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## Enforcing the Clean Water Act: The effect of state-level corruption on compliance



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### ABSTRACT

This paper uses an event study to examine the transition from federal to state management of the Clean Water Act (CWA). I find that, overall, the transition from federal to state control has little effect on facility compliance, measured by the violation rate. However, states with a long run prevalence of corruption see a large decrease in the violation rate after authorization relative to states without corruption. Alternative specifications support these findings. I explore whether the response to transition to state control differs across political ideology, GDP and income per capita, government size, environmental preferences and government management performance. None of these alternative state level characteristics seem to account for the observed difference.

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### Introduction

Corruption has a well established distortionary effect on public policy.<sup>1</sup> The empirical literature has also addressed the interaction between corruption and the level of decentralization of government.<sup>2</sup> In the United States, environmental policy is often mandated at the federal level but implemented primarily at the state level. Many federal environmental policies, such as the Clean Water Act, suffer from failures in execution at the state level. There is a large literature addressing the implementation of environmental policy specifically, but the effect of corruption on enforcement and compliance outcomes at the state level is not well documented.

Despite the passage of the Clean Water Act (CWA) nearly 40 years ago, water pollution remains a problem in the United States. Both a series of articles published in the New York Times beginning in August 2009, “Toxic Waters”, and an extensive study by the Government Accountability Office cite issues with enforcement and compliance with the program (Duhigg, 2009; U.S. Government Accountability Office, 2009).<sup>3</sup> Under the CWA, states are authorized by the federal EPA to administer and perform the functions of the CWA program. This feature of the CWA is cited specifically in the GAO reports, which discuss the tension between state management and federal oversight, stating that there are inconsistent levels of

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<sup>1</sup> See Mauro (1998), Polinsky and Shavell (2001), Hindriks et al. (1999).

<sup>2</sup> See Fisman and Roberta (2002b), Fisman and Gatti (2002a).

<sup>3</sup> Duhigg (2009) provides anecdotal evidence that firms are unduly influencing enforcement decisions, stating: “One E.P.A. official stated “We were told to take our clean water and clean air cases, put them in a box, and lock it shut. Everyone knew polluters were getting away with murder. But these polluters are some of the biggest campaign contributors in town, so no one really cared if they were dumping poisons into the streams.””

enforcement across states and that the federal EPA has not taken steps to remedy these variations in program enforcement. Additionally, the legal literature has addressed the issue of state level enforcement of the CWA. Flatt (1997) states that federal oversight of the CWA has no “teeth” and that without the threat of federal oversight or takeover, states are left to their own devices with no incentive to uniformly enforce federal laws. States can engage in a “race to the bottom,” allowing powerful firm interests to govern the enforcement stringency of environmental regulation.<sup>4</sup>

The structure of this policy provides an opportunity to study the effect of the transition from federal to state control on enforcement and compliance. In addition, I use the corruption measure from Glaeser and Saks (2006) to assess whether corrupt states responded differently to transition than non-corrupt states. Theoretically, this could be the case if state level control with little federal oversight makes the state's program vulnerable to corruption and pressure from firms who wish to avoid abatement costs.

While corruption is sometimes thought to plague only less developed countries and dictatorships, recent research has used differences in corruption between states to contribute to the broader literature on the determinants of corruption (Glaeser and Saks, 2006; Leeson and Sobel, 2008). Other work exploits state-level variation to study the effect of state Freedom of Information Act Laws on corruption (Cordis and Warren, 2014). Additionally, the existing literature has developed theoretical models of the interaction between corruption and environmental compliance, but has not examined this interaction empirically (Damania, 2002; Wilson and Damania, 2005). Other work in this literature uses cross-country comparisons to study the effect of corruption on environmental policy choice (Fredriksson and Svensson, 2003). Dincer and Fredriksson (2013) investigate the effect of corruption and public trust on environmental policy stringency. Dincer and Fredriksson (2013) use data on abatement costs to capture stringency but do not use direct measures of enforcement or firm compliance. The first contribution of my work is empirically linking enforcement and compliance behavior with observed corruption levels.

This paper also contributes to the literature on enforcement efforts and compliance with environmental regulation.<sup>5</sup> Previous work examines the effect of inspections and enforcement actions on compliance and assesses the determinants of penalty levels (Earnhart, 2004; Magat and Viscusi, 1990; Kleit et al., 1998). Other work in this literature addresses spillover effects of enforcement, finding that firms respond positively to enforcement efforts at nearby firms (Shimshack and Ward, 2005). However, these studies focus on firm level inspections and subsequent enforcement actions, while my findings aggregate across firms to explore state level compliance.

The area of the enforcement literature most closely aligned with my work focuses specifically on the empirical study of differences in state oversight of federal policy, and the effects of transferring control from federal to state jurisdiction. Addressing the initial decision for the state to take control of federal regulation, Sigman (2003) and Sigman and Traub (2007) examine the determinants of the decision to authorize, finding that states with strong environmental preferences tend to authorize earlier. After states take control, in an empirical study of the behavior of states authorized to administer the CWA, Sigman (2005) finds that authorized states free-ride on their downstream neighbors, leading to lower water quality in downstream states. Other work in this area examines the impact of political factors on the stringency of state level enforcement of federal environmental policy (Helland, 1998; Innes and Mitra, 2011). A related literature examines the effect of citizen suits on monitoring and sanctions (Langpap and Shimshack, 2010). Ashenmiller and Norman (2011) using a similar empirical methodology to this paper, study the effect of laws designed to protect citizen's right to civil suit on monitoring and enforcement.

I use data on inspections, violations, and enforcement actions from the EPA's Enforcement and Compliance History Online (ECHO) database to construct measures of enforcement and firm compliance. I interact a measure capturing the prevalence of corruption within each state, given by federal corruption convictions, with the timing of state authorization to identify the differential effect of the transition on corrupt vs. non-corrupt states. I use an event study, accounting for leads and lags, to examine the effect of authorization on regulatory actions such as the violation rate.

I find that corruption affects reported compliance rates after authorization. Corrupt, self-authorized states see a drop in the reported violation rate following authorization, relative to non-corrupt, self-authorized states. I explore alternative state level characteristics that may be determinants of the violation rate after authorization, including political ideology (a red vs. blue state specification), income and GDP per capita, a small vs. large government specification, a high vs. low environmental preference specification, and a high vs. low government management performance specification. Unlike corruption, none of these alternative characteristics provide evidence of differential reported violation rates across states under self-management. In addition to the event study with leads and lags, I explore a more parsimonious specification of the same model in which I group all of the years before and after authorization together. I find an ambiguous effect of corruption on the fraction of facilities inspected and enforced upon in self-authorized states. I find that states that are corrupt and self-authorized have fewer facilities in violation. This result is statistically significant and holds across specifications.

To my knowledge, this work provides the first empirical study of the impact of state level corruption on enforcement of the Clean Water Act. The findings presented here have implications for future work. First, these findings contribute to the

<sup>4</sup> Flatt (1997) claims that lax enforcement of federal policy is worse even than states creating their own lax laws, as lax enforcement is far less transparent than lax law.

<sup>5</sup> As summarized in Shimshack (2014).

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