

# Presidents, Regulators and Policy Disagreement: A Framework for Estimating Audit Scores\*

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## **Abstract**

Presidents have been selectively reviewing regulatory proposals from executive branch agencies since the Clinton administration. For scholars of the regulatory process, one result of this program is a pattern of audit rates, or the proportion of an agency's regulatory agenda that is reviewed by the White House. What inferences can be drawn from these audit rates? To shed light on this question, I start with a behavioral model of strategic auditing between a president and a regulatory agency. The model clarifies conditions under which presidential auditing may reflect policy disagreement between presidents and regulatory agencies. Intuitively, proposals from "adversaries" are audited more frequently than proposals from "allies." Using insights from the model, I statistically estimate the auditing bias presidents have toward individual agencies using data from all executive branch rule-making agencies (regulators) that were active during the Clinton and Bush II administrations. I compare the resulting *audit scores* to existing measures of agency ideology and find positive, albeit modest, correlations.

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# 1 Introduction

The executive branch is a large hierarchical organization, but it is hardly monolithic. At the top sits the Executive Office of the President, which includes the presidential advisors that staff the “White House Office,” in addition to a host of support offices that aid the president in managing the vast federal bureaucracy.<sup>1</sup> Outside of the president’s executive offices are hundreds of regulatory agencies, and despite the fact that these agencies are staffed by appointees that were chosen to advance the goals of the White House, they often serve different masters. Presidents, as a consequence, are perpetually wrangling with agencies over the use and interpretation of delegated authority, as evidenced by examples from one administration to the next: the Obama administration’s recent high-profile rebukes of Environmental Protection Agency regulations (e.g. the Boiler MACT and Ozone standards), President Reagan’s own strained relationship with the EPA and the Federal Trade Commission (Harris and Milkis 1996), and President Nixon’s troubles with the Department of Health, Education and Welfare (Nathan 1975). The history of contentious politics between presidents and agencies raises a fundamental question about the extent to which particular agencies are constantly in conflict with the president, or whether conflict simply ebbs and flows with changes in administration.

The existing literature has shed light on this question by demonstrating that agencies appear to have distinct policy preferences—and perhaps even ideological orientations—that are driven by myriad considerations including the relevant policy area (Aberbach and Rockman 1976), idiosyncratic goals of careerist entrepreneurs (Carpenter 2001), the influence of appointees (Clinton, Bertelli, et al. 2012) and more intractable features concerning the

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<sup>1</sup>Nelson Polsby referred to a *presidential branch* to include the White House Office and its support offices within the Executive Office of the President, like the Office of Management and Budget and the Office of Administration (Jones 1994).

agency’s mission, enacting political coalition and enduring statutory authority (Clinton and Lewis 2008; Gilmour and Lewis 2006). However, existing studies of the tensions agencies have with their political overseers typically focus on narrow intervals of time (e.g. Harris and Milkis (1996)), often sidestepping counterfactual questions about how a different presidential administration, for example, would treat the same agency, or how that agency would shift behavior under a different administration.

In this paper, I introduce a method for approximating a dynamic preference gap between presidents and regulatory agencies by leveraging information from the White House’s program of regulatory review.<sup>2</sup> My focus is on the proportion of an agency’s regulatory agenda that is redirected to the White House for review. Intuitively, when an agency has a large proportion of its agenda redirected, it suggests some degree of friction between the White House’s preferred policy and the policy the agency chooses to supply. Underpinning my analysis is the fact that agencies collectively write many more policy proposals than presidents and their staff can realistically review. Therefore, like the Internal Revenue Service auditing tax payers (Reinganum and Wilde 1985), the Supreme Court granting cert (Cameron, Segal, and Songer 2000), or Congress “auditing” the budgets of agencies (Banks 1989), presidents resort to selectively reviewing only a subset of regulatory proposals put forward each year. As I show in the coming sections, the same agency can be subjected to different (or similar) levels of White House scrutiny across presidential administrations.

To motivate my method for approximating the preference gap between presidents and agencies, I start with a behavioral model of the regulatory review process. In equilibrium, a president is more likely to review a proposal from an agency that is spatially distant from the president in an ideological sense, or that is expected to develop policies with insufficient

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<sup>2</sup>Selective review of regulations began with President Clinton’s Executive Order 12,866, which is currently executed by the Office of Information and Regulatory Affairs (OIRA).

valence, such as regulatory quality, relative to the preferences of the president.<sup>3</sup> Auditing can thus be construed as a mechanism for reigning in ideological “drift” when the president suspects an agency is proposing a policy that is too liberal or too conservative, and a mechanism for correcting bureaucratic “shirking” when the president suspects that the agency has not invested enough in policy valence. Because auditing is costly for the president, it is used sparingly. Presidents only find it worthwhile to audit a regulatory proposal when the severity of expected drift or shirking is sufficiently large, which occurs probabilistically in the model.

A key implication of the model is that an agency’s audit rate, or the proportion of the agency’s regulatory agenda that is redirected to the White House for review each year, should provide information about the preference gap (related to either drift or shirking) between the White House and the agency. Using data from the Clinton and George W. Bush administrations, I model the probability that an agency’s proposal is audited for all executive branch agencies that are subject to White House review. By comparing two administrations I am able to identify the extent to which both administrations audit an agency at a similar rate, likely for reasons that have to do with valence concerns more than partisan or ideological concerns. I am also able to estimate the extent to which the administrations deploy different strategies and audit an agency at different rates. I refer to the size of this difference as an agency’s *audit score*.<sup>4</sup> An audit score is positive (conservative) when the Democratic administration audits the agency more than the Republican administration, and the score is negative (liberal) when the Republican administration audits the agency more than the

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<sup>3</sup>Valence is reduced-form way to characterize the attributes of a policy that are beneficial to all political actor, irrespective of their ideological preferences (Londregan 2007; Hirsch and Shotts 2012).

<sup>4</sup>Audit scores also control for a number of proposal-specific variables, such as whether a proposal is listed as *economic significant* and the year of proposal.

Democratic administration.

To preview the results, the recovered audit scores show that health, safety and environmental regulators tend to be relatively liberal, such as the agencies within the Department of Labor and the Environmental Protection Agency. In contrast, more conservative agencies tend to be those that have the potential to benefit specific industries, such as the Minerals Management Service for the extractive industries, the General Services Administration for manufacturers and other suppliers of government wares, and the Commerce Department's Bureau of Industry and Security for the defense industry. Another way to interpret the audit scores is that liberal agencies tend to represent diffuse interests such as workers, in the case of the Occupational Safety and Health Administration (OSHA), whereas conservative agencies tend to represent concentrated interests, like the extractives industry, the aerospace industry in the case of NASA and agribusiness in the case of the Agriculture Department's Farm Service Agency.

This paper contributes to an evolving literature on measuring the latent preferences of bureaucratic actors. Some approaches use surveys to either ask experts how they would characterize an agency's ideological orientation (Clinton and Lewis 2008) or ask bureaucrats how they would vote on a particular bill pending in Congress (Clinton, Bertelli, et al. 2012). Nixon (2004) looks at instances where an agency head also served as a member of Congress to "bridge" the ideology of the agency. Other methods infer the ideological preferences of bureaucrats by relying on actual behavioral patterns, such as prior campaign contributions by bureaucrats (Chen and Johnson 2014; Bonica, Chen, and Johnson 2012) or public statements from congressional testimony (Bertelli and Grose 2011).

Audit scores are arguably unique because they are derived from strategic behavior that is connected to the actual policy-making activities of the agencies. Due to these behavioral foundations, audit scores share a similarity with legislative ideal point models, which are also theoretically grounded, albeit in a random utility model where lawmakers choose between

the status quo and an alternative (Poole and Rosenthal 2000). The institutional setting in regulatory politics is unique, of course, and I cannot exploit any shared obligation that agencies have to “vote” together. Instead, audit scores take advantage of agencies’ shared experiences with the president’s program of regulatory review.

To conclude, audit scores estimate the degree of policymaking conflict between presidents and regulators, both across time and across agencies. The scores have a number of advantages that make them useful. For one, they can be applied to any executive branch agency that is subject to regulatory review by the White House, and they can be recovered at sub-department levels, provided the agency or bureau of interest is active in regulating. Secondly, while my empirical focus in this paper is on the Clinton and George W. Bush administrations, the scores can be easily extended to new administrations. Finally, the scores implicitly incorporate information about the influence of appointees and careerists on agency policymaking, which, as I discuss in the next section, has been an ongoing challenge for scholars interested in estimating the preference divergence between agencies and their overseers.

## **2 Background**

### **2.1 Measuring Agency Preferences**

Measuring the preferences of bureaucratic actors is an active research area and there are several recent papers that offer summaries of the literature. See, for example, Clinton, Bertelli, et al. (2012) and Bonica, Chen, and Johnson (2012). My focus in this section is not to review the literature, but instead to emphasize one important aspect of estimating the preferences of an agency that still presents challenges. Critical to measuring agency preferences is to account for the preferences of both appointees and careerists and their

shared influence in the development of policy within an agency.<sup>5</sup> Some existing measures have focused on only one or the other, while other measures have tried to account for both. These latter approaches have been particularly innovative, but have struggled with how to weight the relative influence of appointees and careerists. Audit scores theoretically sidestep this problem by implicitly using information about the combined contributions of both appointees and careerists, albeit without disentangling their individual contributions.

Table 1 summarizes the existing approaches, starting with audit scores, and includes a checkmark next to each to denote whether or not information about appointees, careerists or both are included in the measure of agency preferences. While the more recent studies include measures of bureaucrats and appointees, they leave open questions about how much of an agency's preferences are shaped by one or the other. Clinton, Bertelli, et al. (2012) recognize this roadblock and develop a measure of agency ideology that weights the relative influence of careerists and appointee by perceptions within the agency about the relative influence of each. The studies that estimate agency ideal points using campaign contributions face the same roadblock, but do not propose any solutions. This is less problematic for Bonica, Chen, and Johnson (2012), who focus their empirical setting on appointee preferences alone. Chen and Johnson (2014), however, incorporate information about both careerists and appointees without accounting for which group wields more influence in policymaking.<sup>6</sup>

Using audit scores as a measure for agency preferences may offer a remedy in some applications. The scores that I estimate inherently provide information about the preference divide between the White House and a given agency, inclusive of the influence of both

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<sup>5</sup>See McGarity (1991) for a survey study on the combined influence of careerists and appointees in the development of EPA regulations.

<sup>6</sup>They do put more weight on contributors that give more money, based on a conjecture that this would reflect higher salaries and thus capture upper-level careerists *and* appointees, i.e. the decision-makers in the agency.

careerists *and* appointees, at least as perceived by the White House. On the downside, however, I cannot disentangle the relative influence of appointees, which likely vary within and between agencies as the number of appointees change and their ability to exert influence is conditional on the policy area at hand. For many applications, however, the quantity of interest is simply an agency preference, not the disaggregated preferences of appointees and careerists.

## 2.2 Regulatory Review and the Rulemaking Process

The audit scores I estimate are derived from the decisions presidents and agencies make during the *rulemaking* process, the formal process by which agencies develop legally-binding regulations, or rules. Agencies develop rules according to the procedures defined in the Administrative Procedures Act of 1946, along with steps that have been added since by statute and executive order. For this paper, the most relevant procedure was put in place by the Reagan administration to require that regulations proposed by executive branch agencies be reviewed by a presidential office. Today, this office is the Office of Information and Regulatory Affairs (OIRA), which selectively reviews regulatory proposals across the executive branch, and can coerce agencies to change or abandon the policies they propose.<sup>7</sup>

OIRA is staffed predominately by career economists and policy experts, along with an appointed head, but it serves as a particularly effective agent of the president for at least two reasons. For one, its location within the president's executive offices facilitates coordination with the White House Office, the locus of presidential planning. More critically, OIRA's

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<sup>7</sup>OIRA has only selectively audited proposals since President Clinton's 1993 Executive Order 12,866 in 1993. Prior to 1993, OIRA was required to review all proposals. For a detailed overview of the rulemaking process and the history of regulatory review see Copeland (2005).



Description of Approach	Incorporates Appointees?	Incorporates Bureaucrats?
1 Audit scores	✓	✓
2 Both Chen and Johnson (2014) and Bonica, Chen, and Johnson (2012) scale the campaign contributions of agency employees	✓	✓
3 Clinton, Bertelli, et al. (2012) survey agency employees and ask them how they would have voted on legislation passed in a previous Congress	✓	✓
4 Bertelli and Grose (2011) use political appointees' congressional testimony that references legislative bills as a "vote" for or against the legislation and then scale the votes	✓	
5 Clinton and Lewis (2008) use IRT on a survey of experts asked to place agencies on a liberal-conservative scale		✓
6 Gilmour and Lewis (2006) use the partisanship of the enacting coalition that created the agency		✓
7 Both Nixon (2004) and Snyder and Weingast (2000) scale the votes of commission members who had served in Congress	✓	
8 Huber and Shipan (2002) use the party affiliation of the appointees	✓	

Table 1: Approaches to Measuring Agency Preferences

mandate—its *raison d'être*—is defined by executive order, not by statute. As a result, OIRA is not subject to the inherent conflicts that plague agencies outside of the Executive Office of the President, where agency staff are torn between serving two masters, namely presidential priorities and congressional intent.

Is the focus on rulemaking an advantage or limitation of the study? An obvious constraint imposed by my focus on rulemaking and regulatory review is that audit scores are only available for executive branch agencies that use the rulemaking process. Furthermore, the scores are only precise for agencies that are reasonably active “rulemakers.”

Clearly the focus on rulemaking narrows the scope of agencies analyzed and, within agencies, discounts a number of important agency functions, such as the enforcement of regulatory rules, procurement, data collection and myriad examples of service delivery. Other studies have focused on more holistic measures of agency ideology, which aggregate across functions, but can raise challenges for interpretation. What does it mean to say that the Army is more conservative than the Broadcasting Board of Governors if we do not know the relevant task being measured? Perhaps the Army wages conservative wars and the Broadcasting Board of Governors produces liberal programming. While this may be true (a holistic measure is agnostic about the output), in some cases the comparison may be apples to oranges. By narrowing in on rulemaking, the interpretation of liberal and conservative agencies is straightforward, both for the obvious reason that the policy outputs are comparable and also because writing rules has a parallel in the familiar legislative setting, where lawmakers and bills have ideological orientations just as agencies and regulations do.

### **3 Theoretical Framework**

Audit scores are grounded in a behavioral model of the regulatory review process. The model explicates a President’s incentives to audit an Agency’s regulatory proposal and, in turn, the

Agency's incentives to develop a proposal.<sup>8</sup> Both the President and Agency are assumed to be unitary actors, so the President is inclusive of the actors within the Executive Office of the President and the Agency is inclusive of both careerists and appointees.<sup>9</sup> Like many models of the regulatory process, the Agency possesses private information about the content of the proposal and the state of the world, although the President can conduct a costly audit to uncover this information and learn about the Agency's analysis (Banks 1989). Because the content of the proposal is hidden, the President's auditing decision relies on knowledge about the Agency's reputation—both its ideological proclivities and, as I will discuss, its capacity to invest in policy valence—not the particulars of a given proposal.

Each proposal developed by the Agency has two parts, an ideological component and a valence component. The President prefers proposals that are ideologically proximate and that have high valence. Indeed, the President always wants more policy valence, since only the agency internalizes the cost of production. However, in order to coerce the Agency to change the policy, the President must rely on veto power. While this assumption may seem strong, consider that presidents lack the lawmaking capacity of most regulatory agencies. If the President wants a change in a proposal—either ideological location or valence—the President must coerce the Agency to change the policy.

I am agnostic about the precise attributes of policy valence. Valence is a reduced-form representation of the policy attributes that presidents and agencies benefit from regardless

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<sup>8</sup>While the White House occasionally directs an agency to initiate a regulatory proposal (Kagan 2001), empirical studies have consistently found that agencies are considerably more likely to initiate proposals, and that the White House often plays a reactive role, if any. See West and Raso (2012) for a recent study along these lines and a review of the literature.

<sup>9</sup>I am agnostic here about the relative influence of factions within these two groups, such as whether the president is dominant within the Executive Office of the President or whether appointees are dominant within the agency.

of their spatial preferences. High valence policies might be high quality, and thus less likely to have unintended consequences, such as scandals, or otherwise damage the reputation of the agency. Valence could also have to do with external support for the policy, whereby high valence policies are those supported by an active and attentive constituency with the power to reward or punish any political actor.<sup>10</sup>

### 3.1 The Model

The game starts with the Agency obtaining private information about the state of the world, or status quo,  $q$ . It is common knowledge that  $q$  is drawn from a uniform distribution  $q \sim U[-1, 1]$ . If choosing to regulate, the Agency makes a proposal  $(x, v)$  to change the status quo  $q$  on a policy space  $X \subset \mathfrak{R}$ , and to supply a level of valence  $v \geq 0$  that is attached to the proposal. To make a proposal, the Agency also pays a production cost  $c$ . The President observes whether or not the proposal was made  $p \in \{0, 1\}$ , but not the content of the proposal. The President draws a random opportunity cost  $k \sim U[0, 1]$  to review, or audit, the proposal  $\alpha \in \{0, 1\}$ . An audit allows the President to both learn the content of the proposal and to veto the proposal  $\gamma \in \{0, 1\}$ . Conditional on an audit, the Agency can change the content of the proposal in order to avoid a veto.

Each actor has a preferred policy denoted by  $x_A$  and  $x_P$  and receives spatial utility according to the linear loss function  $f(x) = -|x_i - x|$ . In addition to a spatial location, each proposal also has a level of valence. The Agency must internalize the cost of producing valence and thus chooses  $v$  according to the production function  $g(v; c_A)$ , where  $c_A$  is the Agency's capacity. I assume that  $g$  is concave and twice differentiable and that the Agency's

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<sup>10</sup>This interpretation is related to the literature on agency reputation and constituency building (Carpenter 2010; Carpenter 2001), as well as to the notion that valence could reflect the political salience, or importance, of the agency's policy (Wiseman 2009)

optimal level of valence is increasing in capacity  $\frac{\partial g}{\partial c_A} > 0$ .<sup>11</sup> The President does not internalize the cost of producing valence and thus simply benefits from the Agency's investment.<sup>12</sup> The strategy set for the Agency is two pairs, a proposal  $(x^*, v^*)$  and, if audited, an amended proposal  $(x', v')$ . The strategy set for the President is a double  $(\alpha, \gamma(\alpha))$ , an auditing decision and, conditional on an audit, a veto decision. Without loss of generality, I focus on the case where  $0 = x_P < x_A$ . Figure 1 summarizes the sequence of play.

Given the ideological and valence components, the utility function for the President is

$$U_P = -|x_P - x| + v - k \quad (1)$$

and the utility function for the Agency is

$$U_A = -|x_A - x| + g(v; c_A) - c \quad (2)$$

The game is sequential and can be solved by backward induction. I use this section to build the intuition for the main result. All technical details and proofs are in the appendix.

The President's strategy is driven by the fact that the President knows the reputation of the Agency, in terms of the Agency's capacity to invest in valence and the Agency's ideological preferences, but the President does not observe the location of the proposal or status quo unless the President conducts a costly audit. In making the decision about whether to audit a proposal, the President uses information about the distribution of the status quo and the Agency's incentives to propose a regulation. Specifically, the President

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<sup>11</sup>For example,  $g(v) = c_A v - \frac{v^2}{2}$

<sup>12</sup>Valence in the model is *transferable* in the sense that the policy can be changed by the Agency without sacrificing the initial investment in valence. Since the Agency is the only actor capable of changing policy, the transferability of valence seems appropriate. See Hirsch and Shotts (2012) for a related discussion.

Figure 1: Sequence of Play

- (1) Agency learns the status quo (private information)
- (2) Agency chooses whether or not to pay a fixed cost to propose a regulation
- (3) If the Agency makes a proposal
  - (a) The Agency chooses an ideological location and level of valence investment
  - (b) The President only observes whether or not a proposal was made
  - (c) The President realizes an auditing cost and decides whether to audit
  - (d) If the President audits
    - (i) The Agency can keep the proposal, or amend it
    - (ii) The President can accept or veto the proposal

calculates the probability that the status quo falls within the *veto set*, namely the region of status quo policies that the President would veto given the Agency's equilibrium proposal. If the status quo falls within the President's veto set, an audit is worthwhile because the President can leverage the threat of a veto to coerce the Agency to change the proposal. In changing the proposal, the Agency can either make a policy concession (along  $x$ ) or make a valence investment, both of which would be utility-improving for the President.

The Agency knows that there is some probability of being audited at any point. The Agency also knows that if a proposal is audited, the Agency will have the opportunity to amend the proposal. Intuitively, this provides the Agency with a strong incentive to propose the best possible policy *ex ante*, and then modify the proposal *ex post* if the President conducts an audit. The best possible policy for the Agency is a proposal at the Agency's ideal point and a level of valence that maximizes equation (2). In the absence of Presidential oversight, the Agency would move all policies to this ideal location and make the optimal valence investment, provided that the utility from doing so exceeded the production cost to

develop a proposal. With the threat of a veto, however, the Agency may be deterred from regulating if the likelihood of an audit is high and the modified policy the agency would have to propose to avoid a veto brings only limited utility.

In equilibrium the Agency supplies its ideal policy (both in terms of ideological location and valence) because the Agency is unable to credibly communicate supplying a different policy or level of valence.

**Lemma 1** *If making a proposal, the Agency always sets the policy at  $x_A$ , the Agency's ideal point, and sets the level of valence investment optimally to maximize equation (2).*

Consider a case where the Agency acted otherwise. The Agency could supply more valence than optimal, some  $v$  larger than the  $v^*$  that maximizes (2). This would reduce the President's incentives to audit if the President had verifiable information about  $v$ . The same is true for setting the ideological location of the policy. The Agency could set some  $x \neq x_A$  closer to the President's preferred policy in an effort to reduce the President's incentive to conduct an audit. However, because the President has no way to verify the information absent an audit, this strategy is suboptimal. The Agency always does better off proposing its first-best policy, and then modifying it later.<sup>13</sup>

Given information about the Agency's equilibrium proposal, it is possible to define the President's veto set, or the range of status quo policies that the President would veto. Figure 2 depicts the range in which the status quo could fall, along with the ideal points of the actors and the veto set. The top diagram depicts the veto set where no valence is supplied in equilibrium, i.e. the Agency's capacity parameter is set to zero. In this simple case, the President vetoes any proposal that moves a status quo from within the symmetric region

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<sup>13</sup>If the Agency had a mechanism for credibly communicating the amount of valence supplied, the Agency could potentially reduce the President's incentives to audit. A signaling game could explore these dynamics further.

around the President’s ideal point. The middle diagram shows how the veto set changes when the Agency supplies more valence in equilibrium. The supply of valence diminishes the President’s incentives to conduct an audit. Finally, the bottom diagram shows how the introduction of an Agency production cost creates a deterrence effect. There is a “no-go” set of status quos that the Agency will not touch around the Agency’s ideal point,  $x_P$ . The region is asymmetric and stretches further to the left of  $x_P$  to reflect the Agency’s expected utility loss from a possible veto. To the immediate right of  $x_P$  the Agency is safe from vetoes, although there are still status quos that the Agency will not move because the production cost outweighs the spatial benefit.<sup>14</sup> The size of the no-go region is increasing in the probability of an audit—the audit rate—an equilibrium quantity that I turn to next.

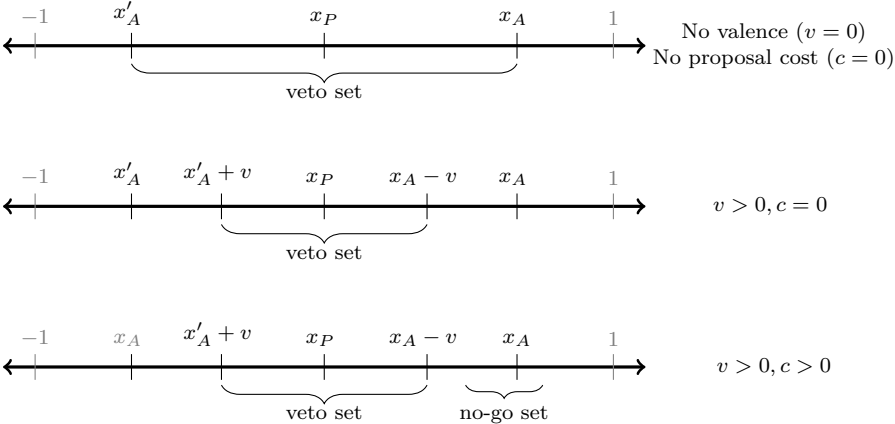


Figure 2: The veto set is depicted depending on the different parameters in the model. The “no-go” region is the set of status quo policies that the Agency will not move. See text for more detail.

The President’s auditing strategy is tied to the Agency’s ideological reputation and the Agency’s capacity to supply valence.

**Proposition 1** *The President audits the Agency based on the Agency’s preferred policy,*

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<sup>14</sup>To avoid uninteresting cases, I assume that  $v^* < c$ , so that the Agency always faces a cost to regulate.



*the Agency’s capacity to invest in valence and the President’s realization of an auditing cost. Because the auditing cost is stochastic, the President audits the Agency probabilistically. The probability of an audit, i.e the audit rate, is:*

*(i) Increasing in the preference divergence between the President and the Agency*

*(ii) Decreasing in the Agency’s capacity to invest in valence*

*(iii) Decreasing in the cost of auditing*

Proposition 1 provides the main results that motivates the estimation of audit scores. It states that the President should audit an agency at a rate that increases with preference divergence and decreases in the Agency’s capacity to supply valence.

## **Audit Rates in Theory and in Data**

The audit rate introduced in Proposition 1 is an equilibrium quantity that is driven by the President’s incentive to “correct” agency behavior. Note that the audit rate does not change depending on whether or not the Agency proposes a regulation. Instead, the audit rate changes systematically with the Agency’s policy preferences and capacity to supply valence; as preference divergence increases, the audit rate increases.<sup>15</sup>

While this interpretation of the audit rate is straightforward in the context of the model, it can appear counterintuitive in an empirical setting. Consider an empirical audit rate that is constructed by taking the share of an agency’s audited proposals over the total number of initiated proposals.<sup>16</sup> If an agency is deterred from proposing a regulation, this should de-

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<sup>15</sup>A higher audit rate would, however, lower the probability that the Agency will propose a regulation. This is because the “no-go” region of status quo’s increases with the audit rate. If the Agency draws a sufficiently distant status quo, however, the Agency will still regulate.

<sup>16</sup>For example, in my data I know that of the 50 regulatory proposals made by the EPA in 2001, 10 were later audited by the Bush administration, yielding an audit rate of 20 percent.

crease the number of proposals in the denominator, thus increasing the audit rate. However, the model highlights that the audit rate—theoretical *and* empirical—is not influenced by the number of proposals that an agency makes. The number of proposals made is partially random (influenced by the stochastic status quo) and partially deterministic (influenced by preference divergence), but any proposal that materializes should be audited at the same rate.

## 4 Audit Scores

The theoretical model shows how the President’s auditing strategy, in equilibrium, is reflected in the Agency’s audit rate. Building off of this framework, I derive audit scores from empirical audit rates. Since auditing is driven by both agency policy preferences and capacity, the construction of audit scores requires disentangling two types of auditing strategies, or biases: one that changes with the party of the president (a *partisan* auditing bias) and one that remains fixed over time regardless of the party of the president (a *shared* auditing bias). Audit scores compare partisan auditing biases across administrations, and measure the extent to which presidents from different parties audit the same agency at different rates.

**Data.** Moving from theory to data requires adapting to the multi-level structure of the auditing data. For each regulatory proposal  $r$ , data is needed on the agency  $a$  making the proposal and the presidential administration in power during the year  $t$  the proposal is made. Audit scores require data from at least two presidential administrations, one Republican administration  $R$  and a Democratic administration  $D$ . Audit scores are also estimated in a way that controls for other features of the rule-making environment that could influence audits, such as the year of the proposal, whether it was *economically significant* and other

proposal characteristics.<sup>17</sup>

**Parameters of Interest.** The theoretical model shows how a president’s incentive to audit an agency’s proposal are driven by ideological distance to the agency, the agency’s capacity to produce valence and a random auditing cost drawn by the president. Each of these enters into the empirical model in a reduced form: for ideological distance, administration  $i$ ’s partisan auditing bias  $\pi_a^i(x_A, x_P)$  for  $i = R, D$  is increasing in  $|x_P - x_A|$ ; for valence, both administrations have shared auditing bias  $\sigma_a(c_A)$  that is inversely related to the agency capacity  $c_A$  to supply valence; and, for auditing cost, both administrations face a random opportunity cost  $\kappa_{ra}$  to audit each proposal. I also add a cost component that was not in the theoretical model. The parameter  $k_{ra}$  measures how cost effective it is for either administration to audit proposal  $r$  based on  $r$ ’s observable characteristics, such as its expected economic impact.<sup>18</sup> As a result, there are three unobserved parameters ( $\pi, \sigma$  and  $\kappa$ ) and one observed parameter ( $k$ ) that capture an administration’s net benefit for auditing a proposal.

By Proposition 1, an administration’s incentive to audit a proposal increases for ideologically distant agencies (high  $\pi$ ), low-capacity agencies (high  $\sigma$ ), proposals that are cost-effective to audit (high  $k$ ) and proposals that present few opportunity costs (low  $\kappa$ ). A president will audit a proposal in year  $t$  if  $\pi_a^i + \sigma_a - (\kappa_{rat} - k_{rat}) \geq 0$ . From here, the probability of an audit can be characterized as

$$\begin{aligned} Pr(\text{Audit}_{rat} = 1) &= \Phi(\pi_a^i + \sigma_a + k_{rat}) \\ &= \Phi(\alpha_a^i + k_{rat}) \end{aligned} \tag{3}$$

where  $\Phi$  is the cumulative density function and the stochastic auditing cost has distribu-

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<sup>17</sup>See Section B of the appendix for more details on the data used to estimate audit scores.

<sup>18</sup>Economically significant regulations are more cost-effective to audit because presidents can achieve more substantive policy gains per man-hour invested.

tion  $\kappa \sim N(0, 1)$ . Estimating  $\pi_a^i$  and  $\sigma_a$  directly is not straightforward so I begin by defining  $\alpha_a^i \equiv \pi_a^i + \sigma_a$  as the *total* auditing bias.

In a regression framework with indicator variables for each agency and presidential administration, it is possible to identify  $\alpha_a^i$  directly. I rewrite (3) so that  $\alpha_a^i$  is reflected in agency and administration indicators variables.

$$Pr(\text{Audit}_{rat} = 1) = \Phi(\beta_0 + \beta_1 A_a + \beta_2 A_a \times P_t + \beta_3 + k_{rat}) \quad (4)$$

where  $A_a$  is a vector of agency indicators,  $P_t$  is an indicator for the Democratic administration and  $k_{rat}$  is a vector of proposal characteristics. Holding the controls at zero,  $\alpha_a^R \equiv \beta_0 + \beta_1 + \beta_2$ , or the audit rate for administration  $R$  and  $\alpha_a^D \equiv \beta_0 + \beta_1$ , or the audit rate for administration  $D$ .

The audit score can be identified by taking the difference in the *total* auditing bias for each administration

$$\pi_a = \alpha_a^D - \alpha_a^R \quad (5)$$

so that the shared auditing bias  $\sigma_a$  cancels out. As a result,  $\pi_a \equiv \beta_2$ .<sup>19</sup>

The audit score has a straightforward interpretation: it is the difference in auditing behavior between the two parties, after controlling for the observed rule-specific characteristics that lead to audits, the  $k_{ra}$ 's, and netting out the unobserved agency characteristics that lead to audits,  $\sigma_a$ . Furthermore, if  $D$  and  $R$  are Democrats and Republicans, respectively, then “conservative” agencies have positive values of  $\pi_a$  because they are targeted more by party  $D$  than party  $R$  and “liberal” agencies have negative values because they are targeted more by party  $R$  than party  $D$ . “Moderate” agencies that are targeted equally by both administrations will have values around zero.

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<sup>19</sup>This follows from the fact that  $\alpha_a^D - \alpha_a^R = (\beta_0 + \beta_1 + \beta_2) - (\beta_0 + \beta_1) = \beta_2$

Panel A in Figure 3 presents a graphical representation of the audit score  $\pi_a$  (the x-axis) and each administration's total auditing bias  $\alpha_a^i$  (the y-axis).<sup>20</sup> Parties  $D$  and  $R$  are denoted by their ideal points  $x_D$  and  $x_R$  and by their auditing strategies, or auditing biases,  $\alpha_a^D$  and  $\alpha_a^R$ . Per Proposition 1, the auditing strategies for each party are increasing in the distance between the party's ideal point and the ideal point of the agency. The audit score for an agency with ideal point  $x_A$  is determined by taking the vertical difference between the two partisan auditing strategies at  $x_A$ :  $\pi_a = \alpha_a^D - \alpha_a^R$ .<sup>21</sup>

**Shared Auditing Bias.** Up to now, my focus has been on estimating audit scores. With an added assumption, it is also possible to identify an estimate for shared auditing bias  $\sigma_a$ . If the two measures of partisan auditing bias are symmetric around zero, so that  $\pi_a^R + \pi_a^D = 0$ , then the appropriate estimator for  $\sigma_a$  is simply the average of the total auditing bias  $\hat{\sigma}_a = \frac{\alpha_a^D + \alpha_a^R}{2}$ .<sup>22</sup>

Shared auditing bias can be estimated from (4) by again using the identities  $\alpha_a^R \equiv \beta_0 + \beta_1$  and  $\alpha_a^D \equiv \beta_0 + \beta_2$ . Define  $\sigma = \beta_1 + \beta_2$  and rearrange terms to estimate

$$Pr(\text{Audit}_{rat} = 1) = \Phi(\beta_0 + \sigma A_a + \beta_2(A_a \times P_t - A_a) + \beta_3 k_{rat}) \quad (6)$$

Panel B of Figure 3 provides a graphical representation of  $\sigma_a$ , which is portrayed as the midpoint between the auditing strategies of  $R$  and  $D$ . In this theoretical depiction, shared

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<sup>20</sup>For simplicity, the figure assumes that total auditing bias is equal to partisan auditing bias, thus shared auditing bias is zero.

<sup>21</sup>Note that the agency ideal point  $x_A$  and the ideal points of the two parties,  $x_D$  and  $x_R$ , cannot be identified without further assumptions.

<sup>22</sup>The assumption that  $\pi_a^R + \pi_a^D = 0$  is innocuous because it preserves the ordering of the  $\sigma_a$ 's.

auditing bias is *constant* for all agencies with ideal points between the two parties,  $x_D$  and  $x_R$ . In practice, shared auditing bias can be highly variable, which is the case for the data I analyze in the next section.

## 5 Application: Clinton and Bush II Administrations

I use data on all rules proposed during the the Clinton and George W. Bush (Bush II) administrations to estimate audit scores for 82 agencies that were active in both administrations.<sup>23</sup>

I estimate audit scores using equation (4) within a multi-level model (MLM) framework where the agency intercepts and agency-administration interactions are modeled with a mean and variance, not fixed. These modeled intercepts and interactions are sometimes referred to as “varying intercepts” and “varying slopes,” respectively (Gelman and Hill 2006).

While using an MLM is not the only way to estimate (4), it has a number of advantages over the alternatives, such as an OLS model with fixed effects, including: 1) audit scores from agencies that issue few proposals, and are thus poorly estimated, are pulled toward the mean audit score of all agencies; 2) audit scores are uncorrelated with the control variables, i.e. the alternative non-ideological factors that may influence auditing; 3) there is no need to omit an agency as the reference category; and 4) an administration effect and varying year intercepts can be included in the model without dropping years due to collinearity issues.<sup>24</sup>

I estimate the following model with varying intercepts for agencies and years and varying

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<sup>23</sup>I define an agency broadly as either a sub-unit of a larger office or department, or a stand alone unit. Each agency in my analysis is technically identified by a unique four-digit code associated with each regulatory proposal’s Regulatory Identification Number. See Section B of the appendix for more detail on the data sources and agencies.

<sup>24</sup>I compare audit scores estimated using a non-linear MLM to alternatives in Section C.1 of the appendix.

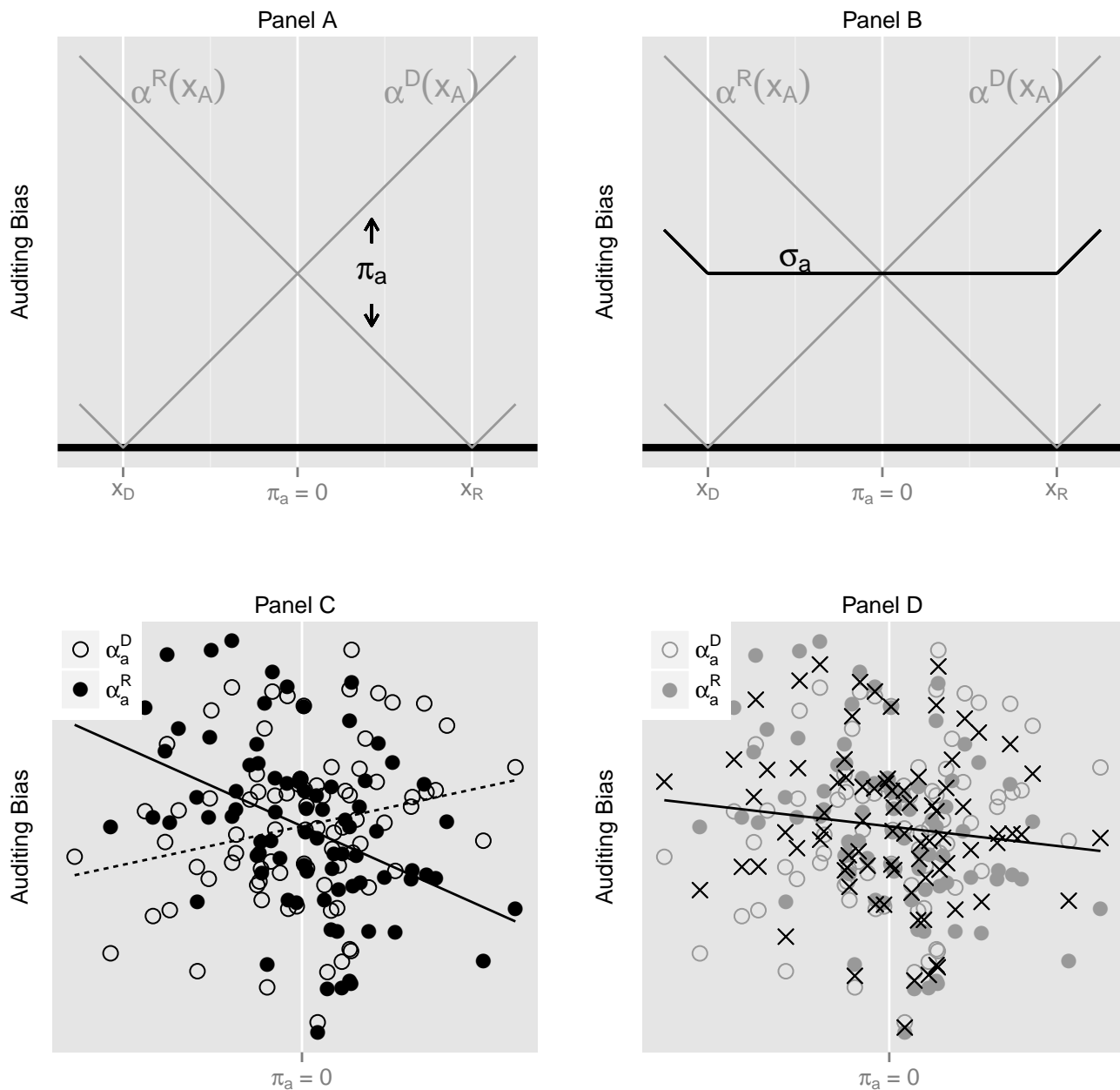


Figure 3: Audit scores depicted on the x-axis in each panel: (Panel A) the grey lines represent the total auditing bias for each administration as a function of the ideal point of the agency, with the vertical distance between the lines yielding the audit score; (Panel B) the midpoint between the two grey lines is the measure of shared auditing bias, which is depicted as constant in the region between  $x_D$  and  $x_R$ ; (Panel C) each agency is represented by the total auditing bias for each administration, with black (Republican) and open (Democratic) points, and corresponding linear trends for each set; (Panel D) the  $\times$ 's, fit with a linear trend, represent the shared auditing bias, i.e. the midpoints between the total auditing bias for each administration.

slopes for each administration

$$\begin{aligned}
\Pr(\text{Audit}_{rat} = 1) &= \Phi(\delta_t + \alpha_a^R + \pi_a \text{Clinton}_t + \beta k_{rat} + \kappa_{rat}) \\
\alpha_a^R &\sim N(\mu_{\alpha^R}, \sigma_{\alpha^R}^2) \\
\pi_a &\sim N(\mu_{\pi}, \sigma_{\pi}^2) \\
\delta_t &\sim N(\mu_{\delta}, \sigma_{\delta}^2)
\end{aligned} \tag{7}$$

where  $\text{Clinton}_t$  is an indicator for the Clinton administration,  $\alpha_a^R$  is the partisan auditing bias for the Bush II administration,  $\pi_a$  is the audit score,  $\delta_t$  is a varying intercept for each year and  $k_{rat}$  is a vector of control variables that, as discussed previously, could influence an administration's cost of auditing a given proposal.<sup>25</sup> As before with equation (4), the audit score is the coefficient on the interaction between the Democratic administration indicator and the agency indicator, although these indicator variables are modeled in the MLM framework. Figure 4 shows the estimates of  $\pi_a$  for the 82 different agencies in the sample, with standard errors estimated from (7) to calculate confidence intervals.

Panel C of Figure 3 shows the relationship between each agency's audit scores and the total auditing bias for each administration,  $\alpha^D$  and  $\alpha^R$ .<sup>26</sup> Each agency in Panel C is ordered along the x-axis by their audit score and represented by the two measures of total auditing bias with open circles for the Clinton administration and closed circles for the Bush administration. A linear fit runs through the Republican points (solid circles, solid line) and the Democratic points (open circles, dashed line). These linear fits represent the empirical counterpart to the theoretical auditing strategies (grey lines) in Panels A and B.

Notably, audit scores do not appear to be driven disproportionately by partisan auditing

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<sup>25</sup>See Section B of the appendix for details on the control variables and Table 4 for the results from estimating equation (7).

<sup>26</sup>Recall from the previous section that by (5)  $\alpha_a^D = \pi_a + \alpha_a^R$ .



from one administration, which would be the case if one linear fit in Panel C were relatively flat and the other relatively steep. Instead, Panel C demonstrates that both parties exhibit changing partisan auditing biases (strategies) as the audit score changes. In other words, it is *not* the case that Republicans audit agencies at different rates, whereas Democrats audit each agency at the same rate, which would make both parties appear partisan via the audit score, when in fact the Democrats deploy a *neutral* auditing strategy. To the contrary, Panel C shows that both administrations have changing auditing strategies as a function of the audit score, and theoretically the ideal point, of the agency.

While Figure 4 shows the audit scores for all 82 agencies in the sample, Table 2 provides more detail on the ten most *liberal* agencies and *conservative* agencies, provided that their audit scores are statistically different from zero. Table 2 also contains hand-coded information. To compare the two groups of liberal and conservative agencies, I coded whether each agency is: 1) a health, safety or environmental regulator and 2) tasked with regulating or interacting with a particular industry.

In general, the audit scores reflect some prior findings about the ideological orientation of particular agencies. Agencies that have liberal reputations, like the Occupational Safety and Health Administration (Noble 1989), and the EPA's Office of Air (Harris and Milkis 1996), are ranked as liberal. On the other hand, more business-friendly agencies like the General Services Administration and the Department of Commerce's Bureau of Industry and Security are ranked as conservative, which may reflect the closer alliance between Republicans and the business community (Vogel 1989). Table 2 shows that most liberal agencies (8 out of 10) are health, safety or environment regulators, compared to only a couple amongst the most conservative agencies (2 out of 10). Furthermore, all of the conservative agencies are associated with an industry beneficiary (10 out of 10), such as the extractives industry for the Minerals Management Service or the defense industry in the case of the Bureau of Industry and Security, whereas only two of the most liberal agencies have such an obvious

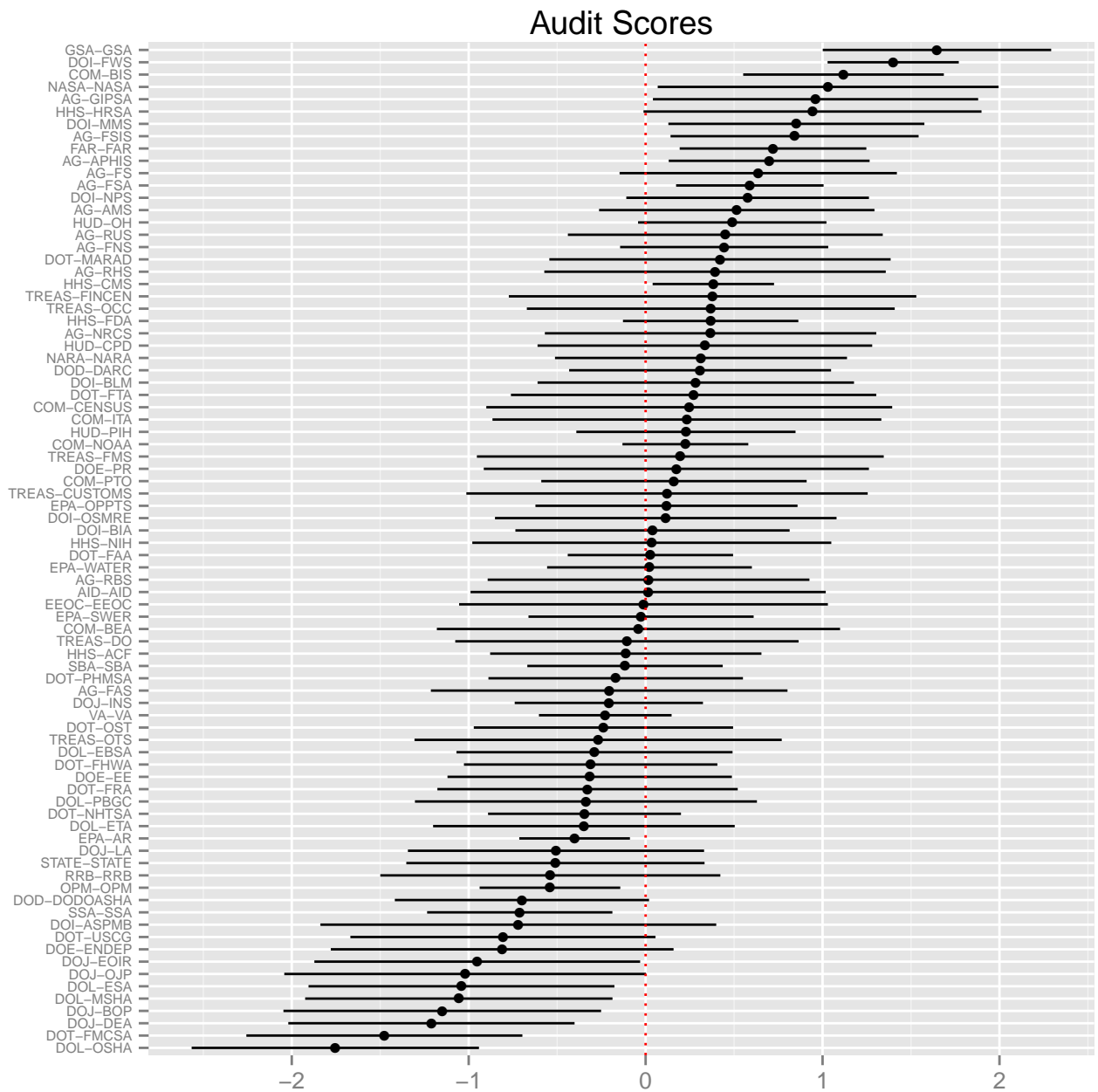


Figure 4: Estimates of agency audit scores with standard errors for the 90-percent confidence intervals. See Table 5 in the Appendix for the full agency names.

industry-agency pairing.

At first glance, the results in Table 2 are not surprising. For the most part, agencies that are plausibly liberal or conservative appear to have the appropriate audit score.<sup>27</sup> However, audit scores should also reflect the influence of political appointee on agency ideology, not just the more permanent ideological reputation of the agency. Theoretically, a conservative president may want to use the appointment process to politicize a liberal agency and pull it in the conservative direction, and vice versa with a liberal president and conservative agency (Lewis 2008). Yet if agencies that are plausibly liberal or conservative have appropriately matched audit scores, what effect does politicization have on agency ideology and presidential incentives to audit? I turn to such questions in the next section.

## 6 Discussion

### 6.1 Interpretation

Audit scores theoretically contain information about the influence of careerists *and* appointees on agency ideology. For some purposes, this is an attractive feature of audit scores, since previous work has wrestled with how to weight the relative influence of careerists and appointees within an agency (Clinton, Bertelli, et al. 2012). However, the lack of a disaggregated measure of influence from appointees and careerists raises questions about interpretation.

Do audit scores reflect more permanent features of agency ideology, such as mission and

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<sup>27</sup>As I show in Section C.2 of the appendix, the audit scores are positively correlated ( $\rho = .28$ ,  $N = 23$ ) with the agency ideology estimates of (Clinton and Lewis 2008), which are designed to reflect the enduring mission of the agency. See Figure 6 in the appendix for a scatterplot of the two measures.

Table 2: Ideologically Extreme Bureaus

Department	Agency	Audit Score	Hlth/Sfty/Env Regulator	Regulated Industry	
<b>Liberal</b>					
1	Department of Labor	Occupational Safety & Health Admin.	-1.75	✓	
2	Department of Transportation	Federal Motor Carrier Safety Admin.	-1.48	✓	Automobile
3	Department of Justice	Drug Enforcement Admin.	-1.21	✓	
4	Department of Justice	Bureau of Prisons	-1.15		
5	Department of Labor	Mine Safety and Health Admin.	-1.06	✓	Mining
6	Department of Labor	Employment Standards Admin.	-1.04	✓	
7	Department of Justice	Office for Immigration Review	-0.95	✓	
8	Social Security Administration	Social Security Admin.	-0.71	✓	
9	Office of Personnel Management	Office of Personnel Management	-0.54		
10	Environmental Protection Agency	Air and Radiation	-0.40	✓	
<b>Conservative</b>					
1	General Services Administration	General Services Administration	1.65		Manufacturing
2	Department of the Interior	Fish & Wildlife Service	1.40		Agriculture
3	Department of Commerce	Bureau of Industry and Security	1.12		Defense
4	NASA	Nat. Aeronautics & Space Admin.	1.03		Aerospace
5	Department of Agriculture	Grain/Packers/Stockyards Admin.	0.96		Agriculture
6	Department of the Interior	Minerals Management Service	0.85		Extractives
7	Department of Agriculture	Food Safety and Inspection Service	0.84	✓	Agriculture
8	FAR System	Fed. Acquisitions Regulation System	0.72		Defense
9	Department of Agriculture	Animal/Plant/Health Inspect. Service	0.70	✓	Agriculture
10	Department of Agriculture	Farm Service Agency	0.59		Agriculture

*Note: I list the 10 most liberal and conservative audit scores that are statistically distinguishable from zero (.1 level). Larger audit scores denote more conservative agencies. Under the Regulated Industry column, an industry is entered only if there is a single industry regulated.*

culture? The answer to this question depends on the role played by political appointees and, crucially, the ability of the White House to observe this role. If presidents know whether appointees are capable of holding agencies accountable to White House priorities, then audit scores may actually reflect the “quality” of the appointee more than an agency’s underlying ideology.<sup>28</sup> On the other hand, presidents may have limited information about the effectiveness of their appointees, thus presidents are forced to audit agencies as if appointees did not exist. In this case, audit scores would reflect more permanent aspects of an agency’s ideological reputation.<sup>29</sup>

While audit scores likely reflect a mix of influences from an agency’s appointees and its more lasting ideological reputation, a number of empirical relationships suggest that the scores nonetheless systematically track agency ideology. First off, audit scores are positively correlated with existing measures of agency ideology that utilize career bureaucrat preferences ( $\rho = .28$ ,  $N = 17$ ), and expert opinions about the enduring ideology of the agency

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<sup>28</sup>In theory, a president could transform a traditionally liberal agency into a conservative agency, and vice versa, thus decreasing the need to audit proposals from the agency. In the extreme case where appointees are perfect agents of the president, a traditionally liberal agency would have a moderate audit score. To see this, note that a conservative president would politicize the agency to the point where audits are unnecessary, and a liberal president would have no need to audit in the first place. As a result, presidents of both parties would audit the agency similarly ( $\pi_a^R = \pi_a^D$ ), resulting in a moderate score ( $\pi_a = \pi_a^R = \pi_a^D = 0$ ). Indeed, the logical conclusion to this dynamic would result in moderate audit scores ( $\pi = 0$ ) across all agencies.

<sup>29</sup>There is an extensive literature that highlights the limitations of appointees: 1) appointees may go native, 2) appointees lack the capacity to control the agency 3) appointees may fail to anticipate the preferences of the White House. See Lewis (2008) for a review of the literature.

( $\rho = .28$  ,  $N = 23$ ).<sup>30</sup> Per Table 2, audit scores also reflect a plausible partisan divide between more industry-friendly agencies (the conservative ones) and those dedicated to health and safety regulation (the liberal ones). Secondly, audit scores are positively correlated with partisan patterns of politicization. I find that a standard deviation increase in the audit score (conservative direction) is associated with a 34 percent increase in the number of Clinton appointees to Bush II appointees. In other words, agencies with more conservative audit scores are politicized more by the Democratic administration than the Republican administration, and vice versa.<sup>31</sup> Furthermore, using data on appointee ideology from the Bush administration, I find that the agencies with the most liberal audit scores have the most conservative appointees ( $\rho = -.23$  ,  $N = 17$ ), suggesting that the Bush White House placed the most consistent partisans (the conservative ones) in the agencies that the administration was disproportionately auditing relative to Clinton (the liberal ones).<sup>32</sup> While all of these relationships are bivariate, and some relationships are statistically weak, taken together they provide suggestive evidence that audit scores are tracking agency ideology.

## 6.2 Extension to Multiple Administrations

The audit scores estimated in this paper use information from only two presidential administrations. There are, however, options for extending the approach to cover more than two administrations. Two strategies stand out. The simplest approach would be to lump all Republican and Democratic administrations together and repeat the analysis above. Alternately, with slightly different assumptions, audit scores can be estimated uniquely for multiple administrations. In short, this would require estimating an average auditing bias

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<sup>30</sup>See Table 6 for relevant correlation plots and see Clinton, Bertelli, et al. (2012) and Clinton and Lewis (2008) for details on these measures of agency ideology.

<sup>31</sup>See Section C.3 of the appendix for the relevant empirical results and further discussion

<sup>32</sup>See Table 6 (bottom-left panel) in Section C.2 of the appendix

across all administrations along with deviations from this average for each administration. This average bias would be comparable to the *shared* auditing bias estimates, and the deviations for each administration would be comparable to the audit scores.

The question of how to extend the audit scores to multiple administrations raises some of the same interpretive concerns addressed in the previous section. If audit scores are largely capturing permanent features of agency ideology, then lumping together administrations by the party of the president may be reasonable, assuming party ideology is sufficiently stable. On the other hand, if audit scores capture too many time-specific components, namely those related to particular appointees and idiosyncratic preferences of a given presidential administration, then this “lumping” approach may be inappropriate. In general, caution should be taken when extrapolating audit scores to uncharted presidential administrations.<sup>33</sup>

## 7 Conclusion

The latent preferences of political actors can be used to test many theories of policymaking. As a result, a decades-long research agenda has focused on estimating legislator preferences from roll call data in the US Congress (Poole and Rosenthal 2000), and extending this approach to more legislative bodies (Londregan 2007; Shor and McCarty 2011), and other decision-makers who cast votes, such as judges (Bailey 2007). Like legislators and judges, regulatory agencies are political actors as well, although systematically analyzing their latent preferences presents a number of added challenges.

For one, regulatory agencies are large and complex organizations, not unitary actors, so any single preference estimate is necessarily an abstraction, and raises questions about interpretation, such as which actors within the agency are most influential. A more pressing

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<sup>33</sup>As more auditing data becomes available, some answers to these questions about interpretation, and the extension to multiple administrations, should emerge.

obstacle for estimation, however, is that agencies, unlike legislative bodies, typically operate within exclusive policy fiefdoms and do not have a shared obligation to “vote” on policy proposals with other agencies.

As I demonstrate in this paper, executive branch agencies do, however, share the same political principal, namely the White House, and have an equal opportunity to have their proposals fall under political scrutiny through the formal process of regulatory review. Audit scores exploit this commonality and estimate the extent to which presidents of different parties audit agencies at similar or different rates. The scores complement a growing literature on measuring the latent preferences of agencies, although they are not a silver bullet. Given the challenges of estimating agency preferences, including their diversity of bureaucratic functions and the myriad policy areas in which agencies operate, there is unlikely to be a single approach that is broadly applicable to all agencies.



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# A Details of Formal Model

[PRELIMINARY]

## Notation and Definitions

The following will be useful in characterizing the equilibrium and proving Proposition 1.

**Valence.** Throughout I refer to  $\tilde{v}$  as the  $v$  that maximizes (2) with respect to  $v$ , and  $v^*$  as the Agency's equilibrium strategy. Per Lemma 1,  $\tilde{v} = v^*$ . For notational convenience, I use  $v = \tilde{v} = v^*$  as the equilibrium level of valence.

**Veto Set.** The veto set  $V$  is the set of status quo locations that the President would veto in equilibrium when the Agency proposes. Per Lemma 1,  $(x^*, v^*) = (x_A, v)$ . Define  $x_l$  and  $x_r$  as the boundaries of the veto set so that  $x_l = -x_A + v$  and  $x_r = x_A - v$  and  $V = [x_l, x_r]$ . Note that  $-x_A$  is the reflection point of  $x_A$  around  $x_P = 0$ . The President will veto the equilibrium proposal  $x^* = x_A$  if  $q \in V$ .

**Regions.** Per Figure 2, I define four regions in which  $q$  could fall, from left to right: left of the veto set  $q \in [-1, x_l]$ ; between the reflection point and the President  $[x_l, x_P = 0]$ ; in the Pareto set  $q \in [x_P = 0, x_r]$ ; and right of the veto set  $q \in [x_r, 1]$ . I denote these regions  $A$ ,  $B$ ,  $C$  and  $D$ , respectively. Conditional on observing a proposal, the President will update beliefs about the likelihood that  $q$  is any of these four regions. Note that the veto set can be defined as  $V = B \cup C$ . As a I will show, the Agency and President potentially play different strategies in each of these regions.

**Assumptions.** Assume the max cost for proposing  $\bar{c} = 1$  and that  $v < c$  so that the cost

of proposing can be binding. Assume also that  $x_A$  is bounded by 0 and 1. To simplify computation, I also assume that  $c < x_A(1 - \alpha) + v$ , which ensures that the Agency always proposes a regulation in regions  $A$  and  $B$ . Finally, without loss of generality, I focus on the case where it is cheaper for the Agency to make revisions by modifying the spatial location of the policy, not the initial valence investment.

## Equilibrium

The full equilibrium can be written as follows:

**Lemma 2** (*Equilibrium Characterization*) *In equilibrium:*

(a) *A proposal strategy for the Agency  $s_A^1(x^*, v^*; )$  consists of:*

- (i)  $(x_A, v)$  if  $q \in A$  and  $q < v - c + x_A$
- (ii)  $(x_A, v)$  if  $q \in B$  and  $q < \frac{x_A(1 - \alpha) + v - c}{1 + \alpha}$
- (iii)  $(x_A, v)$  if  $q \in C$  and  $q < \frac{v - c}{1 - \alpha} + x_A$
- (iv)  $(x_A, v)$  if  $q \in D$  and  $q > c - v + x_A$
- (v) otherwise  $(\emptyset, \emptyset)$

(b) *An auditing strategy for the President  $s_P^1(\alpha; )$  consists of:*

- (i)  $\alpha = Pr(q \in V | p = 1)[EU_P(q | q \in V, p = 1) - U_P(x_A)]$

(c) *A revision strategy for the Agency  $s_A^2(x', v'; )$  consists of:*

- (i)  $(x', v)$  if  $q \in V$

(d) *A veto strategy for the President  $s_P^2(\gamma; b_P, b_A)$  consists of:*

- (i)  $\gamma = 1$  if  $U_P(x', v) \geq U_P(q, 0)$
- (ii)  $\gamma = 0$  otherwise

## Proof of Lemma 2

**Proof of Part (a) (and Lemma 1 from main text).** Starting with Lemma 1, if the Agency makes a proposal, the Agency will always initially propose  $(x_A, v)$ , where  $v$  maximizes equation (2). Consider otherwise. If the Agency sets some  $x \neq x_A$ , the Agency is strictly worse off if the proposal is not audited ( $U_A(x) < U_A(x_A)$  for all  $x \neq x_A$ ) and weakly worse off if the proposal is audited (at best the Agency could set the revision policy equal to  $x_A$ , provided that  $q \notin V$ ). Critically, the President's auditing strategy remains fixed if the Agency proposes some  $x \neq x_A$  since the President only observes that a policy has been set, not the spatial location or valence investment.

The proof of part (a) follows from comparing the Agency's expected utilities with and without a proposal. The status quo utility for the Agency is  $-|x_A - q|$ . When  $q \in V$ , the expected utility of making a proposal depends on the probability of an audit  $\alpha$ .

**Proof of Part (b).** Given Lemma 1, upon observing a proposal ( $p = 1$ ) the President will audit if

$$\begin{aligned} \phi(EU_P(q|q \in V, p = 1) - k) + (1 - \phi)(U_P(x_A) - k) &> U_P(x_A) \\ \phi[EU_P(q|q \in V, p = 1) - U_P(x_A)] &> k \end{aligned} \tag{8}$$

where  $EU_P(q|q \in V, p = 1) = -\int_{x_l}^{x_r} |x_P - q|f(q)dq$  and where  $\phi = pr(q \in V|p = 1)$  is determined by Bayes rule. Note that for  $q \in V$ , the President always gets spatial utility equal to  $q$ . Since  $k$  is distributed uniform on the range 0, 1 it is straightforward to characterize the probability of an audit as

$$\alpha = \phi[EU_P(q|q \in V, p = 1) - U_P(x_A)] \tag{9}$$

The probability that the policy is in veto set is determined by Bayes' rule. For each region,

the President calculates the probability that  $q$  is in the range and the probability of seeing a proposal given that  $q$  is in the relevant range. The President calculates  $\phi = pr(q \in V|p = 1)$  as follows

$$pr(q \in V|p = 1) = \frac{Pr(p = 1|q \in B)Pr(q \in B) + Pr(p = 1|q \in C)Pr(q \in C)}{\sum_{r \in A, B, C, D} Pr(p = 1|q \in r)Pr(q \in r)} \quad (10)$$

which simplifies to

$$pr(q \in V|p = 1) = \frac{x_A^2 + x_A + x_A \frac{v - c}{1 - \alpha}}{\frac{3}{4}x_A^2 + x_A \frac{v - c}{1 - \alpha} + \frac{3}{4} + \frac{x_A}{4}(c - v) + \frac{1}{4}(v - c)} \quad (11)$$

Note that this probability is equal to one when  $x_A = 1$  and zero when  $x_A = 0$  (no preference divergence).

**Proof of Part (c).** If audited when  $q \in V$ , the Agency would have to set a revision policy  $(x', v')$  to make the President indifferent over the new policy and the status quo. This is possible for  $q \in B$ , but not possible if the status quo is in the Pareto set  $q \in C$ . If audited, the Agency will change a policy when  $q \in B$  and will abandon a policy when  $q \in C$ . For  $q \in B, C$ , if the President audits, the President gets spatial utility equivalent to  $-|x_P - q|$ , either because the Agency revises the policy to the President's indifference point or because the Agency abandons the policy. Thus,  $(x', v') = (x', v)$ . If there is a threat of veto, the Agency will either make a policy concession or invest in more valence, depending on which is cheaper.

**Proof of Part (d).** This follows from the comparison of President's utilities. Note that the Agency is indifferent between abandoning the policy and keeping the policy and letting it



be vetoed.

## Proof of Proposition 1

Start by defining the probability of an audit implicitly. Define the implicit function as  $F$ .

$$F(x, v, \alpha) = pr(q \in V|p = 1)(EU_P(q|q \in V) - U_P(x_A)) - \alpha^* \quad (12)$$

For any function  $f(x, y)$  I use  $f_1$  for the derivative of  $f$  w.r.t.  $x$  and  $f_2$  for  $y$  and  $F_{12}, F_{21}$  for cross partials. Using the Implicit Function Theorem, I show that  $\frac{\partial \alpha^*}{\partial x_A} > 0$  and that  $\frac{\partial \alpha^*}{\partial v} < 0$ . By the theorem

$$\frac{\partial \alpha^*}{\partial x_A} = -\frac{\partial F/x_A}{\partial F/\alpha} = -\frac{F_1}{F_3} \quad (13)$$

and

$$\frac{\partial \alpha^*}{\partial v} = -\frac{\partial F/v}{\partial F/\alpha} = -\frac{F_2}{F_3} \quad (14)$$

Note first that  $F$  is the product of two functions:  $g(x_A, v, \alpha) = pr(q \in V|p = 1)$  and  $h(x_A, v, \alpha) = EU_P(q|q \in V) - U_P(x_A)$ . Therefore,  $F_i = g_i h + g h_i$  for  $i = 1, 2, 3$ .

First note that  $g$  is probability and is therefore positive, and that  $h$  is always positive because the lottery outcome from the expected utility  $EU_P$  is less in absolute terms than the certainty of  $U_P(x_A)$ . I now show the signs for each  $g_i, h_i$  for  $i = 1, 2, 3$ , which will complete the proof.

1)  $F_1 > 0$ .  $F_1$  is positive because  $g_1$  and  $h_1$  are all positive. Showing  $g_1 > 0$  requires derivation of equation (11) w.r.t.  $x_A$  using the quotient rule. Showing  $h_1 > 0$  requires straightforward derivation of  $EU_P(q|q \in V) - U_P(x_A)$  w.r.t.  $x_A$ .

2)  $F_2 < 0$ .  $F_2$  is negative because  $g_2$  and  $h_2$  are positive.

3)  $F_3 < 0$ . Note that for  $F_3$  the  $\alpha$  term does not drop out as before, thus  $F_3 = g_3h + gh_3 - 1$ . Since  $g_3$  is negative and  $h_3$  is positive, it is straightforward to show that  $|gh_3| < 1$ , which yield  $F_3 < 0$ .

Since  $F_1$  is positive and  $F_3$  is negative, then  $\frac{\partial \alpha^*}{\partial x_A} > 0$  by equation (13). Since  $F_2$  is negative then  $\frac{\partial \alpha^*}{\partial v} < 0$  by equation (14).

For brevity, numerical details for  $g_i$  and  $h_i$  for  $i = 1, 2, 3$  are been omitted, but are available on request.

## B Data

### B.1 Sources

The data analyzed here come from merging two rulemaking datasets together. The first is the *Unified Agenda of Federal Regulatory and Deregulatory Activity* (Unified Agenda), which tracks all regulatory activity that agencies work on, from the informal proposal of a rule, to the more formal Notice of Proposed Rulemaking (NPRM) to the final promulgation of the rule. The second dataset is the Regulatory Information Services Center’s data (the OIRA data) on which rules were audited by OIRA. I merged to the two datasets by each proposal’s Regulatory Information Number (RIN).

I use the term *agency* to refer to the lowest administrative unit identified by each RIN. In some cases this is a bureau or office within a larger department and in other cases this is an agency. There are roughly 220 agencies with rulemaking authority that have issued at least one rule in my dataset. Many of these agencies, however, write rules infrequently. In order to recover accurate estimates, I include only those agencies that propose more than ten rules during each of the two presidential administrations, which yields a total of 82 agencies. The results do not change much when including more agencies, although inferences are less reliable for the low-production agencies. See Table 5 for a list of all 82 agencies used in the estimation of audit scores.

### B.2 Control Variables

From the Unified Agenda, 9 covariates specific to each regulation were collected. Agencies are required to record whether each proposal: (1) will undergo a notice-and-comment period, (2) is designated as *significant* by the agency, as opposed to *substantive, but not significant*, (3) requires a “regulatory flexibility” analysis (4) imposes unfunded costs on state and local government (5) is under legal deadline, (6) is starting as an Advanced Notice of Proposed

Rulemaking (ANPRM); (7) is a Direct Final or (8) Interim Final rule.<sup>34</sup>

In the context of the theoretical model, these may provide the White House with information about the cost-effectiveness of an audit and, thus, the degree to which it is worthwhile to devote resources to auditing the proposal.<sup>35</sup> The relevant summary statistics are in Table 3.

Table 3: Summary Statistics

	Min	Max	Mean
Audit	0.00	1.00	0.24
Governments Affected	0.00	1.00	0.28
Regulatory Flexibility Required	0.00	1.00	0.07
Legal Deadline Rule	0.00	1.00	0.13
Significant	0.00	1.00	0.27
Early Proposal (ANPRM)	0.00	1.00	0.04
Routine Proposal (NPRM)	0.00	1.00	0.56
Interim Final Rule	0.00	1.00	0.12
Direct Final Rule	0.00	1.00	0.02
Administration (Clinton)	0.00	1.00	0.52
First Year of Admin	0.00	1.00	0.09
Last Year of Admin	0.00	1.00	0.14
Year	1993	2008	2001

All the rule variables are used as covariates in estimating equation (7). The relevant coefficients are shown in Table 4. Many of the covariates have a statistically significant association with the probability of an audit. For example, *significant* rules dramatically increase the probability of an audit relative to the base category of *substantive* rules. This

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<sup>34</sup>I removed *economically significant* rules from my sample. These are proposals cost more than 100 USD annually. They account for only 4 percent of the sample, and are rules that are always audited, thus they provide little information to the audit scores. The rules can be included with no substantive change to the results.

<sup>35</sup>I discarded rules that fell into the “Administrative” or “Other” categories in the Unified Agenda.

finding is not surprising given that the executive orders that have governed regulatory review have emphasized the need to review significant rules.<sup>36</sup>

Table 4: Multi-Level Model, Non-Varying (Fixed) Coefficients

	Probability of Review
Administration (Clinton)	-0.750*** (0.170)
Significant	2.000*** (0.055)
Governments Affected	0.200*** (0.068)
Regulatory Flexibility Required	0.320*** (0.100)
Legal Deadline Rule	0.830*** (0.073)
Early Proposal (ANPRM)	1.400*** (0.110)
Routine Proposal (NPRM)	1.700*** (0.061)
Interim Final Rule	1.400*** (0.081)
Direct Final Rule	-1.100*** (0.220)
First Year of Admin	-0.200 (0.220)
Last Year of Admin	-0.470** (0.210)
Varying Intercepts by Year	✓
Varying Intercepts by Agency	✓
Varying Slopes by Administration	✓
Observations	15,010
Log Likelihood	-5,499.000

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

<sup>36</sup>There is arguably more ambiguity about the need to review significant rules.

Table 5: Departments and Agencies in Analysis

	Abbreviation	Department	Agency
1	AG-AMS	Department of Agriculture	Agricultural Marketing Service
2	AG-APHIS	Department of Agriculture	Animal and Plant Health Inspection Service
3	AG-FAS	Department of Agriculture	Foreign Agricultural Service
4	AG-FNS	Department of Agriculture	Food and Nutrition Service
5	AG-FS	Department of Agriculture	Forest Service
6	AG-FSA	Department of Agriculture	Farm Service Agency
7	AG-FSIS	Department of Agriculture	Food Safety and Inspection Service
8	AG-GIPSA	Department of Agriculture	Grain Inspection, Packers and Stockyards Administration
9	AG-NRCS	Department of Agriculture	Natural Resources Conservation Service
10	AG-RBS	Department of Agriculture	Rural Business-Cooperative Service
11	AG-RHS	Department of Agriculture	Rural Housing Service
12	AG-RUS	Department of Agriculture	Rural Utilities Service
13	AID-AID	Agency for International Development	Agency for International Development
14	COM-BEA	Department of Commerce	Bureau of Economic Analysis
15	COM-BIS	Department of Commerce	Bureau of Industry and Security
16	COM-CENSUS	Department of Commerce	Bureau of the Census
17	COM-ITA	Department of Commerce	International Trade Administration
18	COM-NOAA	Department of Commerce	National Oceanic and Atmospheric Administration
19	COM-PTO	Department of Commerce	Patent and Trademark Office
20	DOD-DARC	Department of Defense	Defense Acquisition Regulations Council
21	DOD-DODOASHA	Department of Defense	Office of Assistant Secretary for Health Affairs
22	DOE-EE	Department of Energy	Energy Efficiency and Renewable Energy
23	DOE-ENDEP	Department of Energy	Departmental and Others
24	DOE-PR	Department of Energy	Office of Procurement and Assistance Policy
25	DOI-ASPMB	Department of the Interior	Assistant Secretary for Policy, Management and Budget
26	DOI-BIA	Department of the Interior	Bureau of Indian Affairs
27	DOI-BLM	Department of the Interior	Bureau of Land Management
28	DOI-FWS	Department of the Interior	United States Fish and Wildlife Service
29	DOI-MMS	Department of the Interior	Minerals Management Service
30	DOI-NPS	Department of the Interior	National Park Service
31	DOI-OSMRE	Department of the Interior	Office of Surface Mining Reclamation and Enforcement
32	DOJ-BOP	Department of Justice	Bureau of Prisons
33	DOJ-DEA	Department of Justice	Drug Enforcement Administration
34	DOJ-EOIR	Department of Justice	Executive Office for Immigration Review
35	DOJ-INS	Department of Justice	Immigration and Naturalization Service
36	DOJ-LA	Department of Justice	Legal Activities
37	DOJ-OJP	Department of Justice	Office of Justice Programs
38	DOL-EBSA	Department of Labor	Employee Benefits Security Administration
39	DOL-ESA	Department of Labor	Employment Standards Administration
40	DOL-ETA	Department of Labor	Employment and Training Administration
41	DOL-MSHA	Department of Labor	Mine Safety and Health Administration
42	DOL-OSHA	Department of Labor	Occupational Safety and Health Administration
43	DOL-PBGC	Department of Labor	Pension Benefit Guaranty Corporation
44	DOT-FAA	Department of Transportation	Federal Aviation Administration
45	DOT-FHWA	Department of Transportation	Federal Highway Administration
46	DOT-FMCSA	Department of Transportation	Federal Motor Carrier Safety Administration
47	DOT-FRA	Department of Transportation	Federal Railroad Administration
48	DOT-FTA	Department of Transportation	Federal Transit Administration
49	DOT-MARAD	Department of Transportation	Maritime Administration
50	DOT-NHTSA	Department of Transportation	National Highway Traffic Safety Administration
51	DOT-OST	Department of Transportation	Office of the Secretary
52	DOT-PHMSA	Department of Transportation	Pipeline and Hazardous Materials Safety Administration
53	DOT-USCG	Department of Transportation	U.S. Coast Guard
54	EEOC-EEOC	Equal Employment Opportunity Commission	Equal Employment Opportunity Commission
55	EPA-AR	Environmental Protection Agency	Air and Radiation
56	EPA-OPPTS	Environmental Protection Agency	Office of Prevention, Pesticides and Toxic Substances
57	EPA-SWER	Environmental Protection Agency	Solid Waste and Emergency Response
58	EPA-WATER	Environmental Protection Agency	Water
59	FAR-FAR	Federal Acquisition Regulation System	Federal Acquisition Regulation
60	GSA-GSA	General Services Administration	General Services Administration
61	HHS-ACF	Department of Health and Human Services	Administration for Children and Families
62	HHS-CMS	Department of Health and Human Services	Centers for Medicare & Medicaid Services
63	HHS-FDA	Department of Health and Human Services	Food and Drug Administration
64	HHS-HRSA	Department of Health and Human Services	Health Resources and Services Administration
65	HHS-NIH	Department of Health and Human Services	National Institutes of Health
66	HUD-CPD	Department of Housing and Urban Development	Office of Community Planning and Development
67	HUD-OH	Department of Housing and Urban Development	Office of Housing
68	HUD-PIH	Department of Housing and Urban Development	Office of Public and Indian Housing
69	NARA-NARA	National Archives and Records Administration	National Archives and Records Administration
70	NASA-NASA	National Aeronautics and Space Administration	National Aeronautics and Space Administration
71	OPM-OPM	Office of Personnel Management	Office of Personnel Management
72	RRB-RRB	Railroad Retirement Board	Railroad Retirement Board
73	SBA-SBA	Small Business Administration	Small Business Administration
74	SSA-SSA	Social Security Administration	Social Security Administration
75	STATE-STATE	Department of State	Department of State
76	TREAS-CUSTOMS	Department of the Treasury	United States Customs Service
77	TREAS-DO	Department of the Treasury	Departmental Offices
78	TREAS-FINCEN	Department of the Treasury	Financial Crimes Enforcement Network
79	TREAS-FMS	Department of the Treasury	Financial Management Service
80	TREAS-OCC	Department of the Treasury	Comptroller of the Currency
81	TREAS-OTS	Department of the Treasury	Office of Thrift Supervision
82	VA-VA	Department of Veterans Affairs	Department of Veterans Affairs

## C Robustness

### C.1 Alternate Estimation Strategies

Audit scores can be estimated using alternate models from the MLM-probit, the model used in the paper. I compare the audit scores from this model with three alternatives:

**OLS:** Use equation (15) to regress audit data on all variables using OLS. In order to recover estimates of partisan bias and shared bias, I estimated (15) and (6) using OLS to recover estimates and standard errors for  $\pi$  and  $\sigma$ . Note that each parameter is of length  $A - 1$ . The reference category was a Treasury Department agency that is not audited by OIRA, so the audit rate can be interpreted as relative to an agency that is never audited.

**Non-linear:** Use equation (15) to regress audit data on all variables using a non-linear specification, such as probit or logit.

**2-Stage:** This approach essentially estimates (15) in two parts. First use probit to regress the audit data on the control variables  $k_{rat}$ . Then decompose the probit residuals, or latent variable, on agency  $A_a$  and agency-admin  $A_a + A_a \times P_t$  indicators per (15) to recover  $\pi$ .<sup>37</sup>

In general, each of these approaches is highly correlated with the data I analyze below.<sup>38</sup>

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<sup>37</sup>To identify the probit model, I use the standard probit assumption that the latent variable has mean 0 and variance 1. This is the formulation of the probit model where the latent variable is the error term, though probit is sometimes motivated by using a continuous version of the binary dependent variable as the latent variable. See Freedman (2009) for a relevant discussion.

<sup>38</sup>The Probit model as the lowest .6 and likely suffers from the known bias in Probit as the number of parameters increase (the model includes 140 parameters).

The correlations and scatter plots across each method are shown in Figure 5.

## C.2 Comparison with Other Measures

In this section I compare the audit scores with measures developed through surveys of experts (Clinton and Lewis 2008), and surveys of bureaucrats Clinton, Bertelli, et al. (2012). Using the authors' names to construct an acronym, I refer to these two measures as "CL scores" and "CBGLN" scores, respectively. I disaggregate the CBGLN scores by estimates of careerists ("CBGLN-career" scores) and appointees ("CBGLN-appoint" scores). Since the CL scores and the CBGLN scores are only available at the department level, I aggregate the audit scores up to the department level.<sup>39</sup> A total of 17 departments overlap across all scores. I show the bivariate scatterplots and correlations in Figure 6.

The audit scores have a weak positive relationship with the CL and CBGLN-career scores and a weak negative relationship with the CBGLN-appoint scores.<sup>40</sup> These relationships are not statistically significant, perhaps in part because  $N = 17$ . Also note that the CL and CBGLN are quasi-permanent measures of agency ideology because they do include information about appointees. The CBGLN-appointee scores do and the audit scores do as well, in theory.

One reason for the modest correlations is that aggregating the scores up to the department level obscures important variation. In Figure 7 I group the audit scores in box-plots for all the departments that contain at least two agencies. The box-plots show that audit scores vary

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<sup>39</sup>I created a department-level audit scores using a weighted average of each sub-agency. The weights were constructed based on the number of rules initiated per agency, thus agencies that regulate more frequently contribute more weight to the department-level audit scores.

<sup>40</sup>The CBGLN-all scores are a weighted average of the CBGLN-career and CBGLN-appoint scores.



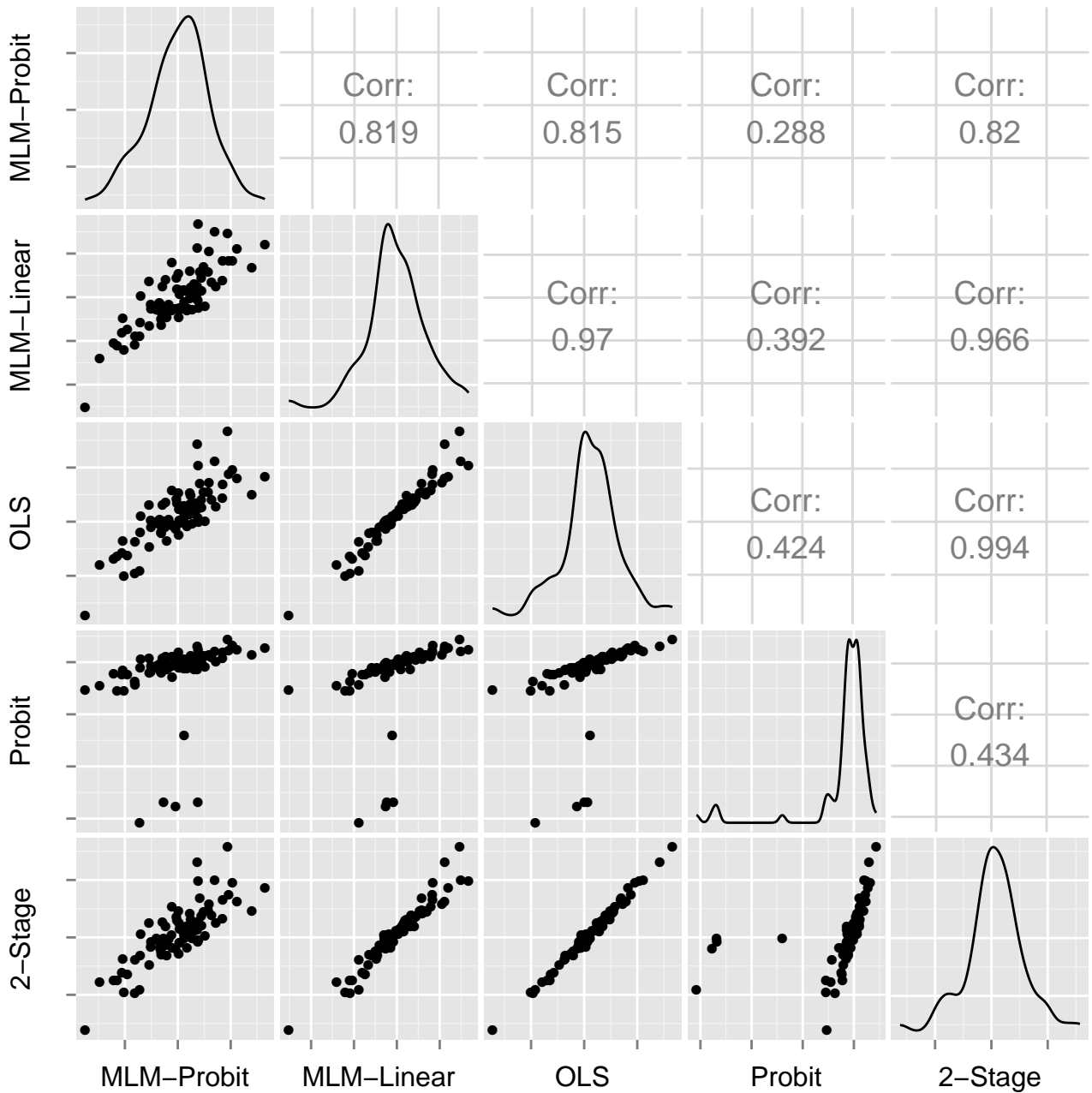


Figure 5: Correlations and scatter plots between the approach used in the paper (MLM-Probit) and the four alternative approaches described in the text: a linear multi-level model (MLM-linear), a linear model (OLS), a nonlinear model (Probit); and a two-stage approach (2-Stage). See section C.1 of the Appendix for more details

both between departments, as well as within departments. The Department of Labor, for example, is liberal on average, but ranges from including the most extreme agency (OSHA) as well as moderate agencies like the Employee Benefits Security Administration (EBSA). The department of Agriculture exhibits similar variation. The department is conservative, on average, but has a relatively liberal Foreign Agricultural Service, the liberal (negative) outlier. The departments shown in Figure 7 are large organizations, and the diversity of affiliated agencies within a department makes it harder to generalize about any particular agency.

Another reason for the modest correlations between audit scores and the other measures is that the audit scores are specific to rulemaking, whereas the other scores likely capture more diverse attributes of the departments. Consider the Department of Defense, which Figure 7 shows as being the fifth most liberal. One agency that pulls DOD in the liberal direction is the Office of Health Affairs, which administers the military’s healthcare system. While administering the healthcare system is a small part of DOD’s overall mission, it makes up a large proportion of DOD’s rulemaking agenda.

### C.3 Politicization

I evaluate the relationship between politicization and partisan bias by estimating

$$\log\left(\frac{D_a}{R_a}\right) = \beta_0 + \beta_1\pi_a + \epsilon_a \tag{15}$$

where  $\pi_a$  is the audit score for agency  $a$ ,  $D_a$  is the mean number of appointees in the agency during the Clinton administrations and  $R_a$  is the mean number of appointees during the Bush II administration.<sup>41</sup> The dependent variable measures the *relative* politicization

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<sup>41</sup>For robustness, I found similar results when the dependent variable was measured as the difference in the number of appointees, though not logged.

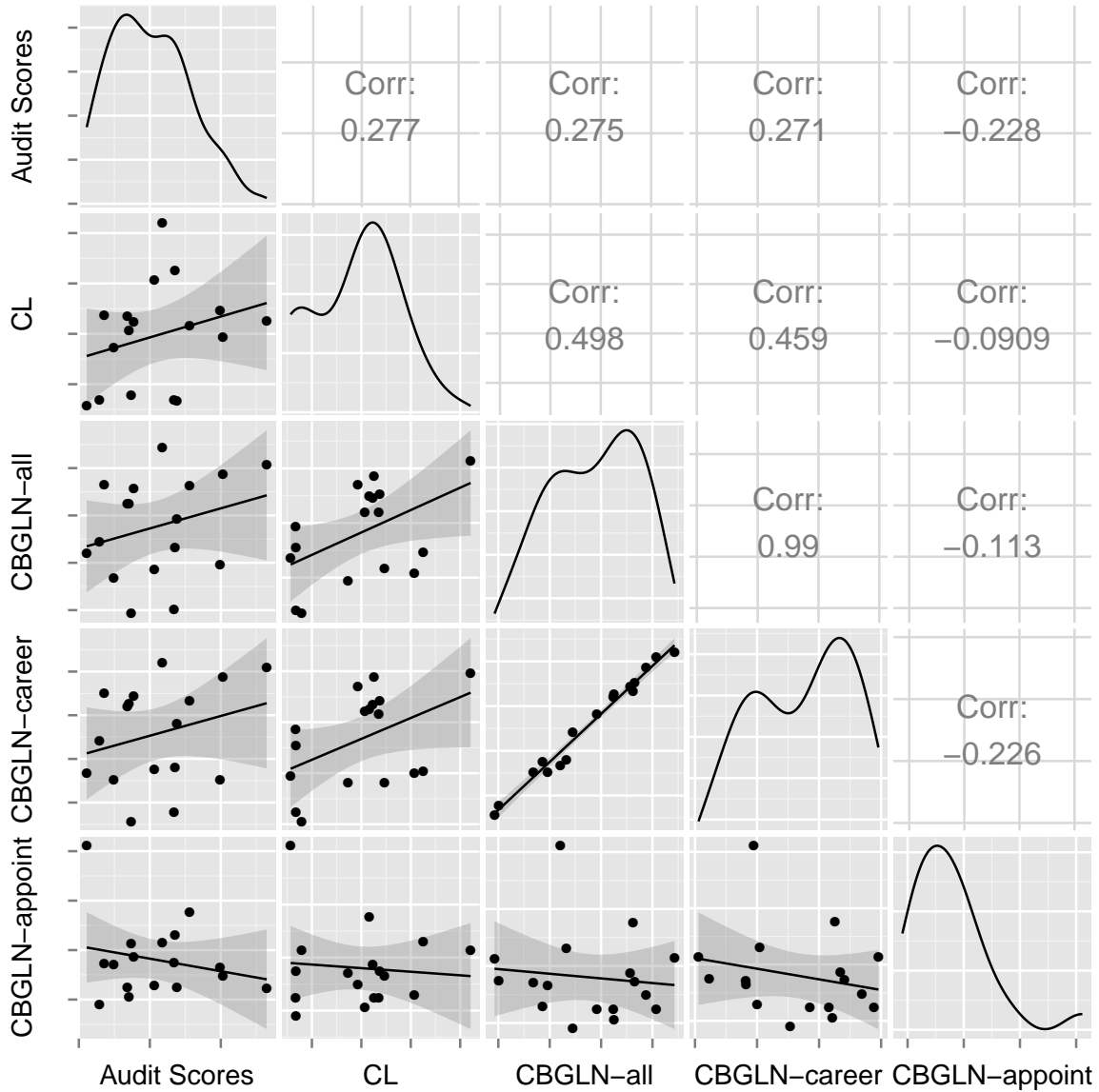


Figure 6: Audit scores are compared to four measures of agency ideology ( $N = 17$  Departments): CL is for the scores developed in Clinton and Lewis (2008); CBGLN scores were developed in Clinton, Bertelli, et al. (2012) and can be disaggregated to careerist (CBGLN-career) and appointee (CBGLN-appoint) scores, or kept whole (CBGLN-all).

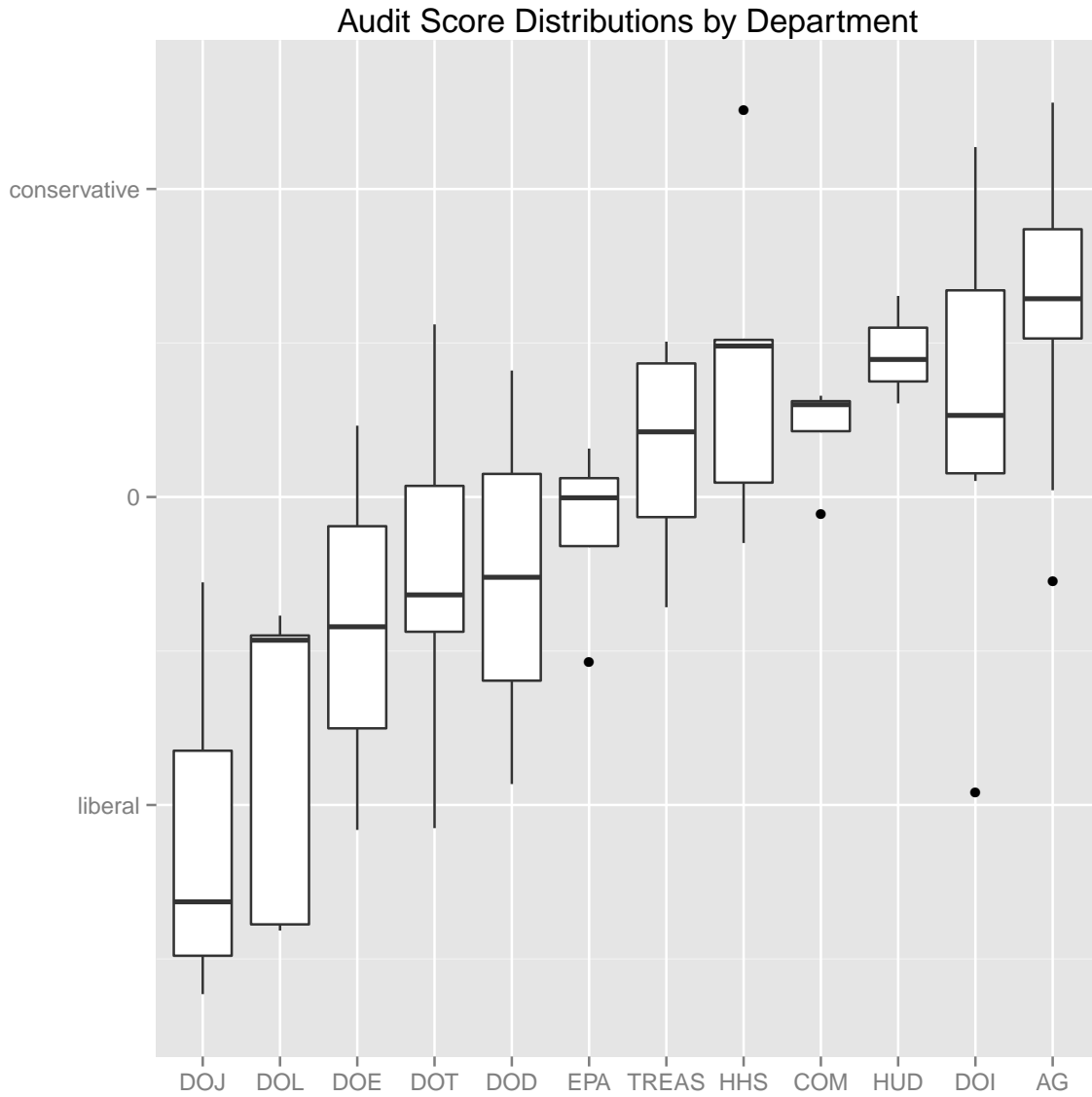


Figure 7: Boxplots showing the distribution of audit scores within each department. Departments are ordered by the mean audit score of the agencies. Departments are loosely defined as any agency with more than one subordinate office.

in an agency across the two administrations. I estimate (15) on three subsets of political appointees: Schedule C, non-career senior executive service (SES) and Senate confirmed (PAS) appointees. The results are shown in Table 6.

Table 6: Audit Scores and Politicization

	<i>Dependent variable:</i>		
	Schedule C (1)	Non-Career SES (2)	PAS (3)
Audit Score	0.160* (0.075)	-0.017 (0.059)	0.034 (0.041)
Constant	-0.096 (0.049)	0.068 (0.038)	-0.015 (0.027)
Observations	63	63	63
R <sup>2</sup>	0.068	0.001	0.011

*Note:* \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

The results from Table 6 are, however, only robust to schedule-C appointees, not PAS or SES appointees. It may be easier for presidents to pack agencies with Schedule C appointments since there is no limit to the number of appointees. With SES and PAS appointments, the president is bound by statute to a certain number. Furthermore, the president needs Senate approval for each PAS appointee. Lewis (2008:88) also finds that changes in Schedule C appointees have the greatest shift in politicization (and the SES and PAS to a lesser extent).

#### C.4 Shared Auditing Bias

In addition to audit scores, the method also recovers an estimate of the shared auditing bias  $\sigma_a$  for each agency. Agencies with higher levels of shared auditing bias are audited more by both administrations. Panel D in Figure 3 shows the correlation between partisan bias  $\pi_a$  and total bias ( $\alpha_a^R$  and  $\alpha_a^D$ ), which is slightly negative. This suggests that liberal agencies

are audited slightly more, on average, than conservative agencies. I show the same bivariate relationship in Figure 8, which plots the estimate of shared auditing bias (y-axis) against the audit score along with with abbreviations for each agency name.

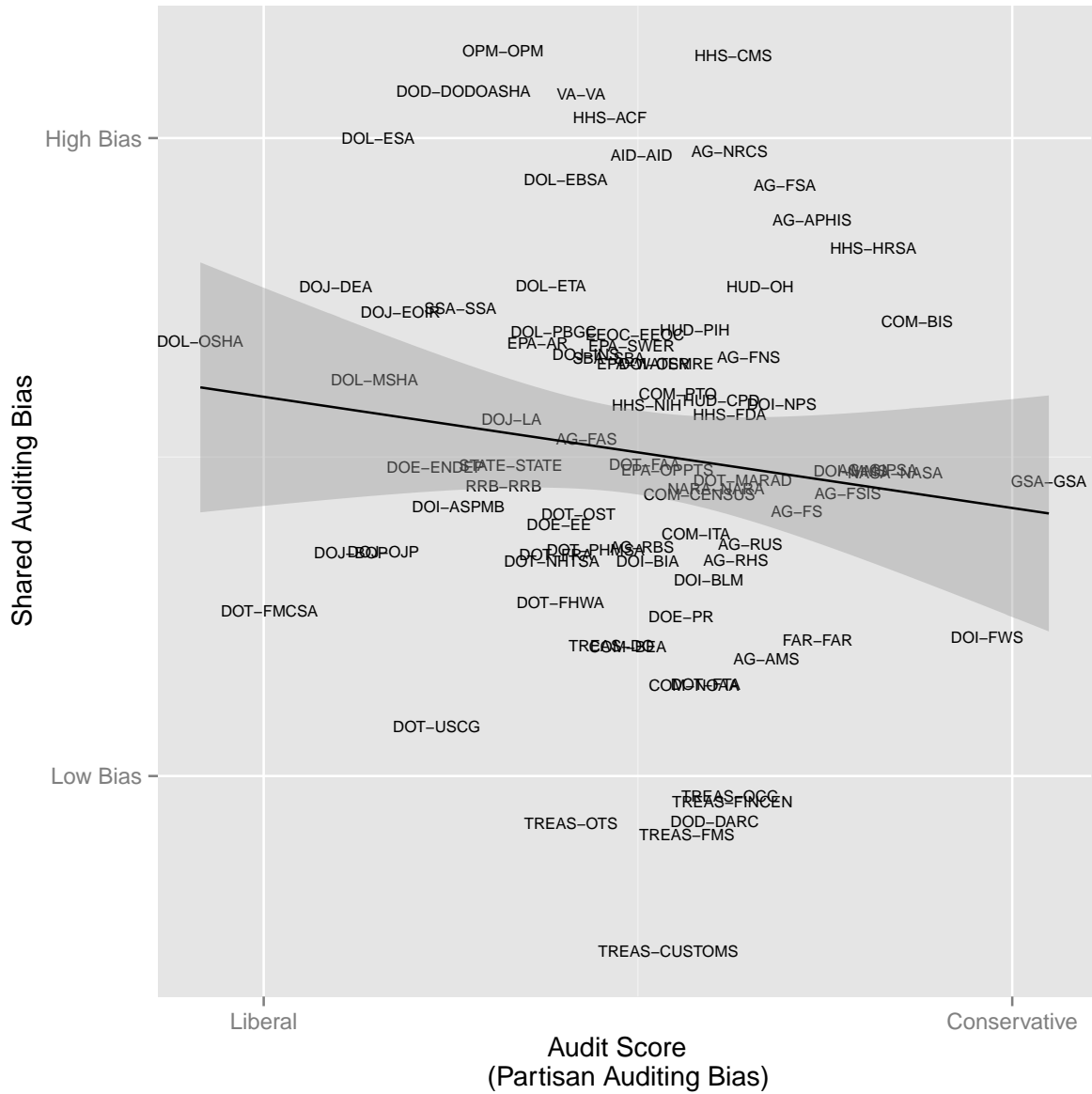


Figure 8: Scatter plot showing the relationship between audit scores and shared auditing bias. This is similar to the relationship between partisan and total bias shown in Panel D of Figure 3.