlined in Section 5 but with a different outcome variable (other agency inspection). Estimates are based on sites at least inspected once by EPA. Bootstraped standard errors clustered on the site level. Pre-treatment effects are expressed relative to the previous period (pseudo-ATTs). The second dotted line represents the last period before the beginning of Phase 2.

8 Discussion

An important question is to what extent the findings obtained from our specific case can be expected to also apply to other contexts. Specifically, the generalizability of our conclusions hinges on the degree to which both the Acid Rain Program and the US EPA can be deemed representative of or distinct from the political and administrative conditions we might encounter in other contexts. Different arguments can be made regarding the Acid Rain Program. On one side of the argument, the Acid Rain Program was notably innovative, being the first policy of its kind where an emissions trading scheme was introduced to combat air pollution. This feature distinguishes it significantly from the conventional regulatory mechanisms historically deployed by the EPA, suggesting wide-ranging consequences for the agency and its implementation practices. On the other hand, according to existing ex-post assessments, the implementation of the Acid Rain Program turns out to be relatively "easy" considering its wide-ranging scope and impact. According to Pedersen (2021), "[t]he regulations that the agency needed to promulgate were mostly procedural and did not require detailed analysis of scientific and technical issues. (…) In addition, the required controls were universally regarded as both technically feasible and economically affordable." (p. 60). From this angle, while the Acid Rain Program certainly mandated a novel policy type, in terms of the workload involved, it does not appear to be inherently different from the implementation of other policies.

When examining the EPA, two organizational features may facilitate the occurrence of policy triage and thus influence the generalizability of its practices to other cases. The first aspect to consider is the distinctive administrative tradition in the US. Public administrations are generally bound to operate under both economic and democratic principles. In practice, however, they differ in the extent to which they prioritize one set of values over the other (Christensen, Goerdel, and Nicholson-Crotty 2011). Administrators in countries with a more managerial orientation are expected to run policy programs as efficiently and effectively as possible. In so-called legalistic systems, by contrast, all public actions are governed by a rule-following ethos, with administrators assuming the primary responsibility of guaranteeing compliance with the prevailing laws, rules, and regulations. Such systems demand that administrative actions align with legal standards, emphasizing strict adherence to the formal letter of the law. The administrative tradition in the US leans more towards managerialism than legalism, which might shape the EPA's approach to policy implementation and enforcement (B. Guy Peters 2021). A leaning towards managerial decision-making within administrations increases the chances of policy triage, as administrators can exercise greater freedom in deciding where exactly to allocate their time and resources (Steinebach 2023).

Another feature that may affect the generalizability is the fact that the EPA is a *central (federal)* level agency. In many countries, policy implementation, especially in the realm of environmental enforcement, is typically carried out by state or local-level authorities rather than central administrative bodies. From this perspective, the US EPA might be different as it has no other supervisory authority "above" it that controls the agency's actions (De Mesquita and Stephenson 2007; Sager and Gofen 2022). This lack of external control facilitates the EPA's capacity to reallocate resources and engage in policy triage more freely than its state or local counterparts, whose actions may be subject to stricter oversight from higher-level authorities.

To determine if the US EPA's managerial approach and central agency role affect the broader applicability of our findings, we carried out roughly 50 semi-structured interviews with environmental policy administrators in Germany, Italy, and Portugal. As Figure A7 in the Online Appendix demonstrates, Germany, Italy, and Portugal can be considered more legalistic than the US, based on data from the Quality of Government (QoG) Expert Survey Dataset (Dahlström et al. 2015). In addition, we looked for environmental public administrations from various levels of government to determine whether indications of policy triage differed by the tier of government. In total, we analyzed 53 semi-structured interviews. There were 17 in Germany, 11 in Portugal, and 25 in Italy. About half of these organizations were central-level authorities, while the remaining part was located at the subnational (state, provincial, local) level. For additional information on our interview questions and sampling strategies, please consult the online appendix. It is crucial to note that this analytical step does not intend to establish a certain relationship, let alone claim causality. Instead, our goal is to assess the likelihood of encountering similar policy triage practices in organizational environments inherently different from that of the EPA.

As detailed in Table XY of the Online Appendix, the interviews from public authorities in these three distinct countries and across different governmental levels reveal that policy triage is (indeed) an approach commonly employed to address increases in administrative workload. For example, an interview partner from a central-level agency in Portugal (agency anonymized) observed that "[o]bviously there are times when we can't respond at all (...) [W]e create priorities in terms of inspection according to a risk analysis system. The organization of our service forces greater gymnastics on our part" (Interview Portugal 1)[3]. Similar statements have been made by administrators at the local level in Germany. Here, a district-level manager from a water authority stated that "[t]he problem can certainly not be solved by working through everything equally well (...). [I]t is often the case that normal water law tasks – for example, that we actually have to check permits and authorizations that have been issued from time to time to see whether they are still being implemented properly (...) – also tend to fall short. You can no longer do everything in this situation. We have reached the squaring of the circle" (Interview Germany 1). Evidence from interviews in Italy suggests that oversight by higher government levels indeed affects the organizational practices in managing workload. However, this influence from "above" seems to shape primarily how organizations prioritize various implementation tasks rather than avoiding policy triage patterns altogether: "Priority is a thing of the hierarchy. (...) The EU requests have priority. Then there is the ministry. And then the

[3]The direct quotes in this section are statements that are representative of the views of several interviewees. See Table XY in the Online Appendix for further details and quotes.

provinces indeed, (...) and all the other things are after, after everything, when there is time" (Interview Italy 1). These varied interview insights imply that policy triage is not a practice confined to the EPA's organizational context and character. Instead, it appears that policy triage is a common practice used to manage bureaucratic overload.

9 Conclusion

TBA

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