

Appendix
(Supporting Information)
“Presidential Power in a Resistant Bureaucracy”

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A Model

I first formalize the setup of the model and characterize equilibrium behavior. I then use propositions 1 and 2 to provide a theoretical basis for the hypotheses in the manuscript. Finally, I discuss scope conditions for the analysis presented in the manuscript, which are based on values of the uncertainty parameters, α and β .

Setup

The two-period sequence of the game is as follows:

1. The President decides whether to issue a directive to the Appointee, $z = \{0, 1\}$
2. The Appointee decides whether to comply with the directive, $x_1 = \{0, 1\}$, where the subscript on x denotes the period
3. The President can then pay k to remove the Appointee
4. (Period 2 starts) If the President removed the Appointee, a new one is drawn from a probability distribution
5. The Appointee (either the incumbent or replacement) chooses whether to implement the directive $x_2 = \{0, 1\}$

The President's payoff depends on the number of times the directive is implemented; P receives b for each implementation. When the directive is not implemented, P suffers reputational damage equal to $d(b, \sigma) = \frac{b^2}{2\sigma}$, where d increases with b , and σ is a political ability parameter for the president. This yields the following payoff function for the President:

$$u_P(b; \sigma) = z \sum_{i=1}^2 (x_i b - (1 - x_i) d(b, \sigma)) - k, \quad (\text{A.1})$$

where i denotes the period. Payoffs for the Appointee depend on how costly it is to implement the directive, which is determined by the function $c(b) = \frac{b^2}{2\phi}$, where the cost increases in b , and ϕ captures the Appointee's ability, or policymaking capacity.

The President is uncertain about the Appointee's type $t \in \{L, D\}$ and the state of the world $s \in \{L, D\}$, where L indicates a *loyal* realization and D indicates a *disloyal* one (the Appointee is fully informed about both). Both variables follow a Bernoulli probability distribution where the Appointee is loyal with probability α and disloyal with probability $1 - \alpha$, and the state is loyal with probability β and disloyal with probability $1 - \beta$. The state variable is drawn at the start of *each* period.

The Appointee's payoff from implementing the directive is as follows: i) for $t = L$ and $s = L$, the Appointee receives a payoff of b , just like the President; when the Appointee is loyal and the state is disloyal, the Appointee receives a payoff of $b - c(b)$, reflecting the benefit and cost of implementation; when the Appointee is disloyal and the state is loyal, the Appointee receives a payoff of 0, reflecting no benefit from the implementation but also no cost (I assume that the Appointee will not implement the directive at this indifference condition); and when the Appointee is disloyal and the state is disloyal, the Appointee receives a payoff of $-c(b)$. The Appointee's expected, per-period payoff for implementing the directive is

$$u_A(b; \phi) = \alpha\beta b + (1 - \beta)(\alpha b - c(b, \phi)). \quad (\text{A.2})$$

The President observes whether or not the directive was implemented, but not the Appointee's type or the state variable. In Perfect Bayesian equilibrium (henceforth, equilibrium) this requires the President to form beliefs about each, and to update those beliefs using Bayes rule after observing x_1 .

Equilibrium. For the removal rights model, as described here, an equilibrium is an issuance decision and removal decision made by the President, along with a set of beliefs about

the Appointee's type after the first period implementation decision. For the Appointee, an equilibrium requires a first period and second period implementation decision. In the benchmark model, where the President does not have removal rights, an equilibrium is an issuance decision by the President and a first period and second period implementation decision made by the Agency.

A Self-Enforcing Directive

When A (the Appointee) is loyal, issuing a directive when $s = D$ brings positive utility if $b < 2\phi$. To see this, note that ϕ is the level of b that maximizes net benefits for A , and that A 's payoff function is symmetric with respect to b . Thus, 2ϕ is the level of b that yields a payoff of zero for A , the same A would receive, all else equal, from choosing $x_i = 0$.

Definition 1. *When $t = L$ and $s = D$, a directive is self-enforcing when $b \leq \underline{b} \equiv 2\phi$.*

Accountability Mechanism

In equilibrium, P 's posterior beliefs, $\mu = Pr(t = L|x_1)$, are consistent with A 's equilibrium first-period implementation strategy, x_1 . Whether P will remove A at the end of period one depends on P 's beliefs about A 's type after observing A 's proposal. Given these beliefs, we can define a removal threshold, \hat{b} :

Definition 2. *There exists a removal threshold, \hat{b} , such that P 's removal threat is credible for $b > \hat{b}$ and not credible for $b \leq \hat{b}$.*

Using the definition of the removal threshold, P 's removal decision can be characterized as follows:

Lemma 1. *The President will remove A at the end of the first period unless:*

- (i) *The directive is implemented, $x_1 = 1$; or*

(ii) The removal threshold has not been surpassed ($b \leq \hat{b}$).

Proof. Part (i). When $x_1 = 1$, P believes $Pr(t = L) = 1$ since $t = D$ receives no utility from setting $x_1 = 1$, by assumption. So, replacement of A brings, at best, the same type in period 2. But since replacement costs k , P strictly prefers to keep A after $x_1 = 1$.

Part (ii). Assume that $b \leq 2\phi$. Here, type $t = L$ will set $x_1 = 1$ regardless of the state (see Lemma 3 below for details). So, when $x_1 = 0$, P knows $t = D$, i.e., $Pr(t = L|x_1 = 0) = 0$.

Now assume that $b > 2\phi$. When $x_1 = 0$, P holds posterior beliefs μ , which are determined by applying Bayes rule such that

$$\mu = Pr(t = L|x_1 = 0) = \frac{\alpha(1 - \beta)}{1 - \alpha\beta} \quad (\text{A.3})$$

P compares the utility associated with keeping A to the utility from removal. By construction, the expected utility of removal is: $\alpha(\beta b - (1 - \beta)d(b)) - (1 - \alpha)d(b) - k$. The expected utility of keeping A is $\mu(\beta b - (1 - \beta)d(b)) - (1 - \mu)d(b)$. Rearranging, P removes A when $x_1 = 0$ if:

$$\mu < \alpha - \frac{k}{\beta(b + d)}, \quad (\text{A.4})$$

Plugging Equation (A.3) into Equation (A.4) and rearranging yields:

$$\frac{k}{b + d(b)} < \frac{\beta^2\alpha(1 - \alpha)}{1 - \alpha\beta}. \quad (\text{A.5})$$

When Equation (A.5) is satisfied, the removal threat binds, that is, P would remove A after $x_1 = 0$. The *removal threshold*, \hat{b} , as defined above, is the value of b that sets the two sides equal. □

The removal threshold can also be expressed in terms of the loyalty of the agency, β , which I make use of in Figure 2 of the manuscript. I state this as a lemma.

Lemma 2. *The removal threshold can be expressed in terms of β , such that:*

1. There exists a cutpoint $\hat{\beta}$ whereby the President removes the Appointee if $\beta > \hat{\beta}$; and
2. The cutpoint $\hat{\beta}$ is decreasing in the stakes of the directive, b .

Proof. Part (i). Set the two sides equal in (A.5) above, the removal threat condition. Then, there exists a value $\hat{\beta}$ that sustains the indifference condition, which can be made into a decreasing function of b , $\hat{\beta}(b)$. To see this, note that $d(b)$ is increasing in b , so the left-hand side is decreasing in b .

Part (ii). The right-hand side is increasing β in the domain $(0, 1)$. Therefore, as b increases, the cutpoint $\hat{\beta}$ must decrease to maintain the indifference condition. \square

The removal threshold can be used to characterize A 's first-period implementation decision, x_1 . To do so, I first define the remaining two directive groups, as alluded to in the manuscript, and state their associated boundaries.

Definition 3. *When the Appointee is loyal and the state is disloyal ($t = L$ and $s = D$), the directive is:*

1. *Enforceable when ($\underline{b} < b < \bar{b} \equiv 2\phi(\beta + 1)$); and*
2. *Unenforceable when ($\bar{b} \leq b$).*

Given these definitions, A 's first period implementation strategy when A is loyal is as follows.

Lemma 3. *A loyal Appointee ($t = L$) needs at least one of these conditions to be satisfied before A will implement the directive:*

- (i) *The state is loyal;*
- (ii) *The directive is self-enforcing; or*
- (iii) *The directive is in the enforceable region and the removal threat is credible;*

Proof. Part (i). By assumption, A 's payoff from implementing the directive is positive when $t = L$ and $s = L$.

Part (ii). This follows from the definition of a self-enforcing directive above, i.e., when $b \leq 2\phi$.

Part (iii). Under what conditions will A prefer to set $x_1 = 1$ and stay in office when A would be removed after setting $x_1 = 0$? Assume first that P 's removal threat is credible, as given by (A.5). Then A 's payoff from setting $x_1 = 0$ is 0 and the payoff from setting $x_1 = 1$ is $b - c(b) + \beta b$. So, A sets $x_1 = 1$ if:

$$b < 2\phi(1 + \beta). \tag{A.6}$$

By the definition above, \bar{b} is the value of b that equalizes Equation (A.6). When $b \geq \bar{b}$, A sets $x_1 = 0$, even when the removal threat is credible. If the removal threat is not credible (and the directive is not in the self-enforcing region), it is immediate that A sets $x_1 = 0$ when $s = D$, and P keeps A in period 2. \square

Note that a *disloyal* Appointee never implements the directive, which follows immediately from the payoffs above.

Equilibrium with no Accountability Mechanism

In the second period, A decides whether to implement the directive. Regardless of A 's decision, A faces no consequences for non-compliance. The following lemma characterizes A 's period two implementation decision:

Lemma 4. *A period two implementation decision for the Appointee, x_2 , is:*

(i) $x_2 = 1$ if $s = L, t = L$;

(ii) $x_2 = 1$ if $s = D, t = L$ and $b \leq \bar{b}$;

(iii) otherwise, $x_2 = 0$.

Proof. Follows from a comparison of utilities when $b > \underline{b}$: $u_A(x_2 = 1|t = L, s = L) > 0 > u_A(x_2 = 1|t = L, s = D) > u_A(x_2 = 1|t = D, \cdot)$. \square

Benchmark Model

In the benchmark model, A 's decision in both period one and period two follows from Lemma 4. Since P cannot remove A , A 's choice to implement the directive depends on what maximizes A 's period-specific utility, i.e., A will not incur negative utility in period one as A does in the removal rights model. I discuss the issuance decision for both models in the next section.

Issuance Decision

P 's decision to issue a directive in the first place depends on the stakes of the directive and whether P 's removal threat is credible. I first establish that P will issue a directive when the expected utility of doing so exceeds 0. P 's expected utility of issuing a directive, $EU_P(z = 1)$, is determined by summing over the two periods, by equation (A.1). EU_P also depends on whether the removal threat binds, that is, whether (A.5) is satisfied ($b > \hat{b}$), and whether the directive is: self-enforcing ($b \leq \underline{b}$), enforceable ($\underline{b} < b < \bar{b}$) or unenforceable ($b \geq \bar{b}$).

There are five cases, three of which occur when the removal threat is credible:

- 1) *Self-enforcing region* ($b < \underline{b}$)
- 2) *Enforceable region* ($\underline{b} < b < \bar{b}$)
- 3) *Unenforceable region* ($b > \bar{b}$)

And two of which occur when the removal threat is not credible (either $b \leq \hat{b}$, or P lacks removal rights)

1) *Self-enforcing region* ($b < \underline{b}$)

2) *Enforceable and unenforceable regions* ($b > \underline{b}$)

I start with the three cases when the removal threat is credible. In the first case, the directive is in the self-enforcing region and the removal threat is credible, so that A will be removed when $x_1 = 0$, which only occurs when $t = D$. P 's expected utility of issuing a directive is:

$$EU_P(z = 1 | b \leq \underline{b}, b > \hat{b}) = \alpha 2b + \alpha(1 - \alpha)(b - d - k) - (1 - \alpha)^2(2d + k). \quad (\text{A.7})$$

Note that d is still a function, $d = d(b, \sigma)$. Because the directive is self-enforcing, P 's expected utility does not depend on the state variable β . Now, when the removal threat is credible and the directive is enforceable, a loyal A sets $x_1 = 1$. A sets $x_2 = 1$ only if the period 2 state is loyal. As a result P 's expected utility is:

$$\begin{aligned} EU_P(z = 1 | \underline{b} < b < \bar{b}, b > \hat{b}) = & \alpha(\beta 2b + (1 - \beta)(b - d)) + & (\text{A.8}) \\ & (1 - \alpha)(\alpha\beta(b - d - k) - \\ & (1 - \beta)(2d + k)). \end{aligned}$$

When the removal threat is credible and the directive is unenforceable, a loyal A sets $x_i = 0$ for $i = 1, 2$ when $s = D$. As a result P 's expected utility is:

$$\begin{aligned}
EU_P(z = 1|b \geq \bar{b}, b > \hat{b}) = & \alpha\beta^2 2b + \alpha\beta(1 - \beta)(b - d) + & (A.9) \\
& (\alpha\beta - \alpha^2\beta^2)(b - d - k) - \\
& (1 - 2\alpha\beta + \alpha^2\beta^2)(2d + k)
\end{aligned}$$

The last two cases occur when the removal threat is not credible. In the removal rights model, this happens when $b \leq \hat{b}$. In the benchmark model, this is always the case. The following is P 's expected utility of issuing a directive in the enforceable region:

$$\begin{aligned}
EU_P(z = 1|\underline{b} < b < \bar{b}, b \leq \hat{b}) = & \alpha(\beta^2 2b + 2\beta(1 - \beta)(b - d) - (1 - \beta)^2 2d) - & (A.10) \\
& (1 - \alpha)2d.
\end{aligned}$$

And the following is P 's expected utility of issuing a directive in the self-enforcing region:

$$EU_P(z = 1|b < \underline{b}, b \leq \hat{b}) = \alpha 2b - (1 - \alpha)2d \quad (A.11)$$

Analysis

I now compare the implications of the removal rights model and the benchmark model. In doing so, I provide a theoretical basis for the hypotheses in the manuscript. The first comparison I make concerns the President's issuance decision, which provides a basis for hypotheses H1. (I limit the analysis to the enforceable region where the removal threshold has been surpassed, which narrows the analysis to where the models have different implications.):

Proposition 1. *For a directive in the enforceable region, the President's decision to issue the directive depends on whether the President has removal rights and on the stakes of the*

directive. In general, removal rights improves the President's payoff from issuing a higher stakes directive, that is, a directive where the removal threshold has been surpassed. If the stakes are sufficiently high, a President without removal rights will not issue the directive, even when a President with removal rights would.

Proof. This follows from a comparison of the expected utility functions derived above in equations (A.8) and (A.10) (I refer to them using subscripts 1 and 0, respectively). Each gives the expected utility of issuing a directive when the removal threat is credible, in principle, although the former assumes removal rights and the latter assumes no removal rights. It is straightforward to show that both utility functions equal zero for $b = 0$, are single-peaked, and have well-defined maximums at b_1^* and b_0^* , where $b_1^* > b_0^*$. Furthermore, the second derivatives reveal that equation (A.8) increases quicker than (A.10), which, taken all together, implies that the payoff from (A.8), when the President has removal rights, is always greater when the payoff is positive, i.e., when $EU_P > 0$. Also, since (A.10) peaks before (A.8), it also descends below zero before (A.8). Thus, there exists some higher-stakes directive, call it b_H , and a lower-stakes directive, b_L , where $b_H > b_L$ and where the President with removal rights prefers the high-stakes directive $EU_P(b_H|r = 1) > EU_P(b_L|r = 1) > 0$ and, at the same time, the President without removal rights prefers the low-stakes directive: $EU_P(b_L|r = 0) > 0 > EU_P(b_H|r = 0)$. (The $r \in \{0, 1\}$ denotes the existence of removal rights.) □

The remaining hypotheses in the manuscript concern compliance with the directive (H2 and H3) and, when the President observes non-compliance, whether P will remove the Appointee (H4). The following proposition forms a theoretical basis for these hypotheses: part (i) forms the basis for H2, part (ii) forms the basis for H3, and part (iii) forms the basis for H4.

Proposition 2. *Compliance rates in the enforceable region depend on whether the President*

has removal rights:

- (i) When the President has removal rights, compliance is weakly greater than when the President lacks removal rights and compliance is increasing in the stakes of the directive;
- (ii) When the removal threat is not credible, compliance increases in the probability of the loyal state, β ; and
- (iii) When the removal threat is credible, the Appointee always complies with the directive, except when A is disloyal ($t = D$).

Proof. Part (i). By Lemma 2, the removal threat binds at $\hat{\beta}$, which is a decreasing function of b . So, as b increases, $\hat{\beta}$ decreases, lowering the threshold at which the removal threat binds. Thus, a higher stakes directive has a lower removal threshold (and the compliance rate increases to α over a wider range of β values). When the President lacks removal rights, or the removal threat is not credible, compliance depends entirely on the uncertainty parameters in the enforceable region (by assumption, compliance occurs only when $t = L$ and $s = L$, so the compliance rate is $\alpha\beta$);

Part (ii). Since the probability that $s = L$ is β , by definition, the compliance rate increases in β when the removal threat is not credible;

Part (iii). When the removal threat is credible, the probability that the Appointee does not comply with the directive is equivalent to the probability that the Appointee is disloyal, $t = D$, which occurs with probability $1 - \alpha$. This follows from Lemma 3.

□

Scope Conditions

In this section I explore how the location of the removal threshold, \hat{b} , changes for different values of the uncertainty parameters. Doing so helps to identify the scope of the President's

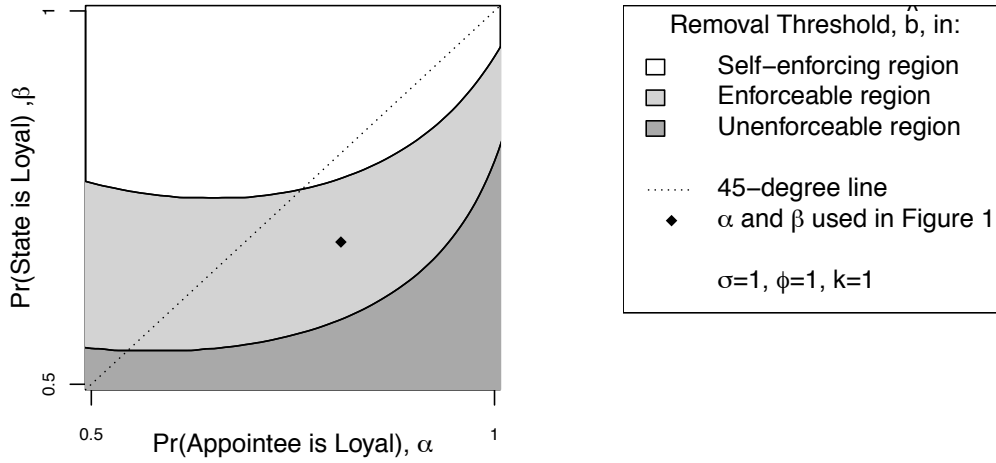
power since a credible removal threat is a necessary condition for the President to exert influence on P 's Appointee. When the removal threshold is in the enforceable region (as it is in Figure 1 of the manuscript), the President's removal threat is only credible for those directives located to the right of the threshold, which includes a subset of the enforceable region and all of the unenforceable region. But if the removal threshold moved leftward into the self-enforcing region, the president could exert influence over a wide range of directives, thus increasing P 's expected utility of issuing a directive.

To see how the location of the removal threshold varies depending on the uncertainty parameters, Figure 4 plots the region in which the threshold is located for different values of α and β . Reasonable parameter values, as defined in the manuscript, are those located both below the dashed 45-degree line, where $\alpha > \beta$, and those located where both parameters are relatively large, such as around the diamond marker, which indicates the values used in Figure 1. In general, the removal threshold is located in the enforceable region for most parameter values that seem reasonable.

In addition to defining some scope conditions for the hypotheses above, Figure 4 also provides insight into the relationship between presidential power and a president's uncertainty about the loyalty of any subordinates. For one, as β increases and the state becomes more loyal, the removal threshold is more likely to be in the self-enforcing region, which makes the President's removal threat credible for a much wider range of directives. Intuitively, when β is large relative to α it suggests that a president's career staff are *more* loyal than the appointed staff, so it is easier for a president to attribute non-compliance to the appointees and, consequently, to improve the situation by removing those appointees. Along the same lines, although less intuitive, the figure shows that increasing the loyalty of the Appointee too much can also limit the President's power. This happens when the President is so confident that the Appointee is loyal that the President is unwilling to remove the Appointee after observing non-compliance. Perhaps not surprisingly, this striking result only occurs for

extreme value of α .

Figure 4: Presidential Power and Uncertainty



B Data

This section includes supplementary information about the data.

Agencies and Proposals

Each agency is uniquely identified by the first four digits of the Regulatory Information Number (RIN) assigned to each regulatory proposal. In some cases, the agency is a standalone unit, like the General Services Administration, and sometimes it is an office within a larger unit, like the Office of Water within the Environmental Protection Agency. The study includes 118 agencies. Of the agencies, 15 are ones in which the president lacks removal rights and, of the proposals, roughly 15 percent were issued by these agencies. Table 4 has a complete list of agencies used throughout.

The analysis includes those proposals listed in the Unified Agenda as having “priorities” that are: (i) economically significant; (ii) significant; or (iii) substantive but not significant. The economically significant proposals are expected to have an impact on the economy of over \$100 million per year, whereas the significant and substantive categories are lower priority, with the substantive ones the lowest priority. Any proposal listed with a priority as “routine” and “infrequent” was dropped from the analysis. I also dropped any Direct Final or Interim Final rules, which bypass the notice and comment process, and proposals that were initiated using the alternative Advance Notice of Proposed Rulemaking process.

In addition to the priority of a proposal, I use data provided in the Unified Agenda for whether a proposal: affects small business and requires a regulatory flexibility analysis (*RegulatoryFlexibility_i*); affects lower levels of government such as state and local government (*GovLevelsAffected_i*); imposes unfunded mandates on lower levels of government (*UnfundedMandate_i*), based on the Unfunded Mandates Reform Act of 1995; and is under a legal deadline, which suggests that Congress (or the courts) viewed the proposal as

Figure 5: A Typical Unified Agenda Entry

| | | |
|--|--|--|
| EPA/AR | RIN: 2060-AS47 | Publication ID: Spring 2015 |
| Title: •Federal Plan for Regulating Greenhouse Gas Emissions From Electric Generating Units | | |
| Abstract: | | |
| <p>EPA is planning a notice of proposed rulemaking for a Federal plan to implement greenhouse gas emission guidelines for existing fossil fuel-fired electric generating units (EGUs). The emission guidelines were proposed in June 2014 as the Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (79 FR 34830; the Clean Power Plan). This plan is part of the President's Climate Action Plan announced in June 2013 to reduce carbon emissions from the power sector by 30 percent below 2005 levels. This Federal plan serves to: 1) provide a model rule that States can tailor for implementation, and 2) set in place a plan that EPA can implement for States that do not develop their own plan. The EPA sees this Federal plan as an interim measure to ensure that congressionally mandated emission standards under authority of section 111 of the CAA are implemented until States assume their role as the preferred implementers of the emissions guidelines.</p> | | |
| Agency: Environmental Protection Agency(EPA) | Priority: Other Significant | |
| RIN Status: First time published in the Unified Agenda | Agenda Stage of Rulemaking: Proposed Rule Stage | |
| Major: Undetermined | Unfunded Mandates: Undetermined | |
| CFR Citation: 40 CFR Part 62 (To search for a specific CFR, visit the Code of Federal Regulations.) | | |
| Legal Authority: 42 U.S.C. 7401 et seq. | | |
| Legal Deadline: None | | |
| Timetable: | | |
| Action | Date | FR Cite |
| NPRM | 08/00/2015 | |
| Final Rule | 08/00/2016 | |
| Regulatory Flexibility Analysis Required: Undetermined | | Government Levels Affected: Federal, Local, State, Tribal |
| Federalism: Undetermined | | |
| Included in the Regulatory Plan: No | | |
| RIN Data Printed in the FR: No | | |

particularly important (*LegalDeadline_i*). The data start in 1995 because this is when reliable reporting on the proposal variables began. Summary statistics for these variables are provided in Table 3.

Unified Agenda Data (the reporting directive)

Figure 5 shows a typical Unified Agenda entry. (The RIN number can be seen on the top row.) This example is from a Spring 2015 entry by the Environmental Protection Agency (EPA) where the EPA is announcing plans to publish a Notice of Proposed Rulemaking, or NPRM, by August 2015 and a final rule by August 2016. This is a prospective announcement since the agency has not yet published the NPRM. In the manuscript, the compliance measure indicates whether an agency reports its regulatory activity prospectively, as the EPA does here (a case of compliance), or whether the agency only reports its activity retrospectively, after the publication of an NPRM (non-compliance). The former case increases transparency because it provides the public with advance notice of the agency's plans.

OIRA Data (the review directive)

Data on the proposals reviewed by OIRA come from the Regulatory Information Services Center. To make the analysis of these proposals more comparable to those analyzed for the reporting directive, all the proposals entered the review process as proposed rules (potential NPRMs, not potential final rules). The results change little when including a control for any proposals that were first introduced during a previous administration, not the administration conducting the review.

Regulatory Stakes Index

To create the regulatory stakes index, $RegulatoryStakes_a$, I used factor analysis on the covariance matrix of the proposal-level variables listed in Table 3. All of the variables loaded onto one factor, with factor loading around .3 for each. Additional factors had eigenvalues less than 1, which implies that they explain little in the way of additional variance. To follow common practice, I use the factor with the eigenvalue greater than 1.

Table 3: Summary Statistics

| | Min. | Max. | Mean | Std. Deviation |
|--|------|------|------|----------------|
| Removal Rights Agency | 0.00 | 1.00 | 0.87 | 0.33 |
| Agency Loyalty | 0.00 | 3.90 | 1.99 | 0.93 |
| Regulation Stakes | -0.4 | 5.39 | -0.0 | 0.58 |
| Compliance Indicator (Reporting Directive) | 0 | 1 | .44 | 0.49 |
| Variables used in Regulation Stakes index | | | | |
| Significant Proposal | 0.00 | 1.00 | 0.29 | 0.46 |
| Regulatory Flexibility Analysis Required | 0.00 | 1.00 | 0.09 | 0.29 |
| Lower Levels of Government Affected | 0.00 | 1.00 | 0.19 | 0.39 |
| Legal Deadline | 0.00 | 1.00 | 0.11 | 0.32 |
| Unfunded Mandate | 0.00 | 1.00 | 0.00 | 0.08 |

Table 4: List of Agencies

| Parent Dept. | Agency / Office | Removal Rights |
|--------------|---|----------------|
| 1 | Agency for International Development | ✓ |
| 2 | Commodity Futures Trading Commission | |
| 3 | Consumer Product Safety Commission | |
| 4 | Department of State | ✓ |
| 5 | Department of Veterans Affairs | ✓ |
| 6 | Equal Employment Opportunity Commission | ✓ |
| 7 | Farm Credit Administration | |
| 8 | Federal Communications Commission | |
| 9 | Federal Deposit Insurance Corporation | |
| 10 | Federal Emergency Management Agency | ✓ |
| 11 | Federal Energy Regulatory Commission | |
| 12 | Federal Housing Finance Agency | ✓ |
| 13 | Federal Housing Finance Board | |
| 14 | Federal Maritime Commission | |
| 15 | Federal Trade Commission | |
| 16 | General Services Administration | ✓ |
| 17 | National Aeronautics and Space Administration | ✓ |
| 18 | National Archives and Records Administration | ✓ |
| 19 | National Credit Union Administration | ✓ |
| 20 | Nuclear Regulatory Commission | |
| 21 | Office of Personnel Management | ✓ |
| 22 | Railroad Retirement Board | |
| 23 | Securities and Exchange Commission | |
| 24 | Small Business Administration | ✓ |
| 25 | Social Security Administration | ✓ |
| 26 | Surface Transportation Board | |
| 27 | Department of Agriculture Agricultural Marketing Service | ✓ |
| 28 | Department of Agriculture Animal and Plant Health Inspection Service | ✓ |
| 29 | Department of Agriculture Farm Service Agency | ✓ |
| 30 | Department of Agriculture Federal Crop Insurance Corporation | ✓ |
| 31 | Department of Agriculture Food and Nutrition Service | ✓ |
| 32 | Department of Agriculture Food Safety and Inspection Service | ✓ |
| 33 | Department of Agriculture Forest Service | ✓ |
| 34 | Department of Agriculture Grain Inspection, Packers and Stockyards Administration | ✓ |
| 35 | Department of Agriculture National Institute of Food and Agriculture | ✓ |
| 36 | Department of Agriculture Office of the Secretary | ✓ |
| 37 | Department of Agriculture Rural Business-Cooperative Service | ✓ |
| 38 | Department of Agriculture Rural Housing Service | ✓ |
| 39 | Department of Agriculture Rural Utilities Service | ✓ |
| 40 | Department of Commerce Bureau of Economic Analysis | ✓ |
| 41 | Department of Commerce Bureau of Industry and Security | ✓ |
| 42 | Department of Commerce International Trade Administration | ✓ |
| 43 | Department of Commerce National Oceanic and Atmospheric Administration | ✓ |
| 44 | Department of Commerce Patent and Trademark Office | ✓ |
| 45 | Department of Defense Defense Acquisition Regulations Council | ✓ |
| 46 | Department of Defense Department of the Army | ✓ |
| 47 | Department of Defense Office of Assistant Secretary for Health Affairs | ✓ |
| 48 | Department of Defense Office of the Secretary | ✓ |
| 49 | Department of Defense U.S. Army Corps of Engineers | ✓ |
| 50 | Department of Education Office of Elementary and Secondary Education | ✓ |
| 51 | Department of Education Office of Postsecondary Education | ✓ |
| 52 | Department of Education Office of Special Education and Rehabilitative Services | ✓ |
| 53 | Department of Energy Defense and Security Affairs | ✓ |
| 54 | Department of Energy Departmental and Others | ✓ |
| 55 | Department of Energy Energy Efficiency and Renewable Energy | ✓ |
| 56 | Department of Energy Office of Procurement and Assistance Policy | ✓ |
| 57 | Department of Health and Human Services Administration for Children and Families | ✓ |
| 58 | Department of Health and Human Services Centers for Disease Control and Prevention | ✓ |
| 59 | Department of Health and Human Services Centers for Medicare & Medicaid Services | ✓ |

(Continued on next page)

| | Parent Dept. | Agency / Office | Removal Rights |
|-----|---|--|----------------|
| 60 | Department of Health and Human Services | Food and Drug Administration | ✓ |
| 61 | Department of Health and Human Services | Health Resources and Services Administration | ✓ |
| 62 | Department of Health and Human Services | National Institutes of Health | ✓ |
| 63 | Department of Health and Human Services | Office of the Secretary | ✓ |
| 64 | Department of Homeland Security | Federal Emergency Management Agency | ✓ |
| 65 | Department of Homeland Security | Transportation Security Administration | ✓ |
| 66 | Department of Homeland Security | U.S. Citizenship and Immigration Services | ✓ |
| 67 | Department of Homeland Security | U.S. Coast Guard | ✓ |
| 68 | Department of Homeland Security | U.S. Customs and Border Protection | ✓ |
| 69 | Department of Homeland Security | U.S. Immigration and Customs Enforcement | ✓ |
| 70 | Department of Housing and Urban Development | Office of Community Planning and Development | ✓ |
| 71 | Department of Housing and Urban Development | Office of Housing | ✓ |
| 72 | Department of Housing and Urban Development | Office of Public and Indian Housing | ✓ |
| 73 | Department of Housing and Urban Development | Office of the Secretary | ✓ |
| 74 | Department of Justice | Bureau of Alcohol, Tobacco, Firearms, and Explosives | ✓ |
| 75 | Department of Justice | Bureau of Prisons | ✓ |
| 76 | Department of Justice | Drug Enforcement Administration | ✓ |
| 77 | Department of Justice | Executive Office for Immigration Review | ✓ |
| 78 | Department of Justice | Immigration and Naturalization Service | ✓ |
| 79 | Department of Justice | Legal Activities | ✓ |
| 80 | Department of Justice | Office of Justice Programs | ✓ |
| 81 | Department of Labor | Employee Benefits Security Administration | ✓ |
| 82 | Department of Labor | Employment and Training Administration | ✓ |
| 83 | Department of Labor | Employment Standards Administration | ✓ |
| 84 | Department of Labor | Mine Safety and Health Administration | ✓ |
| 85 | Department of Labor | Occupational Safety and Health Administration | ✓ |
| 86 | Department of Labor | Pension Benefit Guaranty Corporation | ✓ |
| 87 | Department of the Interior | Assistant Secretary for Policy, Management and Budget | ✓ |
| 88 | Department of the Interior | Bureau of Indian Affairs | ✓ |
| 89 | Department of the Interior | Bureau of Land Management | ✓ |
| 90 | Department of the Interior | Minerals Management Service | ✓ |
| 91 | Department of the Interior | National Park Service | ✓ |
| 92 | Department of the Interior | Office of Surface Mining Reclamation and Enforcement | ✓ |
| 93 | Department of the Interior | United States Fish and Wildlife Service | ✓ |
| 94 | Department of the Treasury | Alcohol and Tobacco Tax and Trade Bureau | ✓ |
| 95 | Department of the Treasury | Bureau of Alcohol, Tobacco and Firearms | ✓ |
| 96 | Department of the Treasury | Comptroller of the Currency | ✓ |
| 97 | Department of the Treasury | Departmental Offices | ✓ |
| 98 | Department of the Treasury | Financial Crimes Enforcement Network | ✓ |
| 99 | Department of the Treasury | Financial Management Service | ✓ |
| 100 | Department of the Treasury | Internal Revenue Service | ✓ |
| 101 | Department of the Treasury | Office of Thrift Supervision | ✓ |
| 102 | Department of the Treasury | United States Customs Service | ✓ |
| 103 | Department of Transportation | Federal Aviation Administration | ✓ |
| 104 | Department of Transportation | Federal Highway Administration | ✓ |
| 105 | Department of Transportation | Federal Motor Carrier Safety Administration | ✓ |
| 106 | Department of Transportation | Federal Railroad Administration | ✓ |
| 107 | Department of Transportation | Federal Transit Administration | ✓ |
| 108 | Department of Transportation | Maritime Administration | ✓ |
| 109 | Department of Transportation | National Highway Traffic Safety Administration | ✓ |
| 110 | Department of Transportation | Office of the Secretary | ✓ |
| 111 | Department of Transportation | Pipeline and Hazardous Materials Safety Administration | ✓ |
| 112 | Department of Transportation | U.S. Coast Guard | ✓ |
| 113 | Environmental Protection Agency | Administration and Resources Management | ✓ |
| 114 | Environmental Protection Agency | Air and Radiation | ✓ |
| 115 | Environmental Protection Agency | Office of Environmental Information | ✓ |
| 116 | Environmental Protection Agency | Office of Prevention, Pesticides and Toxic Substances | ✓ |
| 117 | Environmental Protection Agency | Solid Waste and Emergency Response | ✓ |
| 118 | Environmental Protection Agency | Water | ✓ |

Note: Department (if applicable) and agency names are given for each administrative unit used in the analysis.

C Robustness Checks

C.1 Matching

A president’s right to remove an agency head can be conceptualized as a “treatment” where $RemovalRights_a = 1$ is a treated agency and $RemovalRights_a = 0$ is an untreated agency. Of interest, then, is the causal effect that this treatment has on the likelihood that an agency complies with a directive. Although removal rights are not randomly assigned to agencies, it is possible to approximate an experimental setup by creating sufficient covariate *balance* between the treatment and control groups, whereby the values of the covariates are similar in both groups.

Here, I use a genetic matching algorithm, as suggested by Ho et al. (2007), to create balance between the two groups of agencies. To do so, I matched on all of the available proposal-level control variables and the measure of agency loyalty. (I opted to match on each variable because it uses more information than the Regulation Stakes index.) I assume these variables are pre-treatment because they are not discretionary. In most cases, listing them in the Unified Agenda is required by statute or executive order. The overall percent balance improvement is 98.6. (Other matching approaches failed to improve balance: both optimal matching and nearest neighbor matching provided no improvement in balance, and “full” matching resulted in a decrease in balance.)

With the matched data, I ran the same regressions shown in Table 2 of the manuscript on the matched data. Table 5 shows the new results with the matched data, which are similar to those shown in the manuscript. Of course, the matched results exclude the review directive since it applies only when $RemovalRights_a = 1$.

Table 5: Compliance Models (MLMs, Matched Data)

| | Reporting Directive | | |
|--|---------------------|--------------------|--------------------|
| | (1) | (2) | (3) |
| Removal Rights | 1.700** (0.286) | 2.640** (0.539) | 1.670** (0.290) |
| Agency Loyalty | 0.016 (0.081) | 0.427* (0.209) | 0.016 (0.082) |
| Stakes of Regulation (the index) | 0.086* (0.041) | 0.087* (0.041) | -0.117 (0.142) |
| Removal Rights \times Agency Loyalty | | -0.473* (0.223) | |
| Removal Rights \times Stakes of Regulation | | | 0.222 (0.148) |
| Agency Intercepts | ✓ | ✓ | ✓ |
| Year Intercepts | ✓ | ✓ | ✓ |
| Agency-Party Intercepts | ✓ | ✓ | ✓ |
| Observations | 11,628 | 11,628 | 11,628 |

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

C.2 Transaction Cost Controls

The results in the manuscript are robust to adding a number of additional controls to capture the transaction costs associated with replacing an appointee. Replacement should be more challenging when: (i) the president has lower approval ratings; (ii) the president has fewer co-partisans in the Senate; and (iii) there are more procedural hurdles for replacing an appointee in the relevant agency, as detailed by Selin (2015). Table 6 replicates the results from Table 2 in the manuscript using these additional controls. Note, however, that there are fewer observations because the Selin measure is only available for a subset of agencies. In the table, this measure is referred to as “Selin D1” because it is the first dimension, or D1, of Selin’s two independence measures.

Table 6: Compliance Models (Logit Coefficients)

| | Reporting Directive | | | Review Directive |
|--|---------------------|--------------------|---------------------|-------------------|
| | (1) | (2) | (3) | (4) |
| Removal Rights | 1.680** (0.488) | 2.310** (0.629) | 1.740** (0.488) | |
| Senate Seats (Pres. Party) | 0.025 (0.017) | 0.025 (0.017) | 0.025 (0.017) | -0.013 (0.032) |
| Net Presidential Approval | 0.001 (0.003) | 0.001 (0.003) | 0.001 (0.003) | -0.003 (0.005) |
| Agency Loyalty | -0.006 (0.058) | 0.271 (0.186) | -0.012 (0.057) | 0.078 (0.105) |
| Agency Independence (Selin D1) | 0.068 (0.203) | 0.065 (0.202) | 0.077 (0.203) | -0.152 (0.278) |
| Stakes of Regulation (the index) | 0.001 (0.042) | 0.002 (0.042) | -0.523** (0.137) | 0.116 (0.145) |
| Removal Rights \times Agency Loyalty | | -0.310 (0.196) | | |
| Removal Rights \times Stakes of Regulation | | | 0.600** (0.144) | |
| Agency Intercepts | ✓ | ✓ | ✓ | ✓ |
| Year Intercepts | ✓ | ✓ | ✓ | ✓ |
| Agency-Party Intercepts | ✓ | ✓ | ✓ | ✓ |
| Observations | 10,022 | 10,022 | 10,022 | 1,755 |

Note:

*p<0.1; **p<0.05; ***p<0.01

C.3 Adjustments to the Agency Loyalty Measure

The measure of agency loyalty used in the manuscript ($AgencyLoyalty_a$) assumes that each presidential administration has an ideological position that sits on the edge of the ideological distribution of agencies, as measured by Clinton and Lewis (2008). For example, each Democratic administration is as liberal as the most liberal agency. In this section, I show how the results in manuscript change as this assumption is modified. I focus specifically on Model 2 in Table 2, which interacts $AgencyLoyalty_a$ with the removal rights indicator, $RemovalRights_a$.

Table 7 shows coefficients and standard errors using four different assumptions about the location of each presidential administration. The first row replicates the results in the manuscript, the second row assumes that the Democratic administrations are located at the 5th percentile of the ideological distribution and the Republican administration is located at the 95th percentile. The third row increases the shift to the 10th and 90th percentile, respectively, and so on. The results are similar under the assumptions in rows 1 through 5.

Table 7: Coefficient Values

| | Dem. Admin. (pctl.) | Rep. Admin. (pctl.) | Direct Eff. | | Interaction Eff. | |
|---|------------------------|------------------------|-------------|------|------------------|------|
| | | | Coef. | SE | Coef | SE |
| 1 | 0.00 | 1.00 | 0.32 | 0.20 | -0.36 | 0.21 |
| 2 | 0.05 | 0.95 | 0.34 | 0.21 | -0.36 | 0.22 |
| 3 | 0.10 | 0.90 | 0.34 | 0.23 | -0.36 | 0.24 |
| 4 | 0.15 | 0.85 | 0.35 | 0.24 | -0.35 | 0.25 |
| 5 | 0.20 | 0.80 | 0.43 | 0.31 | -0.42 | 0.32 |