The Politics of Investigations and Regulatory Enforcement by Independent Agents and Cabinet Appointees

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We develop a game-theoretic model that identifies conditions under which a political executive will be satisfied with the actions of an appointee who decides whether to investigate possible legal violations. Because investigations are a necessary precondition for enforcement, the investigator exerts significant influence over whether, and the extent to which, laws are enforced. In our model, an executive can exert power over the investigator's actions only indirectly, via the threat of replacement. This threat is most effective when the investigator has preferences that diverge from those of the executive. In contrast, when the investigator and executive share similar preferences, the replacement threat can induce the investigator to behave dogmatically, contrary to the executive's interests. More subtly, we show how the replacement threat's effects on investigator behavior hinge on whether the executive is able to predict the behavior of potential replacements: an executive can sometimes gain leverage over the investigator if he can credibly threaten to replace her with a dogmatist. Our results have broad implications for the politics of regulatory enforcement in the United States and other developed democracies, and for the qualitative differences between regulation by independent investigators and less politically insulated agents.

> Although the Department of Labor currently has the necessary tools to fight wage theft . . . the problem of wage theft is only getting worse because of weaker enforcement . . . in too many cases, investigators from the Wage and Hour Division simply drop the ball in pursuing employers that cheat their employees out of their hard earned wages.
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> —Rep. George Miller, Education and Labor Committee Hearing, July 15, 2008

Regulation consists of two components: rule making and enforcement. First, a rule must be created that defines the permissibility of certain activities. These rules may be established by legislation, such as when Congress dictates that attempting to monopolize consumer product markets is illegal. Alternatively, rules may be created by bureaucratic agencies, such as when the Environmental Protection Agency issues standards for water quality. The extent to which regulatory rule making can be influenced by principals such as voters or executives has been the source of much debate. A wide body of literature (e.g., Miller and Stokes 1963; Shapiro, Brady, Brody, and Ferejohn 1990) has analyzed whether legislative voting and policy priorities reflect constituent preferences. Similarly, scholars have investigated how Congress (e.g., Ferejohn and Shipan 1990; McCubbins, Noll, and Weingast 1987) and the President (e.g., Moe 1985b) design institutions to enhance or constrain bureaucrats' abilities to create policy.

While many scholars have studied the control of political actors who enact laws, relatively few researchers have systematically analyzed the second component of regulation: enforcement. For a rule to be substantively meaningful, it must be followed, and rules are typically enforced in the following manner. First, an actor, such as a prosecutor or regulator, must decide whether a violation is likely to have occurred. She must then put the presumed violator on *trial*, by which we mean any judicial or quasi-judicial proceeding in which a defendant's guilt or innocence is determined, based on the evidence at hand. Finally, a judgment is rendered, and a penalty is doled out if a defendant is found guilty.

A necessary precondition for enforcement is the investigation of alleged wrongdoing, and in many

The Journal of Politics, Vol. 72, No. 1, January 2010, Pp. 209–226 doi:10.1017/S0022381609990570

ISSN 0022-3816

situations the simple decision to investigate has political implications. By commencing or inhibiting investigations, a bureaucratic agent can affect the likelihood that the enforcement process will promote her political superior's interests.

In addition to the controversy over enforcement of wage and hour laws highlighted above, several other recent events underscore the political relevance of the decision to investigate. In December 2006, for example, the Department of Justice fired seven U.S. attorneys, ostensibly because of their job performances. Subsequently, however, it was revealed that most of the firings appeared to be based on the attorneys' unwillingness to advance partisan objectives. Most notably, a New Mexico-based U.S. Attorney, David Iglesias, argued that he was fired because he did not aggressively pursue allegations of Democratic voter fraud.[1]

The political salience of investigations is also clearly relevant to a variety of bureaucratic enforcement activities. Consider, for example, the issues that emerged in an April 2007 congressional hearing regarding OSHA's response to workers at a Jasper, Mo popcorn plant who had developed bronchiolitis obliterans, also known as "popcorn worker's lung." According to testimony, OSHA sent only one inspector to the Jasper plant, who did not test the facility's air quality, yet concluded that the plant complied with existing guidelines.[2] In contrast, the more extensive investigatory activities of the National Institute for Occupational Safety and Health supported the conclusion that the workers' illnesses were caused by the food additive diacetyl, eventually prompting OSHA to prepare a safety bulletin regarding the use of the additive. This incident, combined with other cases of OSHA intervention, or lack thereof, raised questions regarding whether OSHA adequately protected workers' health and welfare, and how the White House influenced regulatory policy by appointing regulators who were hesitant to investigate firms.

To understand bureaucratic policymaking in these, and many other, settings, it is crucial to study the politics of investigations. This is particularly true because investigators' decisions have a direct impact on the effectiveness of the laws and rules that govern society. Given the length of time needed to promulgate new regulations (see, e.g., Kerwin 2003), the most important impact of new political appointees is not necessarily the policy agendas that they seek to promote, but rather how they choose to enforce or neglect *existing* rules.[3]

In light of the significant influence that investigators wield over policy outcomes, it is important to analyze how their superiors can affect their actions, particularly because in most political systems executives have relatively few tools of control at their disposal. In governments, unlike the private marketplace, executives generally cannot design enforceable performance-based contracts wherein subordinates are compensated, monetarily or otherwise, for certain outcomes. Rather, an executive's primary tool for influence is the simple ability to terminate and replace an investigator.

Related to this question, one might also wonder how the pool of potential replacements influences the actions and choices of investigators and their superiors. If investigators have well-defined policy preferences, will they base their decisions on who is likely to replace them if they are terminated?

Finally, how might an executive's satisfaction with enforcement decisions vary depending on whether or not he can terminate an investigator once she is appointed? In other words, are investigators' actions more likely to be congruent with executive preferences when regulatory enforcement is conducted by political appointees (such as cabinet secretaries) who serve at the pleasure of the executive, rather than by independents agents who cannot be fired?

We address these questions by developing a model of investigatory politics wherein a bureaucratic agent with private preferences decides whether to pursue or drop a case. We analyze two versions of the model. In the baseline model, which we call the *independent agent* game, the executive observes the investigator's decision and the outcome of a case if it is brought to trial, but is unable to remove the investigator from office. In contrast, in the second version of the model, which we call the *cabinet agent* game, an executive observes the investigator's decision, as well as the outcome if the case is brought to trial, and then decides whether to retain or replace the investigator. In analyzing the cabinet agent game, we assess the degree to which an executive can influence an investigator's decisions to pursue, or not pursue, investigations, and how policy outcomes ultimately depend on whether regulation is conducted by independent or cabinet agents.

[1]Soloman, John, and Dan Eggen. 2007. "White House Backed U.S. Attorney Firings, Officials Said." *The Washington Post.* A01. March 3.

[2]Labaton, Stephen. 2007. "OSHA Leaves Worker Safety Largely in Hands of Industry." *New York Times.* Section A, Column 1, Page 1. April 25.

[3]The history of the EPA clearly illustrates this phenomenon. Anne Gorsuch, Reagan's EPA Administrator from 1981 to 1983, was widely criticized for not enforcing existing statutes.

One of our main findings is that even though the executive does not know the investigator's preferences, the threat of replacement is a powerful tool for increasing congruence between an investigator's actions and the executive's preferences. Somewhat surprisingly, however, the threat of replacement does not always induce the investigator to follow her political superiors' wishes more closely, compared to what she would do if the principal could not remove her from office. In particular, an investigator who shares the executive's policy preferences may be induced to exaggerate the extent to which she leans in his direction. We also extend the model to show that this pathology can be ameliorated when executives can credibly commit to appoint well-known ideologues as replacements for incumbent investigators.

This article proceeds as follows. We first discuss existing scholarship on investigations and enforcement, as well as those works that analyze distinctions between insulated bureaucrats and political appointees. The next two sections introduce the model, present baseline results, and extend the model to cases where the executive can appoint a known ideologue. We conclude by considering the implications of our findings and further directions for research.

Literature

As noted by Wood and Anderson in their analysis of the Department of Justice's Antitrust Division, the decision to investigate is a necessary condition for effective enforcement: "the primary devices used by the Antitrust Division to enforce the antitrust laws are investigations and litigations of possible anticompetitive practices . . . investigations serve a dual role in the enforcement process. They provide an opportunity for negotiation, and they furnish the evidentiary basis for litigations" (1993, 3)[4] Hence, questions about bureaucratic enforcement implicitly require an analysis of the determinants and consequences of investigations. While several scholars have studied the politics of enforcement, little work has analyzed the crucial role of investigations in the enforcement process.

In his classic study of the NLRB, for example, Moe (1985a) identifies how NLRB decisions correspond to changes in presidential and congressional preferences, but the direct effects of these actors' preferences on investigatory activity is unclear. Changes in the agency's preferences via new appointments induce a change in the caseload, but Board members do not have a strategic role in Moe's analysis, and they presumably engage whatever cases are presented to them by lower-level staff. Relatedly, Weingast and Moran (1983) and Shipan (2004) find that case loads and inspections at the FTC and FDA, respectively, are related to congressional and presidential preferences, yet the mechanism driving the relationship is not specified. Similar to Moe, agency inspections (which presumably influence caseloads and are analogous to investigations) respond to external actors' preferences, so that bureaucrats advance the types of cases preferred by these actors; but the potential for bureaucrats to simply not investigate (or to investigate aggressively), contrary to the wishes of their principals, is not considered. In a similar spirit, Wood and Anderson (1993) identify how the Antitrust Division's investigatory activities are related to its budget, which, in turn, is highly responsive to who is in the White House.[5]

In this article, we develop a model in which investigators strategically choose whether to pursue investigations, and we identify when investigator decisions correspond to the preferences of their political principals. Unlike the works above, the substantive implications of our findings will not rely on budgetary promises, or threats, which lack credibility in many political contexts. In developing our theory, a small, but interesting body of formal models is relevant.

Scholz (1991) develops a theory in which political principals may lack information about bureaucratic agents' preferences and shows that this information asymmetry can hinder effective enforcement. But he does not analyze how the threat of removal affects agents' decisions; and rather than explicitly analyzing principals' beliefs and equilibrium strategies, he presents a semi-formalized analysis of 2×2 games based on a repeated prisoner's dilemma. Also, he does not model agents' decisions to initiate investigations, whereas that choice is central to our model.

O'Connell (2007) develops a formal model to analyze the relationship between Congress and the Government Accountability Office. O'Connell's model differs from ours in several important ways. Most notably, in O'Connell's model the GAO

[4]A substantial body of literature (e.g., Asch 1975; Lewis-Beck 1979; Long, Schramm, and Tollison 1973; Posner 1970; and Siegfried 1975) examines the second device for enforcement, analyzing the determinants of the number and types of cases litigated by antitrust authorities.

[5]Recent work by Gordon (2008) analyzes political bias in DOJ officials' decisions to investigate.

unambiguously knows ex ante whether a violation has occurred. Hence, her model is not about the decision to investigate, but rather about the decision to report violations. Moreover, our model is fundamentally based on actors' relative concerns over Type I errors (mistaken convictions of the innocent) versus Type II errors (failures to convict the guilty), whereas in O'Connell's model such concerns are irrelevant.

The theory that is most closely related to our analysis is Gordon and Huber's (2002) model of elected prosecutors, in which they assume that prosecutors wish to hold office, whereas voters care about Type I and Type II errors. Prosecutors are assumed to be work averse, in that they wish to avoid conducting investigations, even though investigations generate information about a defendant's guilt or innocence. A major finding of their model is that it is always optimal for voters to re-elect a prosecutor who obtains a conviction, remove a prosecutor who obtains an acquittal, and employ a mixed strategy for prosecutors who drop cases.[6]

The most significant way that we diverge from Gordon and Huber is that we do not develop an effort-based model in which investigators are work averse. Rather, we assume that investigators, like executives, have preferences over Type I and Type II errors, and we allow for the possibility of preference divergence between these actors.[7] In addition, we do not assume that a principal can precommit to a particular mechanism to induce investigators to choose desirable actions. Our choice not to assume commitment is motivated by the observation that, regardless of whether agents are politically insulated or serve at the pleasure of the executive, government pay scales and the civil service system sharply limit the discretion that a President has in designing contracts that specify rewards and punishments for agents. Hence, we believe that, compared to Gordon and Huber's model, our model and results are more appropriate for most political settings, where principals typically cannot make binding commitments.

At a technical level, our model builds on Canes-Wrone and Shotts (2007), who develop a model of extremism and moderation by elected officials. While that model is relevant to our efforts, two distinctions limit its applicability to the politics of investigations. In any investigation there is an inherent asymmetry in the political principal's ability to learn about the actual guilt or innocence of the defendant, depending on whether a case goes to trial. Specifically, in a trial the principal can potentially learn quite a lot, but if the case is not brought to trial—or, if an investigation is not launched in the first place—the principal learns relatively little about the defendant's guilt or innocence. This type of asymmetry is not generally present in electoral settings, which Canes-Wrone and Shotts model using a game in which voters always observe the policy's success or failure, regardless of what action an elected official takes. A secondary distinction is that, unlike the realization of policy success or failure, the outcome of an investigation or trial does not perfectly reveal whether the defendant was truly innocent or guilty. All that the principal knows is the verdict, which could be mistaken. Thus any model of investigations must allow for the possibility of errors in the judicial process.

Our approach also diverges from Canes-Wrone and Shotts in that we extend our model to examine situations in which an executive has the option of replacing an incumbent investigator with a well-established ideologue. This assumption would be inappropriate for an electoral model, where a voter has limited control over policy preferences of a potential electoral challenger, but it is quite appropriate in a model of bureaucratic enforcement, given that an executive may be able to choose from many possible appointees, some of whom have well-established policy priorities.

Finally, in considering an executive's preferences over political appointees, our model also speaks to the differences between insulated bureaucrats and political appointees who serve at the discretion of their superiors. Questions about the virtues of an insulated bureaucracy are fundamental to the study of public administration (e.g., Kaufman 1956), and recent scholarship has breathed new life into the topic. Lewis (2007) and Krause, Lewis, and Douglas (2006) identify how insulated policymakers, i.e., civil servants, might make better policy choices than political appointees who are subject to termination. Gailmard and Patty (2007) analyze how policy discretion might be used as a tool to ensure competence within an insulated civil service. In this vein, comparing our baseline model against our full model helps

[6]Like Gordon and Huber, Dewatripont and Tirole (1999) and Prendergast (2007) develop models in which a principal designs a mechanism to induce agents to exert costly effort gathering information. A major difference between those papers and the models by Gordon and Huber and ourselves is that the former focus on cases where information collected by the agent cannot be concealed. Furthermore, those authors assume that the principal, not the agent, decides what actions to take.

[7]Gordon and Huber (2002) mention this as an alternative modeling approach.

us identify conditions under which an executive would prefer regulation to be conducted by a political appointee, who can be terminated, in comparison to an insulated investigator.[8]

The Model

We develop a model of investigations, trials, and retention, played by an *executive* and an *investigator*. The game is played across two periods, and in each period there is one case. In the first period, the investigator receives a signal regarding the guilt or innocence of a potential defendant and decides whether to bring the case to trial. At trial, the defendant is convicted or acquitted.[9] The executive observes whether the investigator pressed forward with a case, as well as the outcome of a trial (when one occurs). In the baseline model, the *independent agent* game, this sequence of events is repeated in the second period. In contrast, in the *cabinet agent* game, after the investigator's choice (and trial outcome) is observed in the first period, the executive decides whether to retain or replace the investigator. In the second period, this sequence of events, except the retention decision, is repeated. We begin our analysis by examining incentives for the investigator and executive, given their preferences over outcomes.

Preferences. In a model of investigations, it is natural to assume that actors prefer to avoid both Type I and Type II errors (i.e., wrongful conviction of the innocent vs. failure to convict the guilty). Of course, people differ in their degrees of concern over these two types of errors, and we parameterize these preferences with an *aggressiveness coefficient* $\alpha \in [0,1]$, subscripted as α_I for the investigator and α_E for the executive. An actor's aggressiveness influences her payoffs, based on a defendant's actual guilt or innocence, and the final outcome, as represented in Table 1.

Table 1 **Payoffs**

	Convicted	Not Convicted
Innocent	$-(1-\alpha)$	0
Guilty	0	$-\alpha$

Thus an individual with a high aggressiveness coefficient, $\alpha \approx 1$, is concerned almost exclusively with ensuring that the guilty are convicted, whereas someone with a low aggressiveness coefficient, $\alpha \approx 0$, is concerned almost exclusively with ensuring that the innocent are not falsely convicted.

More generally, an actor's aggressiveness coefficient could be interpreted as a predisposition for, or against, a variety of interests, depending on the policy domain. In antitrust enforcement, an investigator who is generally predisposed towards consumer interests would have a high α, meaning that she generally prefers to take accused firms to trial. Alternatively, in the case of environmental protection, an EPA Administrator who is sympathetic to business interests would have a low α, meaning that she is hesitant to pursue allegations of misconduct.

Given an actor's aggressive coefficient α, we characterize his preferences as follows:

$$U = -\alpha\{\text{Total number of guilty defendants not convicted}\} - (1-\alpha)\{\text{Total number of innocent defendants convicted}\}.$$

Note that this specification implies that investigators care about the outcomes of cases even if they are not in office, as might occur if they are terminated and replaced.

An accused party is either guilty or not guilty, $\omega \in \{G, NG\}$, and we assume that the prior probability of guilt is $\pi \in (0,1)$. The investigator has an additional private signal $s \in \{G, NG\}$ about the defendant's innocence or guilt, and the probability that this signal is correct, conditional on the accused's true innocence or guilt, is $q > 1/2$. Given this setup, Bayes's Rule implies that the conditional probability of guilt is $\gamma^G \equiv \frac{\pi q}{\pi q + (1-\pi)(1-q)}$ when the investigator observes a guilty signal $s = G$, and $\gamma^{NG} \equiv \frac{\pi(1-q)}{\pi(1-q)+(1-\pi)q}$ when she observes $s = NG$.

Consistent with real-world investigations and trials, we assume that the adjudicative process is potentially erroneous. Specifically, we assume that the

[8]Our model is also relevant to relations between bureaucratic managers and subordinates. While many subordinates are civil servants who cannot be terminated, in several contexts, they can be relieved of their responsibilities. Hilts (2003, 178–90), for example, documents how civil servants at the FDA were relieved of investigatory responsibilities, and sometimes induced to resign, due to policy disagreements with presidential appointees during the Nixon Administration.

[9]In reality, many cases that regulators pursue are settled rather than taken to trial. While our model does not account for this option, it is reasonable to argue that settling is similar to dropping (at least moreso than trying) cases. How the settling option influences investigator behavior and executive control is a topic worthy of future study, but beyond the scope of our analysis.

error rate, given that the defendant is guilty, is $\rho_G \in \left(0, \frac{1}{2}\right)$, whereas the error rate, given that the defendant is innocent, is $\rho_{NG} \in \left(0, \frac{1}{2}\right)$. The trial produces an either a conviction, denoted C, or an acquittal, denoted A.

We assume that α_I is the investigator's private information, whereas the executive's aggressiveness coefficient, $\alpha_E \in [0, 1]$, is common knowledge. An investigator's preferred action in a given period depends on the information available to her and her aggressiveness coefficient, α_I. As we show in Lemma 1 in the appendix, there are two key cutpoints for $\alpha_I : \underline{\alpha}$ and $\bar{\alpha}$. If $\alpha_I < \underline{\alpha}$, we say that the investigator is *passive*, because she wants to drop the case regardless of her private signal. In contrast, if $\alpha_I \in (\underline{\alpha}, \bar{\alpha})$ the investigator is *neutral*, because she wants to follow her signal, bringing cases to trial when $s = G$ but not when $s = NG$. Finally, if $\alpha_I > \bar{\alpha}$, the investigator is *aggressive* because she always wants to bring a case to trial, regardless of her signal.

When characterizing equilibrium behavior we describe an investigator as *passive-leaning* if her primary goal is to make sure that cases are dropped when $s = NG$, or *aggressive-leaning* if her primary goal is to make sure that cases are tried when $s = G$. Lemma 2 in the appendix defines a cutpoint $\tilde{\alpha} \in (\underline{\alpha}, \bar{\alpha})$ such that an investigator is passive-leaning if $\alpha_I < \tilde{\alpha}$ and aggressive-leaning if $\alpha_I > \tilde{\alpha}$. Thus, the set of passive-leaning investigators consists of all passive investigators and some neutral ones, while the set of aggressive-leaning investigators consists of all aggressive investigators and some neutral ones. Figure 1 illustrates the relationship between the definitions of *passive, neutral, aggressive, passive-leaning,* and *aggressive-leaning*.

Like investigators, executives can be categorized as passive, neutral, or aggressive, depending on what decision rule they want the investigator to follow. For neutral executives, i.e., those who want the investigator to follow her signal, we make a slightly finer distinction, based on which direction they lean. Specifically, we distinguish between executives that are passive-neutral (PN), meaning those with α_E just a bit above $\underline{\alpha}$, aggressive-neutral (AN), meaning those with α_E just a bit below $\bar{\alpha}$, and truly-neutral (TN), meaning those with α_E between the PN and AN regions. The categories of executives are illustrated in Figure 1 and defined formally in the appendix.

Given these assumptions, what actions will investigators take in equilibrium, and how do their choices vary in response to the possible threat of termination (if they are cabinet agents)? To answer these questions, we begin by analyzing the baseline independent agent game.

Independent Agent

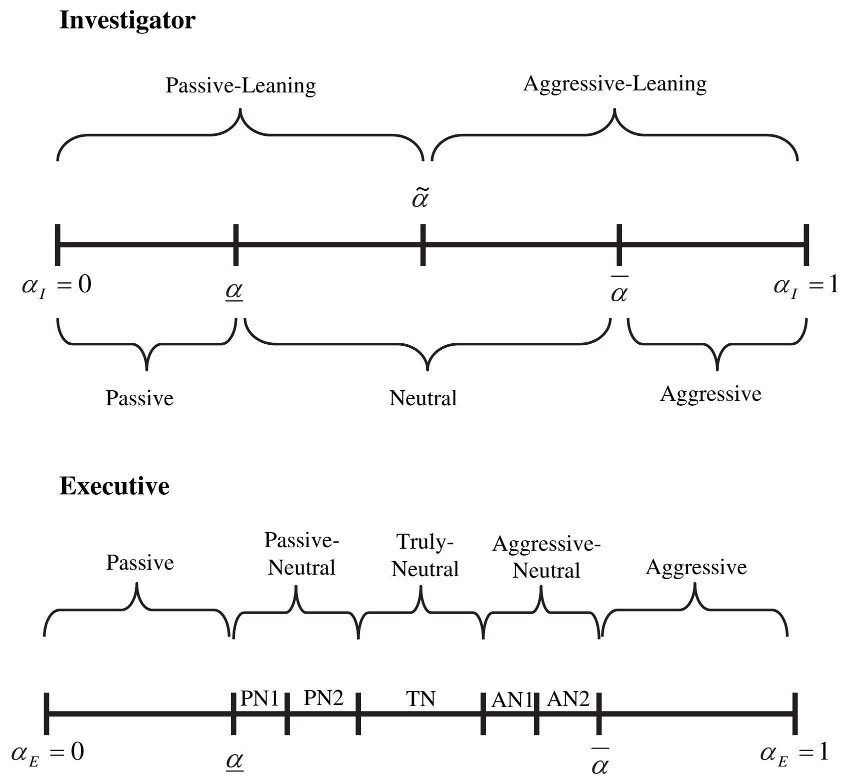
Regardless of whether regulation is conducted by independent or cabinet agents, it is clear that in the second period, an investigator will choose to drop a case or press ahead based solely on her α_I value and her signal $s \in \{G, NG\}$. Because there is no possibility of termination by the executive, the investigator's second-period decision is entirely a function of the tradeoff that she faces between Type I and Type II errors in a decision-theoretic environment. Hence, if $\alpha_I < \underline{\alpha}$, the investigator will drop all cases, regardless of her signal, if $\alpha_I > \bar{\alpha}$, the investigator will take all cases to trial, regardless of her signal, and if $\alpha_I \in (\underline{\alpha}, \bar{\alpha})$, she will press ahead with a case if she receives a guilty signal and drop the case otherwise. Moreover, because independent agents cannot be terminated, regardless of what actions they take, an investigator's decision rule in the first period is identical to her second-period decision rule.

Cabinet Agent

When investigators serve at the pleasure of executives and can be replaced at will, their incentives and choices can vary substantially from what would occur if they were independent agents. Although a given investigator's second period choices are the same regardless of agency type, an investigator's first-period choices in a cabinet agency depend on how those choices will influence her probability of job retention. To analyze this further, let σ_D, σ_C, and σ_A denote the probability that the executive retains the investigator when she drops a case, obtains a conviction, and obtains an acquittal, respectively. We assume that the executive cannot commit to a reward schedule $\sigma = (\sigma_D, \sigma_C, \sigma_A)$, but rather that his behavior is determined in equilibrium.

To characterize equilibrium behavior in the Cabinet Agent game, we must specify the distribution from which the investigator's aggressiveness coefficient, α_I, is drawn. Previous work on electoral accountability (Canes-Wrone and Shotts 2007) has assumed a uniform distribution for both the incumbent and any potential replacement. Here, we analyze not only the uniform, but also a much broader family of distributions. Formally, we assume that the investigator, as well as her replacement, have aggressiveness coefficients drawn from any atomless distribution $F(\cdot)$ with full support on $[0, 1]$ such that $F(\underline{\alpha}) \leq \underline{\alpha}$, $1 - F(\bar{\alpha}) \leq 1 - \bar{\alpha}$, and $\frac{1-q}{q} < \frac{\underline{\alpha} - F(\underline{\alpha})}{(1-\bar{\alpha}) - (1 - F(\bar{\alpha}))} < \frac{q}{1-q}$, which implies that there is not too much asymmetry

Figure 1 Investigator and Executive Types



Note: the distinction between PN1 versus PN2 and AN1 versus AN2 executives is only relevant in the model with extremist replacements available.

in the probability of the two extreme types being drawn relative to what would be the case in a uniform distribution. Intuitively, then, our model can allow for the possibility that the executive may try to avoid appointing someone who is clearly passive while also trying avoid appointing someone who is clearly aggressive. Indeed, the executive in our model may be extremely effective at weeding out dogmatic agents.

In analyzing the cabinet agent game, we draw a contrast with what would occur if investigators were independent agents. To facilitate this comparison, we define the term *congruence* to mean the extent to which an investigator's actions match what the executive would prefer that she do in a given situation, if the executive had access to her private signal, *s*. Given this definition, we seek to identify conditions under which the investigator's decisions to initiate first-period investigations are congruent with the executive's wishes and how the *accountability incentive* provided by the threat of replacement increases or decreases congruence. In the analysis that follows we characterize congruence as a function of the executive's and the investigator's types.

We say that accountability has *no effect* on congruence of a given category of investigators (passive-leaning or aggressive-leaning) if for all investigator preferences (as parametrized by α_I) within that category, the investigator's first period equilibrium actions are identical for independent and cabinet agents.

Alternatively, congruence *increases* if two conditions are satisfied. First, for all investigator types within a given category (passive-leaning or aggressive-leaning), and for each signal $s \in \{G, NG\}$, a cabinet agent's actions are at least as good for the executive as what occurs if the investigator is an independent agent. Second, for some investigator preferences within a given category and at least one signal, the executive prefers the cabinet agent's choices to those of an independent agent. Such a scenario might occur, for example, if the executive is neutral and some passive-leaning cabinet agents are induced to try a case when $s = G$.

Finally, congruence *decreases* if for all investigator preferences within a given category, and for each signal $s \in \{G, NG\}$, the cabinet agent's equilibrium actions are no better, for the executive, than those of an independent agent, and for some investigator preferences and at least one signal, the cabinet agent's actions make the executive worse off than what occurs if the regulator is an independent agent. Such a scenario might occur, for example, if the executive is neutral and some passive-leaning cabinet agents are induced to drop the case when $s = G$.

While one might naturally expect that accountability incentives would inevitably increase congruence, the opposite can actually occur in certain situations. To identify why this might be the case, consider a generic retention strategy $\sigma = (\sigma_A, \sigma_C, \sigma_D)$. If the probability of being retained after dropping a case (σ_D) increases, the investigator has an increased incentive to drop cases, whereas if the probability of being retained after a conviction or acquittal $(\sigma_C$ or $\sigma_A)$ increases, the investigator has increased incentives to try cases.

Hence, for a passive executive, regardless of whether the investigator is passive-leaning or aggressive-leaning, congruence is increasing in σ_D, and decreasing in σ_A and σ_C. Conversely, for an aggressive executive, the opposite is true: regardless of whether the investigator is passive-leaning or aggressive-leaning, congruence is decreasing in σ_D, and increasing in σ_A and σ_C. Thus, it is relatively easy for dogmatic executives, whether passive or aggressive, to achieve the maximum possible level of congruence. A passive executive may, for example, retain an investigator if and only if she drops ($\sigma_D = 1$ and $\sigma_A = \sigma_C = 0$), whereas an aggressive executive may retain an investigator if and only if she tries a case ($\sigma_D = 0$ and $\sigma_A = \sigma_C = 1$). Indeed, as we show later, these types of strategies are always used in equilibrium by dogmatic executives.

While accountability clearly can help dogmatic executives obtain higher levels of congruence, the same will not generally hold for a neutral executive. More specifically, for a neutral executive—who wants the investigator to try if and only if she sees a guilty signal—increased congruence by one category of investigators can come at the cost of decreased congruence by the other category. For example, increasing σ_D increases congruence by aggressive-leaning investigators, who become more likely to drop when they see $s = NG$, but also decreases congruence by passive-leaning investigators, who become more likely to drop when they see $s = G$. Likewise, increasing σ_A or σ_C increases incentives to try cases, thereby increasing congruence of passive-leaning investigators at the cost of decreased congruence of aggressive-leaning investigators.

The only way a neutral executive can achieve increased congruence by both passive-leaning and aggressive-leaning investigators is to simultaneously increase σ_C and decrease σ_A. More specifically, to have increased congruence by both types of investigators, relative to what happens in the absence of accountability, requires that $\sigma_C > \sigma_D > \sigma_A$, and that the following inequalities be satisfied:

$$\sigma_C\left[\gamma^G(1-\rho_G) + \left(1-\gamma^G\right)\rho_{NG}\right] + \sigma_A\left[\left(1-\gamma^G\right)(1-\rho_{NG}) + \gamma^G\rho_G\right] > \sigma_D \tag{1}$$

$$\sigma_C\left[\gamma^{NG}(1-\rho_G) + \left(1-\gamma^{NG}\right)\rho_{NG}\right] + \sigma_A\left[\left(1-\gamma^{NG}\right)(1-\rho_{NG}) + \gamma^{NG}\rho_G\right] < \sigma_D. \tag{2}$$

Equation (1) ensures that the investigator has an incentive to investigate when she sees a signal indicating guilt, given her belief γ^G, and equation (2) ensures that the investigator has an incentive to drop the case when she sees a signal indicating innocence, given her belief γ^{NG}.

Results

The results of our analysis are summarized in Table 2. A " + " indicates that, due to accountability, cabinet agents are more congruent, in equilibrium, than independent agents, and a " – " indicates decreased congruence. We characterize the effects based on whether the executive is passive, passive-neutral, truly-neutral, aggressive-neutral, or aggressive, and whether the investigator is passive-leaning or aggressive-leaning. The second column ("Accountability Incentive") identifies the action that maximizes an investigator's probability of being retained.

Table 2 clearly shows that accountability doesn't always increase congruent behavior by investigators compared to what would occur if regulation were conducted by independent agents—in certain circumstances it actually decreases congruence. For executives who lean one way or the other (P, PN, AN, A), accountability unambiguously increases congruence by the investigators who are least like them. However, unless the executive is truly dogmatic, i.e., P or A, this increased congruence by divergent investigators comes at the cost of *reduced* congruence by like-minded investigators. In fact, the only executives who can encourage neutral competence, i.e., expert unbiased use of information, by investigators are the subset of executives that we label as *truly neutral.*

We now present our results in more detail. The equilibrium concept that we employ is Perfect Bayesian. For passive and aggressive executives there exists a unique equilibrium, but for some types of neutral executives multiple equilibria may exist, and in these cases, we focus on the following equilibria. If, for a given α_E, there exists an equilibrium that satisfies

Table 2 Congruence of Cabinet Agent in Model with Random Replacement

		Investigator Type	
Executive Type	**Accountability Incentive**	**Passive-Leaning**	**Aggressive-Leaning**
Passive (P)	Drop	+	+
Passive-Neutral (PN)	drop	−	+
Truly-Neutral (TN)	try iff $s = G$	+	+
Aggressive-Neutral (AN)	try	+	−
Aggressive (A)	try	+	+

both equations (1) and (2), so that congruence by both passive-leaning and aggressive-leaning investigators increases, then we characterize this type of equilibrium. If the executive is too passive for such an equilibrium to exist, we characterize an equilibrium in which investigators are rewarded for dropping cases. Likewise, if he is too aggressive for such an equilibrium to exist, we characterize an equilibrium in which investigators are rewarded for trying cases.[10]

We now discuss in detail the results for each type of executive. Recall that when describing the impact of accountability, we are referring the behavior of a cabinet agent—who can be terminated—in comparison to an independent agent. Proofs are in the appendix.

Dogmatic Executives

Proposition 1. *If the executive is passive, then investigators have an incentive to drop cases regardless of their signals. Hence, accountability increases congruence of passive-leaning investigators, who become more likely to drop when $s = G$, and of aggressive-leaning investigators, who become more likely to drop when $s = NG$.*

Proposition 2. *If the executive is aggressive, then investigators have an incentive to try cases regardless of their signals. Hence, accountability increases congruence of passive-leaning investigators, who become more likely to try when $s = G$, and of aggressive-leaning investigators, who become more likely to try when $s = NG$.*

Accountability incentives influence investigator behavior in a straightforward manner in Propositions 1 and 2. Because an investigator is rewarded for taking certain actions, and she may be replaced by another investigator with different policy priorities, she is more willing, on the margin, to take the action that is favored by the executive.

[10]We focus on these equilibria because they are substantively the most interesting and relevant to questions of congruence. Focusing on other equilibria that potentially exist yields little insight.

The rationale that underlies the executive's retention decision is somewhat more subtle. Whenever the executive sees a trial, he concludes that the investigator is relatively aggressive. Alternatively, when he observes an investigator dropping a case, he concludes that she is relatively passive. Hence, a passive executive strictly prefers to retain an investigator who drops a case and to remove an investigator who tries a case, whereas an aggressive executive has the opposite preferences, because of his beliefs about the types of investigators who take each action.

Passive-Neutral and Aggressive-Neutral Executives

In contrast to dogmatic executives, we find that neutral executives, i.e., those who prefer that the investigator bring a case to trial if and only if $s = G$, face tradeoffs. As noted above, any increase in the incentive to try cases when $s = G$ can increase the investigator's incentive to try cases when $s = NG$. The ways in which these tradeoffs map into increased or decreased congruence depend on whether the executive is truly neutral, or somewhat biased in either a passive or aggressive direction. We first consider those executives who are somewhat biased.

Proposition 3. *If the executive is passive-neutral, then investigators have an incentive to drop cases regardless of their signals. Hence, accountability increases congruence of aggressive-leaning investigators, who become more likely to drop when $s = NG$, but it decreases congruence of passive-leaning investigators, who become more likely to drop when $s = G$.*

Proposition 4. *If the executive is aggressive-neutral, then investigators have an incentive to try cases regardless of their signals. Accountability increases congruence of passive-leaning investigators, who become more likely to try when $s = G$, but it decreases congruence of aggressive-leaning investigators, who become more likely to try when $s = NG$.*

Hence, when given the opportunity to terminate investigators, an executive gains increased congruence by those whose preferences diverge from his own, but at a cost. Some neutral investigators who lean in the executive's direction and who would prefer to follow their signals in ways that would generally benefit the executive, now choose to ignore their signals. Hence, the executive is worse off when dealing with these types of investigators than if he had no oversight capacity.

It is important to note that accountability incentives are essentially similar between Propositions 1 and 3, in which investigators have incentives to drop cases, as well as between Propositions 2 and 4, in which investigators have incentives to try cases. The difference between these propositions is whether the executive is uniformly pleased with the effect of these incentives. While dogmatic executives appreciate increased congruence by all types of investigators, passive-neutral and aggressive-neutral executives see that increased congruence by some types of investigators comes at the cost of reduced congruence by other types of investigators.

It is natural to wonder why an executive would employ this sort of accountability rule, given that it can induce problematic investigator behavior. The explanation follows directly from how the executive draws inferences about an investigator's type based on her first-period actions. As noted above, if the investigator drops a case, an executive infers that she is likely passive, and most likely not aggressive. Hence, a passive-neutral executive would prefer to retain the investigator, because doing so increases the chance that he retains a relatively ideologically similar investigator. This outcome is most likely better than what would occur if he replaced her with a randomly drawn new investigator. In contrast, after observing a dropped case, an aggressive-neutral executive removes the investigator, because he expects to be better off with a replacement in the second period than with the current investigator, who probably does not share his policy priorities. Although this accountability rule can produce the perverse outcomes in Propositions 3 and 4, it is the best that an executive can do given the investigator's equilibrium behavior.

Truly-Neutral Executives

The final case is that of a truly neutral executive. We will show that a truly neutral executive does not face the same tradeoffs as slightly biased executives, but rather benefits from increased congruence by *both* aggressive-leaning and passive-leaning investigators.

Proposition 5. *If the executive is truly neutral, investigators have an incentive to try if and only if $s = G$. Accountability increases congruence of passive-leaning investigators, who become more likely to try when $s = G$, and of aggressive-leaning investigators, who become more likely to drop when $s = NG$.*

We note that the accountability incentives that generate this sort of investigator behavior—retaining after a conviction, removing after an acquittal, and mixing after a dropped case—are identical to the electoral incentives that voters employ in Gordon and Huber's model.[11] Indeed, one of the most surprising results of Gordon and Huber's model is that even a highly passive voter would reward a prosecutor who obtains a conviction. Clearly, a parallel result does not hold in our model, because Propositions 1 and 3 imply that passive and passive-neutral executives remove investigators who take cases to trial, even if the trial produces a conviction.

These contrasting predictions stem from the fact that the two theories focus on different dynamics between investigators and their superiors. In Gordon and Huber, electoral incentives induce prosecutors to exert costly effort in investigating cases before bringing them to trial, and the voter is not concerned about selection. In contrast, our model is fundamentally driven by the executive's concern over the preferences of the second period investigator. Hence, when he draws an adverse inference about an investigator's type he *must* replace her. An interesting and important question that we reserve for future research is whether a model in which investigators care about outcomes but must exert costly effort to obtain case-specific information would produce results similar to those that we characterize here.

Extremist Replacements

We now extend our model of investigations by cabinet agents to situations in which the executive can choose a replacement investigator who is either a random draw from a common pool or a known ideologue. For example, a passive president who favors the free market might choose a known hard-core libertarian as his Assistant Attorney General for Antitrust, or he might go with a less well-known appointee. This modeling approach clearly diverges from most political models of elections or agent-selection, which assume that all potential employees are drawn from the same pool

[11] In our model, this means the executive plays a strategy with $\sigma_C = 1$, $\sigma_A = 0$, and $\sigma_D \in (0,1)$, taking a value such that equations (1) and (2) are satisfied.

(e.g., Banks and Duggan 2008; Canes-Wrone and Shotts 2007; Fox 2007; Maskin and Tirole 2004). However, this new assumption captures a crucial feature of bureaucratic politics—executives sometimes exert influence over the ideologies of their appointees. One could easily imagine how, perhaps due to interest group pressures, executives might initially be constrained in their ability to control the appointments of their subordinates when they are first elected to office, but later are able to exert greater control.

Anecdotal evidence suggests that presidents face these tradeoffs. For example, Nathan (1983, 7–9) notes how in the early days of the Nixon Administration, the president chose appointees who had a broad appeal, but then moved to appoint loyalists during his second term.[12] Nathan argues that this appointment pattern was a specific component of Nixon's administrative strategy. During the Clinton Administration, the president's public commitment to the EGG (ethnicity, gender, and geography) standard limited his ability to use certain types of appointees, which induced very lengthy delays in filling several agency vacancies.[13] More recently, several pundits have argued that President George W. Bush chose initial appointees, e.g., Colin Powell, who appealed to a broad array of interests, but later chose replacements such as Condolezza Rice who were more likely to toe the president's line.[14] Whatever the reason for these trends, it is plausible that presidents sometimes face constraints at the beginning of their administrations that limit their ability to appoint known ideologues, but such constraints are less binding over time.[15]

To illustrate the dynamics of accountability under the threat of an extreme replacement, consider Christine Todd Whitman, President George W. Bush's first EPA Administrator, who by most accounts was more pro-environment than the President, and was likely appointed as a way to offer an olive branch to environmentalists. Given that Republicans controlled the Senate, Bush probably had sufficient latitude to appoint a more conservative EPA head, if he chose to do so. One wonders, then, did his ability to choose a less environmentally friendly, i.e., more passive, appointee than Whitman enhance his control over her investigatory and enforcement activities?

In considering the historical record, Whitman's tenure at the EPA was clearly marked by incidents of conflict with the Bush Administration, as well significant criticism against Whitman, in particular, for ostensibly betraying her earlier pro-environment principles and engaging in weak enforcement efforts. It is interesting to note that her ultimate replacement was Mike Leavitt, the former governor of Utah, who received a less-than-enthusiastic welcome from numerous environmental groups, which feared that he would be even more passive than Whitman. One could argue that Whitman actually did not betray her principles while at the EPA, but rather was responsive to constraints imposed by her principal. Hence, she chose to take somewhat unsavory actions during her time in office, rather than surrender her position of influence to someone who would take the agency in a more passive direction.

More generally, we investigate whether the perverse effects of accountability incentives that we identified in our cabinet agent model can be ameliorated if an executive can credibly commit to appoint a certain type of investigator for the second period when he is dissatisfied with the current investigator's performance. To address this question more systematically, we begin by assuming that well-established ideologues on either side of a policy issue are always available as potential replacements. That said, we require the extremist replacement to be credible. For example, President Bush could not threaten to install Representative Dennis Kucinich (D-OH) as his new Secretary of Defense, given Kucinich's well-known desire to create a Department of Peace and Nonviolence.

Given the option of an extremist replacement, does the executive obtain more or less congruent behavior from the investigator, compared to when he is dealing with an independent agent? Furthermore, how does this level of congruence compare to the model in which the executive can only choose a random replacement?

[12]The authors thank Dave Lewis for pointing us to this, and other examples, of presidential moderation and subsequent partisanship in appointments.

[13]Putzel, Michael. 1993. "Clinton Lags in Filling Top Posts." *The Boston Globe.* p.1. February 28. President Obama has also faced appointment difficulties, though in his case the main stumbling block has been the fact that many otherwise-qualified people have problematic tax histories.

[14]Sandalow, Marc. 2004. "Cabinet has low profile; 'It's clearly a steady-as-you-go team'." *San Francisco Chronicle.* p. A1. December 17.

[15]It is also worth noting that even in the absence of such constraints, we can demonstrate that in our model there are some executive types who while preferring a known dogmatist over a random-draw replacement in the second period, would actually prefer to appoint a random-draw for an investigator in the *first* period. This result follows because the threat of a dogmatic replacement has no effect on a dogmatist, whereas a random-draw investigator may, depending on her aggressiveness parameter, be induced to take first-period actions that are congruent with the executive's preferences. Details are given at the end of the supplemental appendix.

TABLE 3 **Congruence of Cabinet Agent in Model with Extremist Replacements Available**

Executive Type	Relevant Replacement	Accountability Incentive	Investigator Type	
			Passive-Leaning	Aggressive-Leaning
Passive (P)	passive	drop	0	0
Moderately-Passive-Neutral (PN1)	passive	drop	0	+
Slightly-Passive-Neutral (PN2)	random	drop	−	+
Truly-Neutral (TN)	random	try iff $s = G$	+	+
Slightly-Aggressive-Neutral (AN1)	random	try	+	−
Moderately-Aggressive-Neutral (AN2)	aggressive	try	+	0
Aggressive (A)	aggressive	try	0	0

Table 3 below summarizes the results for congruence in comparison to an independent agent. As in Table 2, a " + " indicates that equilibrium incentives increase the degree to which a given category of cabinet agency-investigator is congruent in equilibrium compared to an independent agent, a " – " indicates decreased congruence, and a "0 " indicates no change. For this analysis, we further subdivide the set of neutral executives. As shown in Figure 1, there are now a total of seven types, ordered in terms of the executive's aggressiveness parameter, α_E: Passive (P), Moderately-Passive-Neutral (PN1), Slightly-Passive-Neutral (PN2), Truly Neutral (TN), Slightly-Aggressive-Neutral (AN1), Moderately-Aggressive-Neutral (AN2), and Aggressive (A).

As in Table 2, the potential appointment of an extremist replacement does not necessarily promote congruent investigator behavior. We consider these results in more detail below, focusing first on relatively neutral executives, then the most dogmatic ones, and finally the most interesting cases, those who are Moderately-Passive-Neutral (PN1) and Moderately-Aggressive-Neutral (AN2).

Proposition 6. *If the executive is sufficiently neutral (PN2, TN, AN1), then the president never uses an extreme replacement, so the investigator's equilibrium behavior is the same as it would be if only random replacements were available.*

The intuition behind this result is straightforward. If an executive is sufficiently neutral, then dogmatic replacements are unappealing and he thus would always prefer a randomly drawn replacement. Hence, the equilibrium is exactly the same as in Propositions 3, 4, and 5.

If the executive is non centrist, however, the potential for an extremist replacement can induce behavior that differs from what we found in earlier results as shown in the next three propositions.

Proposition 7. *If the executive is an extremist (i.e., passive or aggressive), then when an extremist replacement is available accountability has no effect on first-period congruence, compared to the independent agent game.*

In contrast to the highly neutral executives, if an executive is sufficiently extreme, he always wants to remove an incumbent investigator and install a like-minded dogmatist after the first period. Moreover, he will do this regardless of what action the incumbent takes. Because an investigator's job security is entirely unrelated to her actions, she will simply choose the action that maximizes her first-period expected utility. As a result, first period congruence is the same as in the independent agent game and lower than in the cabinet agent game with only random replacements available.

The more interesting result that emerges from this analysis is what occurs when an executive is either Moderately-Passive-Neutral (PN1) or Moderately-Aggressive-Neutral (AN2).

Proposition 8. *If an executive is moderately-passive-neutral (PN1), then the availability of an extremist (i.e., passive) replacement increases congruence of aggressive-leaning investigators, yet has no effect on passive-leaning investigators, compared to the independent agent game.*

Proposition 9. *If an executive is moderately-aggressive-neutral (AN2) then the availability of an extremist (i.e., aggressive) replacement increases congruence of passive-leaning investigators, yet has no* *effect on aggressive-leaning investigators, compared to the independent agent game.*

To understand the empirical domain of these results, first consider what it means for an executive to be moderately-passive-neutral (PN1). This executive prefers his investigator to be neutral, i.e., to press ahead with cases when she sees $s = G$, and drop cases when $s = NG$. Yet the executive also has a passive bias. Hence, if the investigator is going to deviate from neutrality in any way, the executive would prefer her to be passive rather than aggressive. Likewise a moderately-aggressive-neutral (AN2) executive prefers the investigator to be neutral, but if she deviates from neutrality then he would prefer her to be aggressive rather than passive.

The empirical relevance of these results is particularly noteworthy if we consider contemporary president-appointee relations. Contrary to the claims of some political pundits, modern-era presidents generally have been neither perfectly centrist, nor clear extremists, but rather somewhat neutral with clearly discernable biases for, or against, different policy initiatives. If these types of executives can select an unambiguously passive investigator as a replacement for the incumbent (for example), then this option effectively gives the investigator an accountability incentive to drop any case, regardless of her signal. The question, then, is how does this type of incentive influence investigator behavior? Both aggressive-leaning and passive-leaning investigators realize that they should drop all cases if they want to maximize their chances of retention, yet the desire to keep their jobs influences them differently, given their underlying preferences for aggressiveness.

The following reasoning undergirds Proposition 8, for moderately-passive-neutral executives. (The reasoning for Proposition 9 is similar). If $s = NG$, an aggressive-leaning investigator knows that if she drops a case in the first period, she will likely be retained for the second period, in which she can do whatever she wants (either try or drop, depending on her second-period signal and α_I). Alternatively, if she takes a first-period case to trial, she will be replaced by a passive investigator who always drops cases. For an aggressive-leaning first period investigator, the ability to influence policy in the second period effectively trumps whatever pain she experiences in dropping a case when $s = NG$ in order to keep her job. As a result, the potential of an extremist replacement promotes congruent behavior by these types of investigators when $s = NG$.

For a passive-leaning investigator, however, the accountability incentive from a moderately-passive-neutral executive in Proposition 8 is less compelling. Because she knows that her replacement will drop all cases, she knows that if she is replaced, the second-period outcome, while possibly undesirable, won't be too bad. Hence, she will choose to always follow her signal in the first period, dropping cases when $s = NG$, and pressing ahead otherwise.

At first glance these results appear problematic for the executive: the availability of an extremist replacement does not enhance the executive's ability to influence all types of investigators. However, the set of investigators who are unaffected by the possibility of replacement is precisely the group for which congruence with the executive is less of a concern given their underlying preference alignment. Many such investigators will follow their signals in the first period, which is *exactly* what the executive would like them to do. Moreover, unlike the model with random replacements, where, for example, an increase in the level of congruence that a passive-leaning executive obtains from one type of investigator (i.e., aggressive-neutral) necessarily comes at a cost of less congruence by the type of investigators most like him (i.e., passive-neutral), we see that these trade-offs are greatly ameliorated in this extension. Certain types of executives can ensure greater influence over those investigators least like them, while not causing like-minded investigators to engage in undesirable actions. In the conclusion we discuss broader implications of this surprising result.

Conclusion

In any system of governance there is a natural tension between those who select policy makers, and those who actually implement policies. When *de facto* implementation depends on investigations, this concern is particularly pronounced, as agents can wield significant influence over the meaningfulness of law. Given how much influence investigators have over enforcement and ultimate policy outcomes, it is important to analyze how they might be controlled when the best tool an executive has at his disposal is the ability to terminate. In the case of independent agents, even this fundamental tool is unavailable to the executive.

Our theory demonstrates that a political principal's influence over his investigators is profoundly related to his ability to select particular types of replacements when he is unsatisfied with an agent's performance. When an executive has little control over the identity of the replacement, the threat of termination does not always induce the investigator to promote the executive's interests. To the extent that we believe that most contemporary executives are relatively moderate, our results are particularly troubling, as they suggest that the threat of termination can induce investigators who have different preferences from the executive to take actions congruent with the executive's interests, but this benefit comes at the cost of perverse behavior by like-minded investigators.

On a positive note, however, we demonstrate that when these executives are able to replace incumbents with established ideologues, they achieve increased levels of congruence by divergent investigators, while not experiencing decreased congruence by like-minded investigators. Hence, while investigators will not do exactly what executives would like in all situations, outcomes are better for the executive than what would occur if the executive was a complete victim of the randomness of the political appointment process, or if he was only dealing with independent agents who could not be terminated. This crucial finding, that an executive's influence over his investigators hinges on his ability to select certain types of replacements, has several implications for the study of appointment politics, as well as the impact of elections on bureaucratic policy making.

If one accepts the argument that presidents are more able to appoint a known ideologue when their party controls the Senate, then our results point to a very subtle implication of the constitutionally mandated appointment process. It is well accepted (e.g., Hammond and Knott 1996; Nokken and Sala 2000) that requiring Senate confirmation of presidential appointees should influence their identities and policies. Our model, however, moves beyond this point to suggest that both appointee preferences, and the executive's ability to ensure that his appointees' actions promote his interests, should be influenced by the confirmation process, and particularly by which party controls the Senate. When the government is divided, the president cannot be certain of his ability to choose anything other than a random replacement, because the Senate may block appointments of known ideologues. Thus, his level of influence over the incumbent agent suffers, compared to what would ensue if the Senate would comply with his wishes.

Taking a step back to consider the role of voters, our findings have implications for the unintended consequences of ticket splitting. Several scholars (e.g., Fiorina 2003) suggest that voters split their tickets to limit either party's influence over the mechanisms of governance. Such arguments, however, have mainly focused on how the party that controls the legislature might act as a check on the party that controls the executive, and vice versa. Our results suggest that by splitting their tickets to facilitate divided government, voters might be getting their wish and ensuring that the president is not too dominant. This lack of dominance, however, might not follow from being constrained by the legislature, but rather because appointed investigators and agency heads fail to implement his goals.

Acknowledgments

For helpful comments we thank Larry Baum, David Baron, Chuck Cameron, Sandy Gordon, Greg Huber, David Lewis, Dennis Yao, and participants at the 2008 Annual Meetings of the Midwest Political Science Association and the Ninth Annual Strategy and the Business Environment Conference at UCLA's Anderson School. Early work on this project benefitted from collaboration with Brandice Canes-Wrone and Michael Herron.

Appendix

We state technical results, along with some intuition, and show how propositions in the main text follow. Proofs of Lemmas 2–10 are in the supplemental appendix. Let $x \in \{T, D\}$ denote the investigator's decision to try or drop.

Lemma 1. *In the absence of accountability there exist cutpoints for investigator behavior, $\underline{\alpha}$ and $\overline{\alpha}$, where $0 < \underline{\alpha} < \overline{\alpha} < 1$, such that: (i) If $\alpha_I < \underline{\alpha}$, then $x = D$; (ii) If $\alpha_I \in (\underline{\alpha}, \overline{\alpha})$, then $x = D$ if $s = NG$ and $x = T$ if $s = G$; (iii) If $\alpha_I > \overline{\alpha}$, then $x = T$.*

Proof. To solve for $\underline{\alpha}$, suppose $s = G$ and set the investigator's expected utility to be equal from trying versus dropping, where $U(Try) = -\gamma^G \alpha_I \rho_G - (1-\gamma^G)(1-\alpha_I)\rho_{NG}$ and $U(Drop) = -\gamma^G \alpha_I$. This reduces to $U(Try) - U(Drop) = \gamma^G \alpha_I (1-\rho_G) - (1-\gamma^G)(1-\alpha_I)\rho_{NG}$, which is strictly increasing in α_I, so $\underline{\alpha} \equiv \frac{(1-\gamma^G)\rho_{NG}}{\gamma^G(1-\rho_G)+(1-\gamma^G)\rho_{NG}}$. Similarly, for $s = NG$, $\bar{\alpha} \equiv \frac{(1-\gamma^{NG})\rho_{NG}}{\gamma^{NG}(1-\rho_G)+(1-\gamma^{NG})\rho_{NG}}$, and because $\gamma^G > \gamma^{NG}$, $\underline{\alpha} < \bar{\alpha}$. ■

Results with random replacements

Lemma 2. *There exists a cutpoint $\tilde{\alpha} \in (\underline{\alpha}, \bar{\alpha})$ such that for any executive strategy σ it is strictly optimal for an investigator with $\alpha_I \leq \tilde{\alpha}$ to drop the first period case when $s = NG$ and it is strictly optimal for an investigator with $\alpha_I \geq \tilde{\alpha}$ to try the first period case when $s = G$.*

Lemma 3. *For any executive strategy σ there exist cutpoints $\underline{\alpha}^1$ and $\overline{\alpha}^1$, where $0 \leq \underline{\alpha}^1 < \tilde{\alpha} < \overline{\alpha}^1 \leq 1$, such that in the first period: (i) If $\alpha_I < \underline{\alpha}^1$, then $x = D$; (ii) If $\alpha_I \in (\underline{\alpha}^1, \overline{\alpha}^1)$, then $x = D$ if $s = NG$ and $x = T$ if $s = G$; (iii) If $\alpha_I > \overline{\alpha}^1$, then $x = T$; (iv) Each of the cutpoints, $\underline{\alpha}^1$ and $\overline{\alpha}^1$, is a continuous function of the executive's strategy σ; and (v) Either $\underline{\alpha}^1 > 0$ or $\overline{\alpha}^1 < 1$.*

Intuition for Lemma 3. This result is similar to Lemma 1, but the investigator must also take into account the probability of winning reelection after trying versus dropping as well as the difference in utility that the she gets from having herself versus a replacement in office in the second period. We refer to this utility difference as $W(\alpha_I)$. (The difficulty of proving this lemma is that although $W_R(\alpha_I)$ is continuous it is not constant).

For, example, $\underline{\alpha}^1$ is the value of α_I such that $U(Drop) = U(Try)$, i.e.,

$$\begin{aligned} -\gamma^G\alpha_I = & -\gamma^G\alpha_I\rho_G - \left(1-\gamma^G\right)(1-\alpha_I)\rho_{NG} \\ & + W(\alpha_I)\left\{\sigma_C\left[\gamma^G(1-\rho_G) + \left(1-\gamma^G\right)\rho_{NG}\right]\right. \\ & \left. + \sigma_A\left[\left(1-\gamma^G\right)(1-\rho_{NG}) + \gamma^G\rho_G\right] - \sigma_D\right\}. \end{aligned} \tag{3}$$

Part *(v)* of Lemma 3 implies that it is impossible for neutral executives to obtain congruence by all types of investigators and that the executive's beliefs about the incumbent investigator's type will be affected by her choice to try or drop as well as the outcome of the trial.

Lemma 4. *If $\alpha_E \leq \underline{\alpha}$ then in equilibrium $\sigma_D = 1$ and $\sigma_A = \sigma_C = 0$.*

Lemma 5. *If $\alpha_E \geq \bar{\alpha}$ then in equilibrium $\sigma_D = 0$ and $\sigma_A = \sigma_C = 1$.*

Lemma 6. *If first period investigator behavior is characterized by cutpoints $\underline{\alpha}^1$ and $\overline{\alpha}^1$ as in Lemma 3 then there exist cutpoints α^C, α^D, and α^A such that:*

1. *$\underline{\alpha} < \alpha^C \leq \alpha^D \leq \alpha^A < \overline{\alpha}$.*
2. *α^C, α^D, and α^A are continuous functions of $\underline{\alpha}^1$ and $\overline{\alpha}^1$.*
3. *If the first period case results in a conviction then an executive with $\alpha_E < \alpha^C$ strictly prefers to remove the investigator, $\alpha_E > \alpha^C$ strictly prefers to retain her, and $\alpha_E = \alpha^C$ is indifferent.*
4. *If the first period case is dropped then an executive with $\alpha_E < \alpha^D$ strictly prefers to remove the investigator, $\alpha_E > \alpha^D$ strictly prefers to retain her, and $\alpha_E = \alpha^D$ is indifferent.*
5. *If the first period case results in an acquittal then an executive with $\alpha_E < \alpha^A$ strictly prefers to remove the investigator, $\alpha_E > \alpha^A$ strictly prefers to retain her, and $\alpha_E = \alpha^A$ is indifferent.*

Lemma 7. *For any α_E, there exists an equilibrium with one of the following types of executive behavior, each of which occurs for some values of α_E. Also, any equilibrium must have one of these types of executive behavior: (i) $\sigma_D = 1, \sigma_C = \sigma_A = 0$; (ii) $\sigma_D = 1, \sigma_C \in (0,1)$, $\sigma_A = 0$; (iii) $\sigma_D = 1$, $\sigma_C = 1$, $\sigma_A = 0$; (iv) $\sigma_D \in (0,1), \sigma_C = 1, \sigma_A = 0$; (v) $\sigma_D = 0$, $\sigma_C = 1$, $\sigma_A = 0$; (vi) $\sigma_D = 0, \sigma_C = 1, \sigma_A \in (0,1)$; (vii) $\sigma_D = 0$, $\sigma_C = 1$, $\sigma_A = 1$.*

We now show how Propositions 1–5 follow from Lemmas 4, 5, and 7. The set of truly neutral executives is characterized from Lemma 7*(iv)*. Set $\sigma_C = 1, \sigma_A = 0$ and let $\bar{\sigma}_D$ and $\underline{\sigma}_D$ solve with equality main text equations (1) and (2), respectively. Let $Z = \{\alpha_E : \exists$ an equilibrium for some $\sigma_D \in [\underline{\sigma}_D, \bar{\sigma}_D]\}$. Let $\alpha_{\underline{E}} = \min\{Z\}$ and $\alpha_{\bar{E}} = \max\{Z\}$. To see that $\underline{\alpha} < \alpha_{\underline{E}}$, note that regardless of the investigator's first period behavior, from Lemma 6 an executive $\alpha_E = \underline{\alpha}$ strictly prefers to retain the investigator after a drop. Thus for α_E close to $\underline{\alpha}$ only the equilibrium in Lemma 7*(i)* exists. A similar argument shows that $\alpha_{\bar{E}} < \bar{\alpha}$.

Passive-neutral executives have $\alpha_E \in \left(\underline{\alpha}, \alpha_{\underline{E}}\right)$, truly neutral ones have $\alpha_E \in \left(\alpha_{\underline{E}}, \alpha_{\bar{E}}\right)$, and aggressive-neutral ones have $\alpha_E \in (\alpha_{\bar{E}}, \bar{\alpha})$.

We have not established uniqueness, which would require showing that, e.g., an equilibrium from part *(v)*, *(vi)*, or *(vii)* of Lemma 7 can't exist for $\alpha_E < \alpha_{\bar{E}}$. But we do know that only for truly-neutral executives, i.e., $\alpha_E \in \left(\alpha_{\underline{E}}, \alpha_{\bar{E}}\right)$, can there be an equilibrium satisfying equations (1) and (2) so that congruence increases for both passive- and aggressive-leaning investigators. When such an equilibrium exists, we characterize it. For $\alpha_E \in \left(\underline{\alpha}, \alpha_{\underline{E}}\right)$ we characterize equilibria in which investigators are rewarded for dropping. Likewise, for $\alpha_E \in \left(\alpha_{\bar{E}}, \bar{\alpha}\right)$ we characterize equilibria in which investigators are rewarded for trying.

Proposition 1 in the main text is from Lemma 4 and Proposition 2 is from Lemma 5. Proposition 3 is from Lemma 7*(i)*–*(iii)* and *(iv)* with $\sigma_D > \bar{\sigma}_D$.

Proposition 4 is from Lemma 7*(v)–(vii)* and *(iv)* with $\sigma_D < \underline{\sigma}_D$. Proposition 5 covers $\alpha_E \in (\alpha_{\underline{E}}, \alpha_{\bar{E}})$, for which there exists an equilibrium with $\sigma_D \in (\underline{\sigma}_D, \bar{\sigma}_D)$ in Lemma 7*(iv)*. The propositions also characterize investigators' incentives to try or drop, which are obvious, based on the executive's strategy σ and equations (1) and (2).

Lemma 8. *In the equilibria that we characterize for passive and passive-neutral executives* $\underline{\alpha}^1 > \underline{\alpha}$ *and* $\bar{\alpha}^1 > \bar{\alpha}$. *For truly neutral executives* $\underline{\alpha}^1 < \underline{\alpha}$ *and* $\bar{\alpha}^1 > \bar{\alpha}$. *For aggressive and aggressive-neutral executives* $\underline{\alpha}^1 < \underline{\alpha}$ *and* $\bar{\alpha}^1 < \bar{\alpha}$.

Intuition for Lemma 8. As can be seen from equation (3), accountability affects first-period investigator behavior in obvious ways. For example, if the investigator has an incentive to try when $s = G$, i.e., $\sigma_C[\gamma^G(1-\rho_G) + (1-\gamma^G)\rho_{NG}] + \sigma_A[(1-\gamma^G)(1-\rho_{NG}) + \gamma^G\rho_G] - \sigma_D > 0$, then $\underline{\alpha}^1 < \underline{\alpha}$, whereas if she has an incentive to drop then $\underline{\alpha}^1 > \underline{\alpha}$. Likewise, if she has an incentive to try when $s = NG$ then $\bar{\alpha}^1 < \bar{\alpha}$ whereas if she has an incentive to drop then $\bar{\alpha}^1 > \bar{\alpha}$.

Congruence. Congruence is determined by comparing first period equilibrium investigator behavior, as characterized by cutpoints $\underline{\alpha}^1$ and $\bar{\alpha}^1$, versus what happens in the independent agent game, as characterized by cutpoints $\underline{\alpha}$ and $\bar{\alpha}$. From Lemma 2 $\underline{\alpha}^1 < \tilde{\alpha} < \bar{\alpha}^1$, so for passive-leaning investigators, i.e., those with $\alpha_I < \tilde{\alpha}$, only $\underline{\alpha}^1$ is relevant to an assessment of congruence, because regardless of accountability incentives all passive-leaning investigators pick $x = D$ when $s = NG$. Likewise for aggressive-leaning investigators, i.e., those with $\alpha_I > \tilde{\alpha}$, only $\bar{\alpha}^1$ is of interest, because all aggressive-leaning investigators pick $x = T$ when $s = G$. Applying the following definition to results from Lemma 8 yields the conclusions regarding congruence in Propositions 1–5.

Definition 1. *The effect of accountability on congruence is as follows:*

1. *For a passive executive, congruence by passive-leaning investigators increases if* $\underline{\alpha}^1 > \underline{\alpha}$ *and decreases if* $\underline{\alpha}^1 < \underline{\alpha}$. *Congruence by aggressive-leaning investigators increases if* $\bar{\alpha}^1 > \bar{\alpha}$ *and decreases if* $\bar{\alpha}^1 < \bar{\alpha}$.
2. *For a neutral executive, congruence by passive-leaning investigators increases if* $\underline{\alpha}^1 < \underline{\alpha}$ *and decreases if* $\underline{\alpha}^1 > \underline{\alpha}$. *Congruence by aggressive-leaning investigators increases if* $\bar{\alpha}^1 > \bar{\alpha}$ *and decreases if* $\bar{\alpha}^1 < \bar{\alpha}$.
3. *For an aggressive executive, congruence by passive-leaning investigators increases if* $\underline{\alpha}^1 < \underline{\alpha}$ *and decreases if* $\underline{\alpha}^1 > \underline{\alpha}$. *Congruence by aggressive-leaning investigators increases if* $\bar{\alpha}^1 < \bar{\alpha}$ *and decreases if* $\bar{\alpha}^1 > \bar{\alpha}$.

Results with extreme replacements available

Lemma 9. *There exist cutpoints* $\underline{\alpha}^{\mathrm{ER}}$ *and* $\bar{\alpha}^{ER}$, *where* $\underline{\alpha} < \underline{\alpha}^{ER} < \alpha_{\underline{E}} < \alpha_{\bar{E}} < \bar{\alpha}^{ER} < \bar{\alpha}$, *such that the executive's most preferred replacement is: (i) passive if* $\alpha_E < \underline{\alpha}^{ER}$, *(ii) random if* $\alpha_E \in (\underline{\alpha}^{ER}, \bar{\alpha}^{ER})$, *and (iii) aggressive if* $\alpha_E > \bar{\alpha}^{ER}$.

For $\alpha_E \in (\underline{\alpha}^{ER}, \bar{\alpha}^{ER})$, which comprises PN2, TN, and AN1 executives in Proposition 6, equilibria are the same as in the model where only a random replacement is available.

The proof of Proposition 7 is trivial. For example, for $\alpha_E < \underline{\alpha}$ the executive wants all cases dropped, so regardless of what the investigator does in the first period he will replace her with someone known to be passive. Because her first-period behavior has no effect on her chances of retention, the investigator chooses her most preferred action, as in Lemma 1. Thus investigator behavior is less congruent than in Proposition 1. For $\alpha_E > \bar{\alpha}$ the argument is similar.

What remains is to prove Propositions 8 and 9, for PN1 and AN2 executives, in $(\underline{\alpha}, \underline{\alpha}^{ER})$ and $(\bar{\alpha}^{ER}, \bar{\alpha})$, respectively.

Lemma 10. *Equilibria for PN1 and AN2 executives.*

1. *For* $\alpha_E \in (\underline{\alpha}, \underline{\alpha}^{ER})$, *there exists an equilibrium in which* $\sigma_D \in (0,1)$ *and* $\sigma_A = \sigma_C = 0$. *First period investigator behavior is characterized by cutpoints* $\underline{\alpha}^1 = \underline{\alpha}$ *and* $\bar{\alpha}^1 > \bar{\alpha}$.
2. *For* $\alpha_E \in (\bar{\alpha}^{ER}, \bar{\alpha})$, *there exists an equilibrium in which* $\sigma_D = 0$ *and* $\sigma_A = \sigma_C \in (0, 1)$. *First period investigator behavior is characterized by cutpoints* $\underline{\alpha}^1 < \underline{\alpha}$ *and* $\bar{\alpha}^1 = \bar{\alpha}$.

Intuition for Lemma 10. We construct an equilibrium for a PN1 executive as follows. (The AN2 case is similar). For any $\alpha_E \in (\underline{\alpha}, \underline{\alpha}^{ER})$ find $\bar{\alpha}^1 \in (\bar{\alpha}, 1)$, such that if first-period investigator behavior is characterized by $\underline{\alpha}^1 = \underline{\alpha}$ and $\bar{\alpha}^1 > \bar{\alpha}$ then when $x = D$ the executive is indifferent between retaining the investigator and installing a dogmatic passive replacement. Then find $\sigma_D \in (0,1)$ that, along with $\sigma_A = \sigma_C = 0$, induces investigators to behave according to cutpoint $\bar{\alpha}^1$ when $s = NG$.

The intuition for why investigators' behavior is optimal is as follows. Passive investigators, with $\alpha_I < \underline{\alpha}$ have no accountability incentives (the replacement is passive) so they do exactly what they want to do in the first period, dropping the case. Neutral investigators drop if and only if they see $s = NG$. Obviously if they see $s = NG$ they want to drop for retention reasons, and because that is what they want to do anyway. More interesting is what happens if they see $s = G$. A neutral investigator is always better off trying when $s = G$. The replacement is passive, so she knows that even if trying leads to removal, the only way the new investigator's behavior could differ from her own in the second period is if there is a guilty signal. So it is better to take the first period case to trial, and hope that if she thereby loses office there is no effect on second period policy.

Because $\underline{\alpha}^1 = \underline{\alpha}$, accountability has no effect on the level of congruence that PN1 executive receives from passive-leaning investigators. Because $\bar{\alpha}^1 > \bar{\alpha}$, the executive, who wants the investigator to follow her signal, benefits from increased congruence by aggressive-leaning investigators.

Manuscript submitted 15 September 2008
Manuscript accepted for publication 18 May 2009

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Supplemental Appendix

This appendix presents supplemental material for Shotts and Wiseman, "The Politics of Investigations and Regulatory Enforcement by Independent Agents and Cabinet Appointees."

We denote the investigator's strategy in the first period as $\tau^1(\alpha_I, s) : [0,1] \times \{G, NG\} \to \{T, D\}$. Similarly for the second period investigator $\tau^2(\alpha, s) : [0,1] \times \{G, NG\} \to \{T, D\}$. Let $\mu_p(A)$ denote the executive's belief about the probability that the incumbent investigator is passive ($\alpha_I < \underline{\alpha}$), when she takes the first period case to trial and it is acquitted. Likewise let $\mu_n(A)$ denote the probability that $\alpha_I \in (\underline{\alpha}, \overline{\alpha})$ and let $\mu_a(A)$ denote the probability that $\alpha_I > \overline{\alpha}$ after an acquittal. Similarly for a conviction or drop, denote beliefs as $\mu_p(C), \mu_n(C), \mu_a(C), \mu_p(D), \mu_n(D)$, and $\mu_a(D)$. Define the probability that a random replacement is passive, neutral, or aggressive as $\phi_p = F(\underline{\alpha}), \phi_n = F(\bar{\alpha}) - F(\underline{\alpha})$, and $\phi_a = 1 - F(\bar{\alpha})$. Finally, given signal s we denote the difference between the probability that the investigator is retained after trying and the probability that the investigator is retained after dropping as

$$r(s) \equiv \sigma_C [\gamma^s (1 - \rho_G) + (1 - \gamma^s) \rho_{NG}] + \sigma_A [(1 - \gamma^s)(1 - \rho_{NG}) + \gamma^s \rho_G] - \sigma_D. \tag{4}$$

Note that if $r(s) > 0$ the investigator has an accountability incentive to try whereas for $r(s) < 0$ she has an incentive to drop.

Proof of Lemma 2 An investigator sees either $s = G$ or $s = NG$. In terms of the utility received from the case in a given period, which we calculate the same way as in Lemma 1, one of these information sets is more important to the investigator in the following sense.

A passive investigator cares more about dropping a case when $s = NG$ than she does when $s = G$, i.e., using the reasoning from Lemma 1, for any $\alpha_I < \underline{\alpha}$, $U(Drop|s = NG) - U(Try|s = NG) > U(Drop|s = G) - U(Try|s = G)$ because

$$
\begin{aligned}
-\gamma^{NG}\alpha_I\left(1-\rho_G\right)+\left(1-\gamma^{NG}\right)\left(1-\alpha_I\right)\rho_{NG} &> -\gamma^{G}\alpha_I\left(1-\rho_G\right)+\left(1-\gamma^{G}\right)\left(1-\alpha_I\right)\rho_{NG} \\
\left(\gamma^{G}-\gamma^{NG}\right)\left[\alpha_I\left(1-\rho_G\right)+\left(1-\alpha_I\right)\rho_{NG}\right] &> 0.
\end{aligned}
$$

The last expression holds because $\gamma^G > \gamma^{NG}$.

Similarly, an aggressive investigator cares more about trying rather than dropping when $s = G$ than when $s = NG$, i.e., for $\alpha_I > \overline{\alpha}$, $U(Try|s = G)- U(Drop|s = G) > U(Try|s = NG) - U(Drop|s = NG)$.

For a neutral investigator we solve for $\tilde{\alpha}$ such that the investigator is indifferent in terms of which decision is more important, i.e., $U(Try|s = G)- U(Drop|s = G) = U(Drop|s = NG)- U(Try|s = NG)$:

$$
\begin{aligned}
\gamma^{G}\alpha_I\left(1-\rho_G\right)-\left(1-\gamma^{G}\right)\left(1-\alpha_I\right)\rho_{NG} &= -\gamma^{NG}\alpha_I\left(1-\rho_G\right)+\left(1-\gamma^{NG}\right)\left(1-\alpha_I\right)\rho_{NG} \\
\alpha_I\left[\left(\gamma^{G}+\gamma^{NG}\right)\left(1-\rho_G\right)+\left(2-\gamma^{NG}-\gamma^{G}\right)\rho_{NG}\right] &= \left(2-\gamma^{NG}-\gamma^{G}\right)\rho_{NG} \\
\tilde{\alpha} &\equiv \frac{\left(2-\gamma^{NG}-\gamma^{G}\right)\rho_{NG}}{\left(\gamma^{G}+\gamma^{NG}\right)\left(1-\rho_G\right)+\left(2-\gamma^{NG}-\gamma^{G}\right)\rho_{NG}}.
\end{aligned}
$$

It is straightforward to confirm that $\underline{\alpha} < \tilde{\alpha} < \overline{\alpha}$. We still need to establish that for $\alpha_I \leq \tilde{\alpha}$ it is optimal to drop in the first period when $s = NG$ and for $\alpha_I > \tilde{\alpha}$ it is optimal to try in the first period when $s = G$, regardless of accountability incentives. To do this, we find bounds on how much the investigator's first period actions can affect her utility from second period actions. For $\alpha_I \leq \tilde{\alpha}$, the largest possible difference between a investigator's expected utility from her own choice of whether to try when retained versus a replacement investigator's choice occurs when $s = NG$ in the second period. She can potentially lose up to $U(Drop|s = NG) - U(Try|s = NG)$ if the replacement is aggressive. However, the probability of this occurring is strictly less than 1, because there is some chance that the second period signal is $s = G$ and there is also some probability that the replacement is not aggressive. Thus a strict upper bound on the investigator's expected second period utility loss from choosing $x = T$ when $s = NG$ in the first period is $U(Drop|s = NG) - U(Try|s = NG)$. Because the investigator's first period utility difference between trying and dropping is $U(Drop|s = NG) - U(Try|s = NG)$ it is thus strictly optimal for her to drop the case in the first period. For $\alpha_I \geq \tilde{\alpha}$, a symmetric argument shows that it is strictly optimal to chose $x = T$ when $s = G$ in the first period.■

Proof of Lemma 3 We characterize $\underline{\alpha}^1$, the cutpoint for first period investigator behavior when $s = G$. The argument for $\overline{\alpha}^1$ is essentially similar, except using $s = NG$. First note that, from Lemma 2, any investigator with $\alpha_I \geq \tilde{\alpha}$ strictly prefers to try when $s = G$. There are three cases, based on the difference in probability of retention from trying versus dropping after a guilty signal: $r(G) = 0$, $r(G) > 0$, and $r(G) < 0$.

Case 1: $r(G) = 0$. First period actions don't affect the investigator's retention probability when $s = G$, so $\underline{\alpha}^1 = \underline{\alpha}$, i.e., she chooses her most preferred action.

Case 2: $r(G) > 0$. Any investigator with $\alpha_I \geq \underline{\alpha}$ strictly prefers to try. That's what she wants to do anyway in the first period and doing so increases the chance that she will be retained, which strictly increases her utility in the second period.

To characterize the behavior of investigators with $\alpha_I < \underline{\alpha}$, we find an investigator's utility difference from trying versus dropping, which we will denote as $U_{TD}(\alpha_I; s, r(s))$.

The first component of $U_{TD}(\alpha_I; G, r(G))$ is just the first period utility difference from the two actions, which, as in the proof of Lemma 1 is $\alpha_I \gamma^G (1 - \rho_G) - (1 - \alpha_I) \left(1 - \gamma^G\right) \rho_{NG}$.

The second component is the second period effect of her first period action. The difference between her probability of being retained if she tries and her probability of being retained if she drops is $r(G)$. If a passive investigator is replaced, there is an increased chance of an incorrect conviction in the second period, which results in $-(1 - \alpha_I)$ utility for the investigator. Specifically, it may be the case that the replacement investigator is a neutral type who mistakenly observes $s = G$ when the defendant is innocent and thus brings the case to trial (which the passive investigator wouldn't do) and the trial produces a mistaken outcome. The probability of this happening is $\phi_n (1 - q) (1 - \pi) \rho_{NG}$. Or it may be the case that the replacement is aggressive, the defendant is innocent, and the trial produces a mistaken outcome. The probability of this happening is $\phi_a (1-\pi) \rho_{NG}$.

If the passive investigator is replaced, there is also a decreased chance of a correct second period conviction, which counts for $-\alpha_I$ utility. Specifically, the replacement investigator may be a neutral type who correctly observes $s = G$ when the defendant is guilty, brings the case to trial, and receives a correct trial outcome. The probability of this happening is $\phi_n q \pi (1-\rho_G)$. Or it may be the case that the replacement is aggressive, the defendant is guilty, and the trial produces a correct outcome. The probability of this happening is $\phi_a \pi (1-\rho_G)$.

Combining all of these terms, for a passive investigator, i.e., $\alpha_I \leq \underline{\alpha}$:

$$
\begin{aligned}
U_{TD}(\alpha_I; G, r(G)) &= \alpha_I \gamma^G (1-\rho_G) - (1-\alpha_I)\left(1-\gamma^G\right)\rho_{NG} \\
&\quad + r(G)(1-\alpha_I)(1-\pi)\rho_{NG}\left[\phi_n(1-q)+\phi_a\right] \\
&\quad - r(G)\alpha_I \pi (1-\rho_G)\left[\phi_n q + \phi_a\right] \\
&= \rho_{NG}\left\{r(G)(1-\pi)\left[\phi_n(1-q)+\phi_a\right] - (1-\gamma^s)\right\} \\
&\quad + \alpha_I (1-\rho_G)\left(\gamma^G - r(G)\pi\left[\phi_n q+\phi_a\right]\right) \\
&\quad + \alpha_I \rho_{NG}\left(\left(1-\gamma^G\right) - r(G)(1-\pi)\left[\phi_n(1-q)+\phi_a\right]\right).
\end{aligned}
$$

Focusing on the last two lines of this expression, we see that for $\alpha_I \in [0, \underline{\alpha}]$, $U_{TD}(\alpha_I; s, r(s))$ is a linear function of α_I. Obviously, for $r(G) > 0$, $U_{TD}(\underline{\alpha}; G, r(G)) > 0$, i.e., an investigator who is indifferent between trying and dropping in terms of first period outcomes when $s = G$ strictly prefers to try when doing so increases the probability that she is retained. Because $U_{TD}(\alpha_I; G, r(G))$ is linear in α_I this means there are two possible situations. First, it may be the case that $U_{TD}(0; G, r(G)) > 0$, in which case all investigators with $\alpha_I \in [0, \underline{\alpha}]$ strictly prefer to try when $s = G$; in this case $\underline{\alpha}^1 = 0$. Second, it may be the case that for some $\underline{\alpha}^1 \in (0, \underline{\alpha})$, $U_{TD}(\underline{\alpha}^1; G, r(G)) = 0$, in which case $U_{TD}(\alpha_I; G, r(G))$ must be strictly increasing in α_I (because $U_{TD}(\underline{\alpha}; G, r(G)) > 0$) and hence all investigators with $\alpha_I < \underline{\alpha}^1$ strictly prefer to drop when $s = G$

and those with $\alpha_I > \underline{\alpha}^1$ strictly prefer to try. Setting $U_{TD}(\alpha_I; G, r(G)) = 0$ and solving out yields

$$\underline{\alpha}^1 = \frac{\rho_{NG}\left[\left(1-\gamma^G\right) - r(G)(1-\pi)\left[\phi_n(1-q)+\phi_a\right]\right]}{\rho_{NG}\left[(1-\gamma^G) - r(G)(1-\pi)\left[\phi_n(1-q)+\phi_a\right]\right] + (1-\rho_G)\left(\gamma^G - r(G)\pi\left[\phi_n q + \phi_a\right]\right)}. \tag{5}$$

Note that for $r(G) > 0$, $\underline{\alpha}^1$ is a continuous function of $r(G)$.

Case 3: $r(G) < 0$. In this case, a passive investigator obviously will not try a case. For a neutral investigator, the utility difference between trying versus dropping is

$$\begin{aligned}
U_{TD}(\alpha_I; G, r(G)) &= \alpha_I \gamma^G (1-\rho_G) - (1-\alpha_I)\left(1-\gamma^G\right)\rho_{NG} \\
&\quad + r(G)(1-\alpha_I)(1-\pi)\rho_{NG}\left[\phi_a q - \phi_p(1-q)\right] \\
&\quad + r(G)\alpha_I \pi (1-\rho_G)\left[\phi_p q - \phi_a(1-q)\right] \\
&= \rho_{NG}\left\{r(G)(1-\pi)\left[\phi_a q - \phi_p(1-q)\right] - \left(1-\gamma^G\right)\right\} \\
&\quad + \alpha_I(1-\rho_G)\left\{\gamma^G + r(G)\pi\left[\phi_p q - \phi_a(1-q)\right]\right\} \\
&\quad + \alpha_I \rho_{NG}\left\{\left(1-\gamma^G\right) - r(G)(1-\pi)\left[\phi_a q - \phi_p(1-q)\right]\right\}.
\end{aligned}$$

Note that this expression is linear in α_I. Moreover, it is strictly increasing because an investigator at $\underline{\alpha}$ strictly prefers to drop and, from Lemma 2, an investigator at $\tilde{\alpha}$ strictly prefers to try when $s = G$. Thus for $r(G) < 0$, there is a unique solution $\underline{\alpha}^1 \in (\underline{\alpha}, \tilde{\alpha})$, which is a continuous function of $r(G)$:

$$\underline{\alpha}^1 = \frac{\rho_{NG}\left\{\left(1-\gamma^G\right) - r(G)(1-\pi)\left[\phi_a q - \phi_p(1-q)\right]\right\}}{\rho_{NG}\left\{(1-\gamma^G) - r(G)(1-\pi)\left[\phi_a q - \phi_p(1-q)\right]\right\} + (1-\rho_G)\left\{\gamma^G + r(G)\pi\left[\phi_p q - \phi_a(1-q)\right]\right\}}. \tag{6}$$

For part *(iv)* of Lemma 3, note that as $r(G) \to 0$, the right hand sides of Equations 5 and 6 both converge to $\frac{\rho_{NG}\left(1-\gamma^G\right)}{\rho_{NG}(1-\gamma^G)+(1-\rho_G)\gamma^G}$, i.e., $\underline{\alpha}$, so $\underline{\alpha}^1$ is a continuous function of $r(G)$. From Equation 4 it is obvious that $r(G)$ is a continuous function of the executive's strategy σ, so $\underline{\alpha}^1$ is also a continuous function of σ.

For part *(v)* of Lemma 3, we assume that $\underline{\alpha}^1 = 0$ and $\overline{\alpha}^1 = 1$ then derive a contradiction.

Assume that $\underline{\alpha}^1 = 0$, and note that an investigator with $\alpha_I = 0$ cares only about avoiding mistaken convictions. If she tries the case in the first period when $s = G$, this will lead to $\left(1 - \gamma^G\right) \rho_{NG}$ mistaken convictions. On the other hand, by trying the case, she changes her probability of retention by $r(G)$, and if retained, she will avoid mistaken convictions in two circumstances: her replacement is neutral and receives an incorrect signal about an innocent defendant who is then mistakenly convicted, or her replacement is aggressive, the defendant is innocent, and the defendant is mistakenly convicted. For the investigator at $\alpha_I = 0$ to try when $s = G$ requires that

$$\begin{aligned}
\left(1 - \gamma^G\right) \rho_{NG} &\leq r(G)\left[\phi_n (1 - \pi)(1 - q)\rho_{NG} + \phi_a (1 - \pi)\rho_{NG}\right] \\
\frac{(1 - \pi)(1 - q)}{\pi q + (1 - \pi)(1 - q)} &\leq r(G)\left[\phi_n (1 - \pi)(1 - q) + \phi_a (1 - \pi)\right] \\
\frac{1}{\pi q + (1 - \pi)(1 - q)} \cdot \frac{1 - q}{\phi_n (1 - q) + \phi_a} &\leq r(G).
\end{aligned}$$

Substituting in $r(G) = \sigma_C\left[\gamma^G (1 - \rho_G) + \left(1 - \gamma^G\right)\rho_{NG}\right] + \sigma_A\left[\left(1 - \gamma^G\right)(1 - \rho_{NG}) + \gamma^G \rho_G\right] - \sigma_D$ from Equation 4, and rearranging terms this reduces to

$$\sigma_D \leq \begin{array}{c} \sigma_C\left[\gamma^G (1 - \rho_G) + \left(1 - \gamma^G\right)\rho_{NG}\right] + \sigma_A\left[\left(1 - \gamma^G\right)(1 - \rho_{NG}) + \gamma^G \rho_G\right] \\ -\frac{1}{\pi q + (1 - \pi)(1 - q)} \cdot \frac{1 - q}{\phi_n (1 - q) + \phi_a}. \end{array} \tag{7}$$

Assume also that $\overline{\alpha}^1 = 1$. An investigator for whom $\alpha_I = 1$ cares only about ensuring conviction of the guilty, so for her to drop when $s = NG$ the number of foregone correct first period convictions must be less than the expected decrease in the number of correct second-period convictions if she drops the first period case:

$$\begin{aligned}
\gamma^{NG} (1 - \rho_G) &\leq -r(NG)\left[\phi_p \pi (1 - \rho_G) + \phi_n \pi (1 - q)(1 - \rho_G)\right] \\
\frac{\pi (1 - q)}{\pi (1 - q) + (1 - \pi) q} &\leq -r(NG)\left[\phi_p \pi + \phi_n \pi (1 - q)\right] \\
\frac{1}{\pi (1 - q) + (1 - \pi) q} \cdot \frac{1 - q}{\phi_p + \phi_n (1 - q)} &\leq -r(NG).
\end{aligned}$$

Substituting in $r(NG) = \sigma_C\left[\gamma^{NG} (1 - \rho_G) + \left(1 - \gamma^{NG}\right)\rho_{NG}\right] + \sigma_A\left[\left(1 - \gamma^{NG}\right)(1 - \rho_{NG}) + \gamma^{NG} \rho_G\right] - \sigma_D$

from Equation 4, and rearranging terms this reduces to

$$\begin{array}{c}\sigma_C\left[\gamma^{NG}\left(1-\rho_G\right)+\left(1-\gamma^{NG}\right)\rho_{NG}\right]+\sigma_A\left[\left(1-\gamma^{NG}\right)\left(1-\rho_{NG}\right)+\gamma^{NG}\rho_G\right] \\ +\frac{1}{\pi(1-q)+(1-\pi)q}\cdot\frac{1-q}{\phi_p+\phi_n(1-q)}\end{array} \leq \sigma_D. \tag{8}$$

Because the same value of σ_D must satisfy Equations 7 and 8, to have $\underline{\alpha}^1 = 0$ and $\overline{\alpha}^1 = 1$ requires that

$$\begin{array}{ccc}\sigma_C\left[\gamma^{NG}\left(1-\rho_G\right)+\left(1-\gamma^{NG}\right)\rho_{NG}\right] & & \sigma_C\left[\gamma^{G}\left(1-\rho_G\right)+\left(1-\gamma^{G}\right)\rho_{NG}\right] \\ +\sigma_A\left[\left(1-\gamma^{NG}\right)\left(1-\rho_{NG}\right)+\gamma^{NG}\rho_G\right] & \leq & +\sigma_A\left[\left(1-\gamma^{G}\right)\left(1-\rho_{NG}\right)+\gamma^{G}\rho_G\right] \\ +\frac{1}{\pi(1-q)+(1-\pi)q}\frac{1-q}{\phi_p+\phi_n(1-q)} & & -\frac{1}{\pi q+(1-\pi)(1-q)}\frac{1-q}{\phi_n(1-q)+\phi_a} \\ & & \\ \frac{1}{\pi(1-q)+(1-\pi)q}\frac{1-q}{\phi_p+\phi_n(1-q)} & \leq & \left(\gamma^G-\gamma^{NG}\right)\left(1-\rho_G-\rho_{NG}\right)\left(\sigma_C-\sigma_A\right). \\ +\frac{1}{\pi q+(1-\pi)(1-q)}\frac{1-q}{\phi_n(1-q)+\phi_a} & & \end{array}$$

Note that the right hand side is strictly less than 1, so a necessary condition for $\underline{\alpha}^1 = 0$ and $\overline{\alpha}^1 = 1$ is

$$\frac{1}{\pi\left(1-q\right)+\left(1-\pi\right)q}\cdot\frac{1-q}{\phi_p+\phi_n\left(1-q\right)}+\frac{1}{\pi q+\left(1-\pi\right)\left(1-q\right)}\cdot\frac{1-q}{\phi_n\left(1-q\right)+\phi_a}<1.$$

Using the fact that $\phi_p = F\left(\underline{\alpha}\right), \phi_n = F\left(\bar{\alpha}\right) - F\left(\underline{\alpha}\right)$, and $\phi_a = 1 - F\left(\bar{\alpha}\right)$, this can be re-written as

$$\begin{array}{c}\frac{1}{\pi\left(1-q\right)+\left(1-\pi\right)q}\cdot\frac{1-q}{F\left(\underline{\alpha}\right)+\left(1-q\right)\left(F\left(\bar{\alpha}\right)-F\left(\underline{\alpha}\right)\right)} \\ +\frac{1}{\pi q+\left(1-\pi\right)\left(1-q\right)}\cdot\frac{1-q}{\left(1-q\right)\left(F\left(\bar{\alpha}\right)-F\left(\underline{\alpha}\right)\right)+1-F\left(\bar{\alpha}\right)}\end{array} < 1. \tag{9}$$

Note that under our assumptions in the main text about the distribution F we can show that $\frac{1-q}{\underline{\alpha}+(1-q)(\bar{\alpha}-\underline{\alpha})} < \frac{1-q}{F(\underline{\alpha})+(1-q)(F(\bar{\alpha})-F(\underline{\alpha}))}$, because

$$\begin{aligned} F\left(\underline{\alpha}\right)+\left(1-q\right)\left(F\left(\bar{\alpha}\right)-F\left(\underline{\alpha}\right)\right) &< \underline{\alpha}+\left(1-q\right)\left(\bar{\alpha}-\underline{\alpha}\right) \\ \left(1-q\right)\left[\left(1-\bar{\alpha}\right)-\left(1-F\left(\bar{\alpha}\right)\right)\right] &< q\left[\underline{\alpha}-F\left(\underline{\alpha}\right)\right] \\ \frac{1-q}{q} &< \frac{\underline{\alpha}-F\left(\underline{\alpha}\right)}{\left(1-\bar{\alpha}\right)-\left(1-F\left(\bar{\alpha}\right)\right)} \end{aligned}$$

and that $\frac{1-q}{(1-q)(\bar{\alpha}-\underline{\alpha})+1-\bar{\alpha}} < \frac{1-q}{(1-q)(F(\bar{\alpha})-F(\underline{\alpha}))+(1-F(\bar{\alpha}))}$, because

$$\begin{aligned} \left(1-q\right)\left(F\left(\bar{\alpha}\right)-F\left(\underline{\alpha}\right)\right)+\left(1-F\left(\bar{\alpha}\right)\right) &< \left(1-q\right)\left(\bar{\alpha}-\underline{\alpha}\right)+1-\bar{\alpha} \\ \left(1-q\right)\left[\underline{\alpha}-F\left(\underline{\alpha}\right)\right] &< \bar{\alpha}-q\bar{\alpha}+1-\bar{\alpha}-1+F\left(\bar{\alpha}\right)-F\left(\bar{\alpha}\right)+qF\left(\bar{\alpha}\right) \\ \left(1-q\right)\left[\underline{\alpha}-F\left(\underline{\alpha}\right)\right] &< q\left[\left(1-\bar{\alpha}\right)-\left(1-F\left(\bar{\alpha}\right)\right)\right] \\ \frac{\underline{\alpha}-F\left(\underline{\alpha}\right)}{\left(1-\bar{\alpha}\right)-\left(1-F\left(\bar{\alpha}\right)\right)} &< \frac{q}{1-q}. \end{aligned}$$

Thus, for Equation 9 to hold requires that

$$\begin{aligned} \frac{1}{\pi\left(1-q\right)+\left(1-\pi\right)q}\cdot\frac{1-q}{\underline{\alpha}+\left(1-q\right)\left(\bar{\alpha}-\underline{\alpha}\right)} & \\ +\frac{1}{\pi q+\left(1-\pi\right)\left(1-q\right)}\cdot\frac{1-q}{\left(1-q\right)\left(\bar{\alpha}-\underline{\alpha}\right)+1-\bar{\alpha}} &< 1 \end{aligned}$$

$$\begin{aligned} \frac{1}{\pi\left(1-q\right)+\left(1-\pi\right)q}\cdot\frac{1-q}{q\underline{\alpha}+\left(1-q\right)\bar{\alpha}} & \\ +\frac{1}{\pi q+\left(1-\pi\right)\left(1-q\right)}\cdot\frac{1-q}{q\left(1-\bar{\alpha}\right)+\left(1-q\right)\left(1-\underline{\alpha}\right)} &< 1. \end{aligned} \tag{10}$$

To simplify Equation 10, we work on the terms $\frac{1-q}{q\underline{\alpha}+(1-q)\bar{\alpha}}$ and $\frac{1-q}{q(1-\bar{\alpha})+(1-q)(1-\underline{\alpha})}$, using the expressions derived in the proof of Lemma 1:

$$\begin{aligned}
\underline{\alpha} &= \frac{\left(1-\gamma^{G}\right)\rho_{NG}}{\gamma^{G}\left(1-\rho_{G}\right)+\left(1-\gamma^{G}\right)\rho_{NG}} \\
&= \frac{\frac{(1-\pi)(1-q)}{\pi q+(1-\pi)(1-q)}\rho_{NG}}{\frac{\pi q}{\pi q+(1-\pi)(1-q)}\left(1-\rho_{G}\right)+\frac{(1-\pi)(1-q)}{\pi q+(1-\pi)(1-q)}\rho_{NG}} \\
&= \frac{(1-\pi)(1-q)\rho_{NG}}{\pi q\left(1-\rho_{G}\right)+(1-\pi)(1-q)\rho_{NG}},
\end{aligned}$$

and

$$\begin{aligned}
\bar{\alpha} &= \frac{\left(1-\gamma^{NG}\right)\rho_{NG}}{\gamma^{NG}\left(1-\rho_{G}\right)+\left(1-\gamma^{NG}\right)\rho_{NG}} \\
&= \frac{(1-\pi) q\rho_{NG}}{\pi(1-q)\left(1-\rho_{G}\right)+(1-\pi) q\rho_{NG}}.
\end{aligned}$$

Substituting for $\underline{\alpha}$ and $\bar{\alpha}$ and simplifying yields

$$\frac{1-q}{q\underline{\alpha}+(1-q)\bar{\alpha}}=\frac{1}{(1-\pi) q\rho_{NG}}\frac{1}{\frac{1}{\pi q(1-\rho_{G})+(1-\pi)(1-q)\rho_{NG}}+\frac{1}{\pi(1-q)(1-\rho_{G})+(1-\pi)q\rho_{NG}}}, \tag{11}$$

and

$$\frac{1-q}{q(1-\bar{\alpha})+(1-q)(1-\underline{\alpha})}=\frac{1}{\pi q\left(1-\rho_{G}\right)}\frac{1}{\frac{1}{\pi(1-q)(1-\rho_{G})+(1-\pi)q\rho_{NG}}+\frac{1}{\pi q(1-\rho_{G})+(1-\pi)(1-q)\rho_{NG}}}. \tag{12}$$

Substituting in Equations 11 and 12 into Equation 10 yields

$$\begin{array}{c}\left[\frac{1}{\pi(1-q)+(1-\pi)q}\cdot\frac{1}{(1-\pi)q\rho_{NG}}+\frac{1}{\pi q+(1-\pi)(1-q)}\cdot\frac{1}{\pi q(1-\rho_{G})}\right] \\ \cdot\left[\frac{1}{\frac{1}{\pi(1-q)(1-\rho_{G})+(1-\pi)q\rho_{NG}}+\frac{1}{\pi q(1-\rho_{G})+(1-\pi)(1-q)\rho_{NG}}}\right]\end{array}<1.$$

Multiplying out the second term on the left hand side, this requires that $\frac{1}{\pi(1-q)+(1-\pi)q}\cdot\frac{1}{(1-\pi)q\rho_{NG}}+\frac{1}{\pi q+(1-\pi)(1-q)}\cdot\frac{1}{\pi q(1-\rho_{G})}<\frac{1}{\pi(1-q)(1-\rho_{G})+(1-\pi)q\rho_{NG}}+\frac{1}{\pi q(1-\rho_{G})+(1-\pi)(1-q)\rho_{NG}}$. However, breaking this into two separate inequalities, we see that the inequality cannot hold. Specifically,

$$
\begin{aligned}
\frac{1}{\pi(1-q)+(1-\pi)q}\cdot\frac{1}{(1-\pi)q\rho_{NG}} &> \frac{1}{\pi(1-q)(1-\rho_G)+(1-\pi)q\rho_{NG}}\\
\pi(1-q)(1-\rho_G)+(1-\pi)q\rho_{NG} &> [\pi(1-q)+(1-\pi)q](1-\pi)q\rho_{NG}\\
\frac{\pi(1-q)(1-\rho_G)}{(1-\pi)q\rho_{NG}}+1 &> \pi(1-q)+(1-\pi)q
\end{aligned}
$$

and

$$
\begin{aligned}
\frac{1}{\pi q+(1-\pi)(1-q)}\cdot\frac{1}{\pi q(1-\rho_G)} &> \frac{1}{\pi q(1-\rho_G)+(1-\pi)(1-q)\rho_{NG}}\\
\pi q(1-\rho_G)+(1-\pi)(1-q)\rho_{NG} &> [\pi q+(1-\pi)(1-q)]\pi q(1-\rho_G)\\
1+\frac{(1-\pi)(1-q)\rho_{NG}}{\pi q(1-\rho_G)} &> \pi q+(1-\pi)(1-q),
\end{aligned}
$$

where the last line of each of these inequalities holds because $\pi \in (0,1)$ and $q \in (0,1)$, so $1 > \pi(1-q) + (1-\pi)q$ and $1 > \pi q + (1-\pi)(1-q)$. Thus we have reached a contradiction.■

Proof of Lemmas 4 and 5 The proof of these lemmas is based on the fact that for any cutpoints $\underline{\alpha}^1$ and $\overline{\alpha}^1$ an executive who is either passive or aggressive has a strict incentive to retain or remove the investigator, based solely on her decision to try or drop the case in the first period.

There are four cases to consider: **(i)** $\underline{\alpha}^1 < \underline{\alpha}$ and $\overline{\alpha}^1 < \overline{\alpha}$, **(ii)** $\underline{\alpha}^1 > \underline{\alpha}$ and $\overline{\alpha}^1 > \overline{\alpha}$, **(iii)** $\underline{\alpha}^1 < \underline{\alpha}$ and $\overline{\alpha}^1 > \overline{\alpha}$, **(iv)** $\underline{\alpha}^1 > \underline{\alpha}$ and $\overline{\alpha}^1 < \overline{\alpha}$. We show below that in each of these four cases, after the first period policy outcome is revealed, executive beliefs about the probability that the incumbent investigator is passive can be ordered as follows: $\mu_p(D) > \phi_p > \mu_p(C) \geq \mu_p(A)$. Because the first period outcome must be A, C or D, ϕ_p is a weighted average of $\mu_p(A), \mu_p(C)$, and $\mu_p(D)$. Thus it is sufficient to prove that $\phi_p > \mu_p(C) \geq \mu_p(A)$ and $\mu_p(D) > \phi_p$ follows. Similarly for beliefs about the probability that the investigator is aggressive, we show that $\phi_a < \mu_a(C) \leq \mu_a(A)$ so that $\mu_a(D) < \phi_a < \mu_a(C) \leq \mu_a(A)$.

For a passive executive, a passive investigator produces the highest expected utility and an aggressive investigator produces the lowest expected utility in the second period. If D is the first period outcome then the probability of the best type is greater than the prior and the probability of the worst type is lower than the prior. Thus it is strictly optimal to retain, setting $\sigma_D = 1$. On the flip side, if C is the first period outcome then $\phi_p > \mu_p(C)$ and $\phi_a < \mu_a(C)$, so it is strictly optimal to remove the investigator, setting $\sigma_C = 0$. Likewise $\sigma_A = 0$ is optimal. Because our analysis allows for any $\underline{\alpha}^1$ and $\overline{\alpha}^1$, except for the case of $\underline{\alpha}^1 = 0$ and $\overline{\alpha}^1 = 1$, which we ruled out in Lemma 3*(v)*, we thus establish a unique equilibrium for the case of a passive executive. A similar argument establishes that for an aggressive executive there is a unique equilibrium because for any $\underline{\alpha}^1$ and $\overline{\alpha}^1$ it is optimal to set $\sigma_D = 0$, and $\sigma_C = \sigma_A = 1$.

We now give the details of the executive's beliefs in cases **(i)-(iv)**.

For **case (i)**, $\mu_p(A) = \frac{\left[F(\underline{\alpha})-F\left(\underline{\alpha}^1\right)\right]\Pr(s=G)\Pr(T=A|s=G)}{\left[1-F(\underline{\alpha}^1)\right]\Pr(s=G)\Pr(T=A|s=G)+\left[1-F(\overline{\alpha}^1)\right]\Pr(s=NG)\Pr(T=A|s=NG)}$ and $\mu_p(C) = \frac{\left[F(\underline{\alpha})-F\left(\underline{\alpha}^1\right)\right]\Pr(s=G)\Pr(T=C|s=G)}{\left[1-F(\underline{\alpha}^1)\right]\Pr(s=G)\Pr(T=C|s=G)+\left[1-F(\overline{\alpha}^1)\right]\Pr(s=NG)\Pr(T=C|s=NG)}$. We show that $\mu_p(A) < \mu_p(C)$, by multiplying out these two expressions, and cancelling terms to get

$$\Pr(T = C|s = NG)\Pr(T = A|s = G) < \Pr(T = A|s = NG)\Pr(T = C|s = G). \tag{13}$$

Expanding out Equation 13, we need

$$\begin{aligned}
\left[\gamma^{NG}(1-\rho_G) + \left(1-\gamma^{NG}\right)\rho_{NG}\right] & & \left[\gamma^{NG}\rho_G + \left(1-\gamma^{NG}\right)(1-\rho_{NG})\right] \\
\cdot\ \left[\gamma^G\rho_G + \left(1-\gamma^G\right)(1-\rho_{NG})\right] & < & \cdot\ \left[\gamma^G(1-\rho_G) + \left(1-\gamma^G\right)\rho_{NG}\right] \\
\gamma^{NG}(1-\rho_G)\left(1-\gamma^G\right)(1-\rho_{NG}) & & \gamma^{NG}\rho_G\left(1-\gamma^G\right)\rho_{NG} \\
+\left(1-\gamma^{NG}\right)\rho_{NG}\gamma^G\rho_G & < & +\left(1-\gamma^{NG}\right)(1-\rho_{NG})\gamma^G(1-\rho_G) \\
0 & < & \left[\left(1-\gamma^{NG}\right)\gamma^G - \gamma^{NG}\left(1-\gamma^G\right)\right]\left[(1-\rho_{NG})(1-\rho_G) - \rho_{NG}\rho_G\right].
\end{aligned}$$

The first term in brackets is strictly greater than zero because $\gamma^G > \gamma^{NG}$ and the second term in brackets is strictly greater than zero because $\rho_{NG} < 1/2$ and $\rho_G < 1/2$.

To show $\mu_p(C) < \phi_p = F(\underline{\alpha})$ note that in case (i), $\overline{\alpha}^1 < \overline{\alpha}$ so the second term in the denominator of

$$\mu_p(C) = \frac{\left[F(\underline{\alpha}) - F\left(\underline{\alpha}^1\right)\right]\Pr(s=G)\Pr(T=C|s=G)}{\left[1-F\left(\underline{\alpha}^1\right)\right]\Pr(s=G)\Pr(T=C|s=G) + \left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=C|s=NG)} \quad (14)$$

is strictly greater than zero, and it's sufficient to show that:

$$\begin{aligned} \frac{\left[F(\underline{\alpha}) - F\left(\underline{\alpha}^1\right)\right]\Pr(s=G)\Pr(T=C|s=G)}{\left[1-F\left(\underline{\alpha}^1\right)\right]\Pr(s=G)\Pr(T=C|s=G)} &\leq F(\underline{\alpha}) \\ F(\underline{\alpha}) - F\left(\underline{\alpha}^1\right) &\leq F(\underline{\alpha}) - F(\underline{\alpha})F\left(\underline{\alpha}^1\right) \\ F(\underline{\alpha})F\left(\underline{\alpha}^1\right) &\leq F\left(\underline{\alpha}^1\right). \end{aligned} \quad (15)$$

Now we turn to beliefs about the probability that the investigator is aggressive in case (i). Here $\mu_a(C) = \frac{[1-F(\overline{\alpha})][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]}{[1-F(\overline{\alpha}^1)][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]+[F(\overline{\alpha}^1)-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=C|s=G)}$ and $\mu_a(A) = \frac{[1-F(\overline{\alpha})][\Pr(s=G)\Pr(T=A|s=G)+\Pr(s=NG)\Pr(T=A|s=NG)]}{[1-F(\overline{\alpha}^1)][\Pr(s=G)\Pr(T=A|s=G)+\Pr(s=NG)\Pr(T=A|s=NG)]+[F(\overline{\alpha}^1)-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=A|s=G)}$. Straightforward though tedious algebra shows that $\mu_a(C) \leq \mu_a(A)$.

For $\phi_a < \mu_a(C)$, we add $\left[F(\overline{\alpha}^1) - F\left(\underline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=C|s=NG)$ to the denominator of the above expression for $\mu_a(C)$, cancel terms and note that $\mu_a(C) >$ $\frac{[1-F(\overline{\alpha})][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]}{\left[1-F(\overline{\alpha}^1)\right][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]+\left[F(\overline{\alpha}^1)-F(\underline{\alpha}^1)\right][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]} = \frac{1-F(\overline{\alpha})}{1-F(\underline{\alpha}^1)} \geq 1 - F(\overline{\alpha})$.

For **case (ii)**, because $\underline{\alpha}^1 > \underline{\alpha}$ no passive type ever tries so $\mu_p(C) = \mu_p(A) = 0$ and thus $\mu_p(D) > \phi_p > \mu_p(C) \geq \mu_p(A)$.

In case (ii), $\mu_a(A) = \frac{\left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=A|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=A|s=G)}{[1-F(\overline{\alpha}^1)]\Pr(s=NG)\Pr(T=A|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=A|s=G)+[F(\overline{\alpha})-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=A|s=G)}$ and

$\mu_a(C) = \frac{\left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=C|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=C|s=G)}{[1-F(\overline{\alpha}^1)]\Pr(s=NG)\Pr(T=C|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=C|s=G)+[F(\overline{\alpha})-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=C|s=G)}$. To show that $\mu_a(C) \leq \mu_a(A)$, we multiply out and cancel several terms to get $\Pr(T=A|s=G)\left[1-F\left(\overline{\alpha}^1\right)\right]$ $\Pr(s=NG)\Pr(T=C|s=NG) +$ $\Pr(T=A|s=G)$ $[1-F(\overline{\alpha})]\Pr(s=G)$ $\Pr(T=C|s=G) \leq$

$\Pr(T=C|s=G)\left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=A|s=NG)+\Pr(T=C|s=G)\left[1-F(\overline{\alpha})\right]\Pr(s=G)$ $\Pr(T=A|s=G)$, which reduces to $\Pr(T=A|s=G)\Pr(T=C|s=NG)\leq\Pr(T=C|s=G)$ $\Pr(T=A|s=NG)$, a condition that we already checked above as Equation 13.

For $\phi_a<\mu_a(C)$ we need $1-F(\overline{\alpha})<\frac{\left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=C|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=C|s=G)}{[1-F(\overline{\alpha}^1)]\Pr(s=NG)\Pr(T=C|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=C|s=G)+[F(\overline{\alpha})-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=C|s=G)}$. Adding $F\left(\underline{\alpha}^1\right)\Pr(s=G)\Pr(T=C|s=G)$ to the denominator decreases the right hand side, so it is sufficient to show that

$$\begin{aligned}1-F(\overline{\alpha}) &\leq \frac{\left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=C|s=NG)+[1-F(\overline{\alpha})]\Pr(s=G)\Pr(T=C|s=G)}{\left[1-F\left(\overline{\alpha}^1\right)\right]\Pr(s=NG)\Pr(T=C|s=NG)+\Pr(s=G)\Pr(T=C|s=G)}\\ [1-F(\overline{\alpha})]\left[1-F\left(\overline{\alpha}^1\right)\right] &\leq \left[1-F\left(\overline{\alpha}^1\right)\right]. \end{aligned} \tag{16}$$

This inequality holds because $F(\overline{\alpha})\in(0,1)$ and $F\left(\overline{\alpha}^1\right)\in[0,1]$.

For **case (iii)**, the argument for $\mu_p(D)>\phi_p>\mu_p(C)\geq\mu_p(A)$ is almost identical to case (i). The only difference is that we need to allow for the possibility that $\overline{\alpha}^1=1$, in which case the second term in the denominator of Equation 14 is zero. So we need the inequality in Equation 15 to hold strictly, but this is guaranteed because when $\overline{\alpha}^1=1$ Lemma 3*(v)* tells us that $\underline{\alpha}^1>0$ and hence $F\left(\underline{\alpha}^1\right)>0$.

The argument for $\mu_a(D)<\phi_a<\mu_a(C)\leq\mu_a(A)$ is almost identical to case (ii). The only difference is that we need to allow for the possibility that $\underline{\alpha}^1=0$, in which case $F\left(\underline{\alpha}^1\right)\Pr(s=G)\Pr(T=C|s=G)=0$. So we need Equation 16 to hold strictly, but this is guaranteed because when $\underline{\alpha}^1=0$ Lemma 3*(v)* tells us that $\overline{\alpha}^1<1$ and thus $F\left(\overline{\alpha}^1\right)\in(0,1)$.

For **case (iv)**, the argument for $\mu_p(D)>\phi_p>\mu_p(C)\geq\mu_p(A)$ is identical to case (ii). The argument for $\mu_a(D)<\phi_a<\mu_a(C)\leq\mu_a(A)$ is identical to case (i).■

Proof of Lemma 6 We first establish existence of the cutpoints. We do this for α^D. The arguments for α^C and α^A are essentially similar. For α^D, note that the difference in the executive's expected utility difference from retaining versus removing the investigator is a linear, and hence monotonic, function of α_E. Specifically, the utility difference is

$-\mu_p(D)\alpha_E\pi - \mu_n(D)\left[\alpha_E\pi(q\rho_G + (1-q)) + (1-\alpha_E)(1-\pi)(1-q)\rho_{NG}\right]$

$-\mu_a(D)\left[\alpha_E\pi\rho_G + (1-\alpha_E)(1-\pi)\rho_{NG}\right]$

$-\left\{-\phi_p\alpha_E\pi - \phi_n\left[\alpha_E\pi(q\rho_G + (1-q)) + (1-\alpha_E)(1-\pi)(1-q)\rho_{NG}\right] - \phi_a\left[\alpha_E\pi\rho_G + (1-\alpha_E)(1-\pi)\rho_{NG}\right]\right\},$

which equals

$$\begin{aligned}&\alpha_E\pi\left\{\left[\phi_p - \mu_p(D)\right] + \left[\phi_n - \mu_n(D)\right](q\rho_G + (1-q)) + \left[\phi_a - \mu_a(D)\right]\rho_G\right\}\\&+(1-\alpha_E)(1-\pi)\left\{\left[\phi_n - \mu_n(D)\right](1-q)\rho_{NG} + \left[\phi_a - \mu_a(D)\right]\rho_{NG}\right\}\end{aligned} \tag{17}$$

Also, as established in the proof of Propositions 4 and 5 an executive with $\alpha_E = \underline{\alpha}$ strictly prefers to retain the investigator when she drops the first period case and an executive with $\alpha_E = \overline{\alpha}$ strictly prefers to remove her. Thus because Equation 17 is linear in α_E there exists a cutpoint $\alpha^D \in (\underline{\alpha}, \overline{\alpha})$ such that an executive with $\alpha_E < \alpha^D$ prefers to retain whereas an executive with $\alpha_E > \alpha^D$ prefers to remove the investigator.

To show that α^D is a continuous function of $\underline{\alpha}^1$ and $\overline{\alpha}^1$, we first note that voter beliefs $\mu_p(D), \mu_n(D)$, and $\mu_a(D)$ are functions of $\underline{\alpha}^1$ and $\overline{\alpha}^1$:

$$\mu_p(D) = \frac{\min\left\{F(\underline{\alpha}), F(\underline{\alpha}^1)\right\} + \Pr(s = NG)\left(F(\underline{\alpha}) - \min\left\{F(\underline{\alpha}), F(\underline{\alpha}^1)\right\}\right)}{F(\underline{\alpha}^1) + \Pr(s = NG)\left(F\left(\overline{\alpha}^1\right) - F(\underline{\alpha}^1)\right)},$$

$$\mu_a(D) = \frac{\Pr(s = NG)\left(F\left(\overline{\alpha}^1\right) - \min\left\{F\left(\overline{\alpha}^1\right), F(\overline{\alpha})\right\}\right)}{F(\underline{\alpha}^1) + \Pr(s = NG)\left(F\left(\overline{\alpha}^1\right) - F(\underline{\alpha}^1)\right)},$$

and

$$\mu_n(D) = 1 - \mu_p(D) - \mu_a(D).$$

Next, we explicitly solve for α^D by setting Equation 17 equal to zero, yielding:

$\alpha^D = \frac{(1-\pi)\{[\phi_n - \mu_n(D)](1-q)\rho_{NG} + [\phi_a - \mu_a(D)]\rho_{NG}\}}{(1-\pi)\{[\phi_n - \mu_n(D)](1-q)\rho_{NG} + [\phi_a - \mu_a(D)]\rho_{NG}\} - \pi\left\{\left[\phi_p - \mu_p(D)\right] + [\phi_n - \mu_n(D)](q\rho_G + (1-q)) + [\phi_a - \mu_a(D)]\rho_G\right\}}$. Note that α^D is a continuous function of $\mu_p(D), \mu_n(D)$, and $\mu_a(D)$ so it is a continuous function of $\underline{\alpha}^1$ and $\overline{\alpha}^1$.

We now order the cutpoints relative to each other. First we note that it's impossible to have both $\alpha^C < \alpha^D$ and $\alpha^A < \alpha^D$. If this were the case then any executive type with $\alpha_E \in (\max\{\alpha^C, \alpha^A\}, \alpha^D)$ would strictly prefer to retain the incumbent investigator after all possible first period outcomes. This is a contradiction because the replacement is drawn from the same pool as the incumbent. A similar contradiction results if $\alpha^C > \alpha^D$ and $\alpha^A > \alpha^D$.

The final part of the argument is to show that $\alpha^C \leq \alpha^A$, which enables us to conclude that $\alpha^C \leq \alpha^D \leq \alpha^A$. To prove that $\alpha^C \leq \alpha^A$, we show that if an executive's expected utility from retaining the investigator after an acquittal is greater than his utility from retaining after a conviction then his utility from retaining after a conviction is greater than his utility from a new randomly drawn investigator. We denote these utilities as $U(old|C)$, $U(old|A)$, and $U(rndm)$. We also will use $U(\alpha > x)$ to denote an executive's expected utility from a investigator randomly drawn from the portion of the investigator type distribution F that is greater than x. Similarly $U(\alpha \in (x, y))$ denotes expected utility from a investigator drawn from the distribution F restricted to the interval (x, y).

First note that if $\underline{\alpha}^1 > \underline{\alpha}$ then, as shown in the proof of Lemmas 4 and 5, $\mu_a(C) \leq \mu_a(A)$ and because passive investigators never choose $x = T$ when $\underline{\alpha}^1 > \underline{\alpha}$, $\mu_p(C) = \mu_p(A) = 0$, so for a neutral executive we always have $U(old|C) \geq U(old|A)$.

The argument is more complicated when $\underline{\alpha}^1 \leq \underline{\alpha}$. We proceed in four steps.

Step 1. We first show that $\Pr\left(\alpha > \overline{\alpha}^1|A\right) > \Pr\left(\alpha > \overline{\alpha}^1|C\right) > 1 - F\left(\overline{\alpha}^1\right)$. For $\Pr\left(\alpha > \overline{\alpha}^1|A\right) > \Pr\left(\alpha > \overline{\alpha}^1|C\right)$, $\frac{\left[1-F\left(\overline{\alpha}^1\right)\right][\Pr(s=G)\Pr(T=A|s=G)+\Pr(s=NG)\Pr(T=A|s=NG)]}{[1-F(\overline{\alpha}^1)][\Pr(s=G)\Pr(T=A|s=G)+\Pr(s=NG)\Pr(T=A|s=NG)]+[F(\overline{\alpha}^1)-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=A|s=G)}$ must be strictly greater than

$\frac{\left[1-F\left(\overline{\alpha}^1\right)\right][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]}{[1-F(\overline{\alpha}^1)][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]+[F(\overline{\alpha}^1)-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=C|s=G)}$. After multiplying out and cancelling, this reduces to $\Pr(T = C|s = G)\Pr(T = A|s = NG) > \Pr(T = A|s = G)\Pr(T = C|s = NG)$, which we already checked as Equation 13.

For $\Pr\left(\alpha > \overline{\alpha}^1|C\right) > 1 - F\left(\overline{\alpha}^1\right)$, we need

$\frac{\left[1-F\left(\overline{\alpha}^1\right)\right][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]}{[1-F(\overline{\alpha}^1)][\Pr(s=G)\Pr(T=C|s=G)+\Pr(s=NG)\Pr(T=C|s=NG)]+[F(\overline{\alpha}^1)-F(\underline{\alpha}^1)]\Pr(s=G)\Pr(T=C|s=G)} > 1-F\left(\overline{\alpha}^1\right)$. Multiplying out and canceling, this reduces to

$F\left(\overline{\alpha}^1\right)[\Pr(s=G)\Pr(T=C|s=G)+\ \Pr(s=NG)\Pr(T=C|s=NG)] >$

$\left[F\left(\overline{\alpha}^1\right)-F\left(\underline{\alpha}^1\right)\right]\ \Pr(s=G)\Pr(T=C|s=G)$, i.e.,

$F\left(\overline{\alpha}^1\right)\Pr(s=NG)\Pr(T=C|s=NG) > -F\left(\underline{\alpha}^1\right)\Pr(s=G)\Pr(T=C|s=G)$.

Step 2. We show that if $U\left(old|A\right) > U\left(old|C\right)$ then $U\left(\alpha > \overline{\alpha}^1\right) > U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)$.

$$\begin{array}{ccc} U\left(old|A\right) & > & U\left(old|C\right) \\ \begin{array}{c}\Pr\left(\alpha > \overline{\alpha}^1|A\right)U\left(\alpha > \overline{\alpha}^1\right) \\ +\Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|A\right)U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\end{array} & > & \begin{array}{c}\Pr\left(\alpha > \overline{\alpha}^1|C\right)U\left(\alpha > \overline{\alpha}^1\right) \\ +\Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|C\right)U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\end{array} \end{array}$$

Because $\Pr\left(\alpha < \underline{\alpha}^1|A\right) = \Pr\left(\alpha < \underline{\alpha}^1|C\right) = 0$, we substitute $1-\Pr\left(\alpha > \overline{\alpha}^1|A\right)$ for $\Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|A\right)$ and $1-\Pr\left(\alpha > \overline{\alpha}^1|C\right)$ for $\Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|C\right)$, to get

$$\begin{array}{ccc} \begin{array}{c}\Pr\left(\alpha > \overline{\alpha}^1|A\right)\left[U\left(\alpha > \overline{\alpha}^1\right)-U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\right] \\ +U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\end{array} & > & \begin{array}{c}\Pr\left(\alpha > \overline{\alpha}^1|C\right)\left[U\left(\alpha > \overline{\alpha}^1\right)-U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\right] \\ +U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\end{array} \end{array}$$

$$\begin{array}{ccc} \begin{array}{c}\left[\Pr\left(\alpha > \overline{\alpha}^1|A\right)-\Pr\left(\alpha > \overline{\alpha}^1|C\right)\right] \\ \cdot\left[U\left(\alpha > \overline{\alpha}^1\right)-U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\right]\end{array} & > & 0. \end{array}$$

From Step 1 we know that the first term in brackets is strictly greater than zero, so $U\left(\alpha > \overline{\alpha}^1\right) > U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)$.

Step 3. We show that $U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) > U\left(\alpha < \underline{\alpha}^1\right)$. There are two cases: $\overline{\alpha}^1 < \overline{\alpha}$ and $\overline{\alpha}^1 > \overline{\alpha}$.

For the first case, if $\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)$ then the investigator is either a neutral type or a passive type, and if $\alpha < \underline{\alpha}^1$ the investigator is a passive type with probability 1, because $\underline{\alpha}^1 \leq \underline{\alpha}$. A neutral executive strictly prefers neutral over passive investigators so $U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) > U\left(\alpha < \underline{\alpha}^1\right)$.

For the second case, $\overline{\alpha}^1 > \overline{\alpha}$ implies that if $\alpha > \overline{\alpha}^1$ then the investigator is surely aggressive. From Step 2 we know that $U\left(\alpha > \overline{\alpha}^1\right) > U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)$. Note that the region $\left(\underline{\alpha}^1, \overline{\alpha}^1\right)$ includes some investigators who are passive, some who are neutral, and some who are aggressive. Also, a neutral executive most prefers a neutral investigator so the only way that $U\left(\alpha > \overline{\alpha}^1\right) > U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)$ is if a passive investigator is the executive's least preferred type. Because $\alpha < \underline{\alpha}^1$ implies that the investigator is passive for sure, $U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) > U\left(\alpha < \underline{\alpha}^1\right)$.

Step 4. We show that $U\left(old|C\right) > U\left(rndm\right)$, i.e.,

$$\begin{array}{c} \Pr\left(\alpha > \overline{\alpha}^1|C\right) U\left(\alpha > \overline{\alpha}^1\right) \\ +\Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|C\right) U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) \end{array} > \begin{array}{c} \left[1 - F\left(\overline{\alpha}^1\right)\right] U\left(\alpha > \overline{\alpha}^1\right) \\ +\left[F\left(\overline{\alpha}^1\right) - F\left(\underline{\alpha}^1\right)\right] U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) \\ +F\left(\underline{\alpha}^1\right) U\left(\alpha < \underline{\alpha}^1\right). \end{array}$$

From Step 3, $U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) > U\left(\alpha < \underline{\alpha}^1\right)$ so the inequality will hold if $\Pr\left(\alpha > \overline{\alpha}^1|C\right) U\left(\alpha > \overline{\alpha}^1\right) + \Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|C\right) U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right) > \left[1 - F\left(\overline{\alpha}^1\right)\right] U\left(\alpha > \overline{\alpha}^1\right) + F\left(\overline{\alpha}^1\right) U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)$. Note that $\Pr\left(\alpha > \overline{\alpha}^1|C\right) + \Pr\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)|C\right) = 1$ because no investigator with $\alpha_I < \underline{\alpha}^1$ will bring a case to trial. Substituting in and collecting terms, we need

$$\left[\Pr\left(\alpha > \overline{\alpha}^1|C\right) - \left(1 - F\left(\overline{\alpha}^1\right)\right)\right]\left[U\left(\alpha > \overline{\alpha}^1\right) - U\left(\alpha \in \left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)\right] > 0.$$

Step 1 and Step 2 establish that each term is strictly greater than zero.■

Proof of Lemma 7 Lemmas 4 and 5 characterize equilibrium behavior for passive and aggressive executives. Here we handle the case of neutral executives.

For the type of equilibrium in Lemma 7*(i)*, set $\sigma_D = 1, \sigma_C = \sigma_A = 0$ and from Lemma 6 find the cutpoint α^C that arises from the resulting first investigator behavior. The executive behavior in part *(i)* is optimal for any $\alpha_E \leq \alpha^C$.

For the type of equilibrium in Lemma 7*(ii)*, set $\sigma_D = 1$, $\sigma_A = 0$, and for each value $\sigma_C \in (0,1)$ apply Lemma 6 to find the cutpoint α^C implied by the resulting first investigator behavior. For $\alpha_E = \alpha^C$ it is optimal to play $\sigma_D = 1$ and $\sigma_A = 0$ and because this executive type is indifferent after observing a conviction in the first period, he can mix using the particular $\sigma_C \in (0,1)$ that was used to generate α^C.

The construction of equilibria for parts *(iii)*-*(vii)* of the lemma is similar.

Note that no other type of equilibrium can exist for any $\alpha_E \in [\underline{\alpha}, \overline{\alpha}]$. Consider any (possibly mixed strategy) executive strategy σ. Given σ, Lemma 3 implies that there exist cutpoints $\underline{\alpha}^1$ and $\overline{\alpha}^1$ for first period investigator behavior. Given these cutpoints, Lemma 6 characterizes cutpoints for executive behavior. It is straightforward to check that the only executive strategies σ that are compatible with these cutpoints are the 7 types listed in Lemma 7.

Finally, we establish existence. To do this, we construct a function $\lambda(z) : [0,7] \to [\underline{\alpha}, \overline{\alpha}]$. Each possible executive strategy σ, whether a pure strategy or a mixed strategy, in parts *(i)*-*(vii)* of Lemma 7 is specified by some value of z, and we use the intermediate value theorem to show that for any $\alpha_E \in [\underline{\alpha}, \overline{\alpha}]$ there is some z such that $\lambda(z) = \alpha_E$, and thus there is an equilibrium with one of these 7 types of executive behavior.

For any executive strategy $\sigma = (\sigma_D, \sigma_C, \sigma_A)$, let $\alpha^1(\sigma) = \left(\underline{\alpha}^1(\sigma), \overline{\alpha}^1(\sigma)\right)$ represent the cutpoints for optimal first period investigator behavior from Lemma 3, given that the executive's strategy is σ. Given any cutpoints for first period investigator behavior, $\underline{\alpha}^1$ and $\overline{\alpha}^1$, let $\alpha^{CDA}\left(\underline{\alpha}^1, \overline{\alpha}^1\right) = \left(\alpha^C\left(\underline{\alpha}^1, \overline{\alpha}^1\right), \alpha^D\left(\underline{\alpha}^1, \overline{\alpha}^1\right), \alpha^A\left(\underline{\alpha}^1, \overline{\alpha}^1\right)\right)$ be the cutpoints for executive behavior from Lemma 6. Let $\alpha_{(1)} = \alpha^C\left(\underline{\alpha}^1(1,0,0), \overline{\alpha}^1(1,0,0)\right)$, $\alpha_{(2)} = \alpha^C\left(\underline{\alpha}^1(1,1,0), \overline{\alpha}^1(1,1,0)\right)$, $\alpha_{(3)} = \alpha^D\left(\underline{\alpha}^1(1,1,0), \overline{\alpha}^1(1,1,0)\right)$, $\alpha_{(4)} = \alpha^D\left(\underline{\alpha}^1(0,1,0), \overline{\alpha}^1(0,1,0)\right)$, $\alpha_{(5)} = \alpha^A\left(\underline{\alpha}^1(0,1,0), \overline{\alpha}^1(0,1,0)\right)$, $\alpha_{(6)} = \alpha^A\left(\underline{\alpha}^1(0,1,1), \overline{\alpha}^1(0,1,1)\right)$. Define

$$\lambda(z) = \begin{cases} \underline{\alpha} + z\left(\alpha_{(1)} - \underline{\alpha}\right) & \text{for } z \in [0,1] \\ \alpha \in [\underline{\alpha}, \overline{\alpha}] : \sigma_D = 1, \sigma_C = z-1, \sigma_A = 0 \text{ is an equilibrium} & \text{for } z \in [1,2] \\ \alpha_{(2)} + (z-2)\left(\alpha_{(3)} - \alpha_{(2)}\right) & \text{for } z \in [2,3] \\ \alpha \in [\underline{\alpha}, \overline{\alpha}] : \sigma_D = 1-(z-3), \sigma_C = 1, \sigma_A = 0 \text{ is an equilibrium} & \text{for } z \in [3,4] \\ \alpha_{(4)} + (z-4)\left(\alpha_{(5)} - \alpha_{(4)}\right) & \text{for } z \in [4,5] \\ \alpha \in [\underline{\alpha}, \overline{\alpha}] : \sigma_D = 0, \sigma_C = 1, \sigma_A = z-5 \text{ is an equilibrium} & \text{for } z \in [5,6] \\ \alpha_{(6)} + (z-6)(\bar{\alpha} - \alpha_{(6)}) & \text{for } z \in [6,7] \end{cases}.$$

And let

$$\tilde{\sigma}(z) = \begin{cases} (1,0,0) & \text{for } z \in [0,1] \\ (1,z-1,0) & \text{for } z \in [1,2] \\ (1,1,0) & \text{for } z \in [2,3] \\ (1-(z-3),1,0) & \text{for } z \in [3,4] \\ (0,1,0) & \text{for } z \in [4,5] \\ (0,1,z-5) & \text{for } z \in [5,6] \\ (0,1,1) & \text{for } z \in [6,7] \end{cases}.$$

Note that $\tilde{\sigma}(z)$ is a continuous function of z. Thus, by part *(iv)* of Lemma 3, the investigator cutpoints given by $\alpha^1(\tilde{\sigma}(z))$ are continuous in z, which in turn implies, by part 2 of Lemma 6, that cutpoints for executive behavior $\alpha^{CDA}\left(\alpha^1(\tilde{\sigma}(z))\right)$ are a continuous function of z. In particular, we care that $\alpha^C\left(\alpha^1(\tilde{\sigma}(z))\right)$ is a continuous function of z for $z \in [1,2]$, $\alpha^D\left(\alpha^1(\tilde{\sigma}(z))\right)$ is a continuous function of z for $z \in [3,4]$, and $\alpha^A\left(\alpha^1(\tilde{\sigma}(z))\right)$ is a continuous function of z for $z \in [5,6]$.

Thus by construction, $\lambda(z) : [0,7] \to [\underline{\alpha}, \overline{\alpha}]$ is a continuous function where $\lambda(0) = \underline{\alpha}$ and $\lambda(7) = \overline{\alpha}$ so the intermediate value theorem implies that for each $\alpha_E \in [\underline{\alpha}, \overline{\alpha}]$ there exists at least one $z \in [0,7]$ such that $\alpha_E = \lambda(z)$. By construction of $\lambda(z)$ this implies that there exists an equilibrium. If $z \in [0,1] \cup [2,3] \cup [4,5] \cup [6,7]$ this equilibrium is a pure strategy equilibrium from part *(i), (iii), (v),* or *(vii)* of Lemma 7 and if $z \in [1,2] \cup [3,4] \cup [5,6]$ it is a mixed strategy equilibrium from part *(ii), (iv),* or *(vi)* of Lemma 7.

Proof of Lemma 8 The proof of this lemma is straightforward. Here we state the argument for part *(i)*, when the executive is either passive or passive-neutral. The arguments for other types of executives are essentially identical.

For $\underline{\alpha}^1 > \underline{\alpha}$, note that in the equilibrium that we characterize for passive and passive-neutral executives, $r(G) < 0$, i.e., when $s = G$ the investigator is strictly more likely to be retained if she drops than is she tries. In terms of second period policy, any investigator is better off, in expectation, when retained, because there is a strictly positive probability that her replacement will choose a different action than the one she would have chosen. In terms of first period outcomes, an investigator with $\alpha_I \leq \underline{\alpha}$ weakly prefers to drop when $s = G$. Thus, because $r(G) < 0$, when considering both first and second period outcomes any investigator with $\alpha_I \leq \underline{\alpha}$ strictly prefers to drop, and hence $\underline{\alpha}^1 > \underline{\alpha}$.

For $\bar{\alpha}^1 > \bar{\alpha}$, note that in terms of first period outcomes any investigator with $\alpha_I \leq \bar{\alpha}$ weakly prefers to drop when $s = NG$. Thus, because $r(NG) < 0$, when both first and second period outcomes are taken into account any investigator with $\alpha_I \leq \bar{\alpha}$ must strictly prefer to drop when $s = NG$, so $\bar{\alpha}^1 > \bar{\alpha}$.

Proof of Lemma 9 First we solve for $\underline{\alpha}^{ER}$, the cutpoint between executives who prefer passive versus random replacement investigators. Let $U(pass)$ denote utility from a passive replacement and $U(rndm)$ denote utility from a random replacement, where $U(pass) = -\alpha_E \pi$ and

$U(rndm) = -\phi_p \alpha_E \pi - \phi_n [\alpha_E \pi (q\rho_G + (1-q)) + (1-\alpha_E)(1-\pi)((1-q)\rho_{NG})] - \phi_a [\alpha_E \pi \rho_G + (1-\alpha_E)(1-\pi)\rho_{NG}]$.

Combining terms, we get

$$\begin{aligned} U(pass) - U(rndm) &= (1-\pi)\rho_{NG}[\phi_n(1-q) + \phi_a] \\ &\quad -\alpha_E \pi \left[1 - \phi_p - \phi_n(q\rho_G + (1-q)) - \phi_a \rho_G\right] \\ &\quad -\alpha_E(1-\pi)\rho_{NG}[\phi_n(1-q) + \phi_a]. \end{aligned}$$

Note that this is strictly decreasing in α_E so

$$\underline{\alpha}^{ER} = \frac{(1-\pi)\rho_{NG}[\phi_n(1-q) + \phi_a]}{(1-\pi)\rho_{NG}[\phi_n(1-q) + \phi_a] + \pi\left[1 - \phi_p - \phi_n(q\rho_G + (1-q)) - \phi_a \rho_G\right]}.$$

To see that $\underline{\alpha}^{ER} > \underline{\alpha}$, note that a passive investigator will act optimally from the perspective of an executive with $\alpha_E = \underline{\alpha}$, so an executive at $\underline{\alpha}$ strictly prefers a passive investigator over a random replacement.

We now prove that $\underline{\alpha}^{ER} < \alpha_{\underline{E}}$. An executive at $\alpha_{\underline{E}}$ is indifferent between a random draw and an investigator who dropped when behaving according to first period cutpoints $\underline{\alpha}^1 = \underline{\alpha}$ and $\overline{\alpha}^1 \in (\overline{\alpha}, 1)$, i.e., he's at $\alpha_{\underline{E}} = \alpha^D$ from Lemma 6 given these cutpoints. The executive at $\underline{\alpha}^{ER}$ is indifferent between a random draw and a passive investigator, which also means that he's indifferent between a random draw and an investigator who dropped when playing according to first period cutpoints $\underline{\alpha}^1 = \underline{\alpha}$ and $\overline{\alpha}^1 = 1$. Because aggressive investigators are the worst type from this executive's perspective, he must strictly prefer to retain an investigator, rather than replace her with a random replacement, if she drops when behaving according to first period cutpoints $\underline{\alpha}^1 = \underline{\alpha}$ and $\overline{\alpha}^1 \in (\overline{\alpha}, 1)$. Thus by Lemma 6, $\underline{\alpha}^{ER}$ is strictly less than the α^D generated by these cutpoints for investigator behavior.

To solve for $\bar{\alpha}^{ER}$, we take a similar approach, setting the utility from an aggressive replacement, i.e., $U(agg) = -\alpha_E \pi \rho_G - (1-\alpha_E)(1-\pi)\rho_{NG}$, equal to $U(rndm)$. Solving out, we get

$$\bar{\alpha}^{ER} = \frac{(1-\pi)\rho_{NG}\left[1-\phi_n(1-q)-\phi_a\right]}{(1-\pi)\rho_{NG}\left[1-\phi_n(1-q)-\phi_a\right] + \pi(1-\rho_G)\left[\phi_p + \phi_n(1-q)\right]}.$$

Arguments similar to the ones for $\underline{\alpha}^{ER}$ establish that $\alpha_{\bar{E}} < \bar{\alpha}^{ER} < \bar{\alpha}$.

Proof of Lemma 10 First, we prove part 1 of the lemma, for $\alpha_E \in \left(\underline{\alpha}, \underline{\alpha}^{ER}\right)$. Suppose the executive plays $\sigma_D \in (0,1)$, and $\sigma_C = \sigma_A = 0$, which means that $r(G) = r(NG) < 0$. We need to show that it is optimal for the investigator to behave according to cutpoints $\underline{\alpha}^1 = \underline{\alpha}$ when $s = G$ and $\bar{\alpha}^1 \in (\bar{\alpha}, 1)$ when $s = NG$.

If $s = G$ then any investigator with $\alpha_I < \underline{\alpha}$ strictly prefers to drop. In terms of first-period policy, she is better off dropping than trying. And accountability incentives have no effect on a passive investigator because the replacement chosen by the executive will be passive.

If $s = G$, then a neutral investigator with $\alpha_I \in (\underline{\alpha}, \bar{\alpha})$ strictly prefers to try. In terms of first-period policy she is better off trying. In the second period, the signal will be either $s = G$ or $s = NG$. If the investigator tries and loses office by doing so and the second period signal is $s = G$ then she is no worse off as a result of having tried. On the other hand if the second period signal is $s = NG$, the dogmatic passive replacement will do exactly what the neutral investigator would do in the second period, so she winds up being strictly better off as a result of trying in the first period.

If $s = G$, then an investigator with $\alpha_I \geq \bar{\alpha}$ strictly prefers to try. In terms of first-period policy she is better off trying. And because $\alpha_I \geq \bar{\alpha} > \tilde{\alpha}$, for an investigator at α_I, $U(Try|s = G) - U(Drop|s = G) > U(Try|s = NG) - U(Drop|s = NG)$. The worst-case scenario if the investigator tries is that by trying in the first period she loses office and the second period signal is $s = G$ but her dogmatic passive replacement drops the case. However, it's also possible that $s = NG$ in the second period, in which case she would have been strictly better off trying in the first period.

We now turn to the case of $s = NG$. If $s = NG$ then an investigator with $\alpha_I < \bar{\alpha}$ strictly prefers to drop. Doing so makes her strictly better off in terms of first period utility and at least weakly better off in terms of second-period utility.

For an investigator with $\alpha_I \geq \bar{\alpha}$ the investigator's utility difference from trying versus dropping is $\hat{U}_{TD}(\alpha_I; NG, r(NG))$, where we put a hat over the U because with a passive replacement the utility difference is not the same as it was for a random replacement in the proof of Lemma 3. The first period utility difference is the same, based the reasoning in Lemma 1. In the second period, the passive replacement will always drop, whereas the incumbent investigator with $\alpha_I \geq \bar{\alpha}$ will always try if retained. Thus, being replaced avoids some mistaken convictions but also results in some failures to convict, i.e., for $\alpha_I \geq \bar{\alpha}$

$$\begin{aligned}
\hat{U}_{TD}(\alpha_I; NG, r(NG)) &= \alpha_I \gamma^{NG} (1 - \rho_G) - (1 - \alpha_I) \left(1 - \gamma^{NG}\right) \rho_{NG} \\
&\quad - r(NG)(1 - \alpha_I)(1 - \pi) \rho_{NG} \\
&\quad + r(NG) \alpha_I \pi (1 - \rho_G) \\
&= -\rho_{NG} \left[\left(1 - \gamma^{NG}\right) + r(NG)(1 - \pi)\right] \\
&\quad + \alpha_I (1 - \rho_G) \left[\gamma^{NG} + r(NG) \pi\right] \\
&\quad + \alpha_I \rho_{NG} \left[\left(1 - \gamma^{NG}\right) + r(NG)(1 - \pi)\right]. \qquad (18)
\end{aligned}$$

Note that Equation 18 is linear in α_I. Also for $r(NG) < 0$, an investigator at $\bar{\alpha}$ strictly prefers to drop when

$s = G$, i.e., $\hat{U}_{TD}(\alpha_I; NG, r(NG)) < 0$, because she is indifferent in terms of first period actions and strictly prefers to be retained rather than to have a dogmatic passive investigator choose second period actions.

There are two possibilities. First, it may be the case that $\hat{U}_{TD}(1; NG, r(NG)) \leq 0$, so $\bar{\alpha}^1 = 1$ and all investigator types strictly prefer to drop when $s = NG$. Second, it may be the case that for some $\bar{\alpha}^1 \in (\bar{\alpha}, 1)$, $\hat{U}_{TD}(\bar{\alpha}^1; NG, r(NG)) = 0$, in which case all investigator types with $\alpha_I < \bar{\alpha}^1$ strictly prefer to drop and those with $\alpha_I > \bar{\alpha}^1$ strictly prefer to try when $s = NG$. Solving out for this case, we get

$$\bar{\alpha}^1 = \frac{\rho_{NG}\left[\left(1-\gamma^{NG}\right) + r\left(NG\right)\left(1-\pi\right)\right]}{\left(1-\rho_G\right)\left[\gamma^{NG} + r\left(NG\right)\pi\right] + \rho_{NG}\left[\left(1-\gamma^{NG}\right) + r\left(NG\right)\left(1-\pi\right)\right]}.$$

Note that as $r(NG) \to 0$, $\bar{\alpha}^1 \to \bar{\alpha}$ (using the expression for $\bar{\alpha}$ in the proof of Lemma 1), and $\bar{\alpha}^1$ is a continuous function of $r(NG)$, and hence of σ. Also, from Equation 18 we can solve for the largest value of $r(NG)$ such that an investigator with $\alpha_I = 1$ will drop in the first period

$$\begin{aligned}
\hat{U}_{TD}(1; NG, r(NG)) &\leq 0 \\
\left(1-\rho_G\right)\left[\gamma^{NG} + r\left(NG\right)\pi\right] + \rho_{NG}\left[\left(1-\gamma^{NG}\right) + r\left(NG\right)\left(1-\pi\right)\right] &\leq \rho_{NG}\left[\left(1-\gamma^{NG}\right) + r\left(NG\right)\left(1-\pi\right)\right] \\
r\left(NG\right) &\leq -\frac{\gamma^{NG}}{\pi} = \frac{1-q}{\pi\left(1-q\right) + \left(1-\pi\right)q}.
\end{aligned}$$

Let $\sigma_{\bar{D}}$ be the value of σ_D such that $r(NG)$ solves this expression with equality when $\sigma_A = \sigma_C = 0$.

Having characterized the investigator's best response, we now solve for the executive type $\alpha_E \in \left(\underline{\alpha}, \underline{\alpha}^{ER}\right)$ who is indifferent between retaining and replacing the investigator when $x = D$, given cutpoints $\underline{\alpha}^1 = \underline{\alpha}$ and $\bar{\alpha}^1 \in [\bar{\alpha}, 1]$ for first period executive behavior.

For $\bar{\alpha}^1 = \bar{\alpha}$, any investigator who drops a case is either passive or neutral, so an executive at $\alpha_E = \underline{\alpha}$ is indifferent between retaining and replacing.

For $\bar{\alpha}^1 = 1$, because $\underline{\alpha}^1 = \underline{\alpha}$ any investigator who drops is either a passive type who saw $s = G$ (with probability $\frac{\phi_p \Pr(s=G)}{\phi_p \Pr(s=G) + \Pr(s=NG)}$), or a random draw who saw $s = NG$ (with probability $\frac{\Pr(s=NG)}{\phi_p \Pr(s=G) + \Pr(s=NG)}$). By the definition of $\underline{\alpha}^{ER}$, an executive at $\underline{\alpha}^{ER}$ is indifferent between this lottery and a passive replacement.

For $\bar{\alpha}^1 \in (\bar{\alpha}, 1)$, as in the proof of Lemma 6, the executive's expected utility difference from retaining is $-\mu_p(D)\alpha_E\pi - \mu_n(D)\left[\alpha_E\pi(q\rho_G + (1-q)) \ + (1-\alpha_E)(1-\pi)(1-q)\rho_{NG}\right]$ $-\mu_a(D)\left[\alpha_E\pi\rho_G + (1-\alpha_E)(1-\pi)\rho_{NG}\right]$. His expected utility from a passive replacement is $-\alpha_E\pi$. Thus his expected utility difference between retaining and removing is

$$\alpha_E\pi\left[1-\mu_p(D)-\mu_n(D)(q\rho_G+(1-q))\right]-(1-\alpha_E)(1-\pi)\left[\mu_n(D)(1-q)\rho_{NG}+\mu_a(D)\rho_{NG}\right].$$

Note that this is strictly increasing in α_E. Setting it equal to zero yields the executive who is indifferent:

$$\alpha_E = \frac{(1-\pi)\left[\mu_n(D)(1-q)\rho_{NG}+\mu_a(D)\rho_{NG}\right]}{(1-\pi)\left[\mu_n(D)(1-q)\rho_{NG}+\mu_a(D)\rho_{NG}\right]+\pi\left[1-\mu_p(D)-\mu_n(D)(q\rho_G+(1-q))\right]}. \tag{19}$$

So we have shown that, holding $\sigma_A = \sigma_C = 0$, for any $\sigma_D \in [0, \sigma_{\bar{D}}]$ there is an executive type, which we denote as $\alpha_E(\sigma_D)$, who is indifferent between retaining and replacing the investigator after she drops, given the cutpoints, $\underline{\alpha}^1 = \underline{\alpha}$ and $\bar{\alpha}^1 \in [\bar{\alpha}, 1]$, for first period investigator behavior that is a best response given σ_D. We have also shown that $\alpha_E(0) = \underline{\alpha}$ and $\alpha_E(\sigma_{\bar{D}}) = \underline{\alpha}^{ER}$. Moreover, because $\bar{\alpha}^1$ is a continuous function of σ_D and α_E is a continuous function of $\bar{\alpha}^1$, the composition $\alpha_E(\sigma_D)$ is continuous as well. Thus the intermediate value theorem implies that for each $\alpha_E \in \left(\underline{\alpha}, \underline{\alpha}^{ER}\right)$ there exists some $\sigma_D \in (0, \sigma_{\bar{D}})$ such that there exists an equilibrium as stated in part 1 of Lemma 10. (As an aside, note that the intermediate value theorem only ensures that for some $\sigma_D \in [0,1]$ there exists an equilibrium. The strict set inclusion comes from the fact that $\sigma_D = 0$ cannot be an equilibrium for $\alpha_E > \underline{\alpha}$ and $\sigma_D = 1$ cannot be an equilibrium for $\alpha_E < \underline{\alpha}^{ER}$.)

A similar argument proves part 2 of the lemma. The only complexity is that whereas for $\underline{\alpha}^{ER}$ we only needed to vary σ_D we now need to consider both σ_A and σ_C. What makes this fairly straightforward is the fact that, in contrast to the case of a random replacement, it is possible for an executive with a given α_E to mix both after convictions and after acquittals. The reason for this is that after either a conviction or an acquittal, because $\underline{\alpha}^1 < \underline{\alpha}$ and $\bar{\alpha}^1 = \bar{\alpha}$ the executive's beliefs can be written as a convex combination of

(i) a belief that the executive is aggressive and saw $s = NG$ and (ii) a belief that the executive is randomly drawn from $\left[\underline{\alpha}^1, 1\right]$ and saw $s = G$. The only difference is that after convictions and acquittals the executive will put different weights on these two beliefs.

Thus, if after observing a conviction the executive is indifferent between retaining the investigator and replacing her with an investigator who is surely aggressive, he must be indifferent between an aggressive type and a random draw from $\left[\underline{\alpha}^1, 1\right]$. But this in turn means that after an acquittal he must likewise be indifferent about whether to retain the investigator or replace her with an aggressive type. By the same argument, if the executive is indifferent after an acquittal he must be indifferent after a conviction.

Thus we can have σ_C and σ_A both strictly between zero and 1. For any $\alpha_E \in \left(\bar{\alpha}^{ER}, \bar{\alpha}\right)$ there exists a continuum of equilibria, using different mixing probabilities $\sigma_A \in (0, 1)$ and $\sigma_C \in (0, 1)$, all of which lead to the same investigator behavior, as characterized by $\underline{\alpha}^1$ and $\bar{\alpha}^1$. For simplicity, in the article we state the equilibrium with $\sigma_A = \sigma_C$.$\blacksquare$

Finally, we sketch technical details supporting footnote 16 in the main text, which mentions the counterintuitive fact that an executive who prefers a dogmatic replacement over a random draw may nonetheless prefer to pick a random draw over a dogmatist in the first period. There are two effects to consider: first period policy considerations and selection effects for the second period. The executive types who prefer to do this are PN1 types with α_E close to $\underline{\alpha}^{ER}$ and AN2 types with α_E close to $\bar{\alpha}^{ER}$. Here we consider the case of PN1 types close to $\underline{\alpha}^{ER}$.

Note that given the equilibrium behavior in part 2 of Lemma 10, any executive with $\alpha_E \in \left(\underline{\alpha}, \underline{\alpha}^{ER}\right)$ is indifferent, in terms of selection effects for the second period, between appointing a first-period dogmatist and a first-period random draw.

First-period policy considerations are more subtle. In the absence of accountability incentives, a PN1 type is strictly better off having policies chosen by a dogmatist rather than a random draw. However, the magnitude of this preference is arbitrarily small as $\alpha_E \to \underline{\alpha}^{ER}$. On the flip side, the accountability incentive stemming from the executive's behavior in part 2 of Lemma 10 increases congruence by a first-period random draw. This increases the executive's utility from appointing a random-draw in the first period.

The next step is to show that this utility increase is bounded away from zero. For this step, we need to show that the equilibrium σ_D in part 2 of Lemma 10 does not converge to zero as $\alpha_E \to \bar{\alpha}^{ER}$. To see this, suppose to the contrary that $\sigma_D \approx 0$. Thus accountability incentives have essentially no effect on first-period behavior because $\sigma_A = \sigma_C = 0$, which means that first period investigator behavior is characterized by cutpoints $\underline{\alpha}^1 = \underline{\alpha}$ and $\bar{\alpha}^1 \approx \bar{\alpha}$. This, in turn, implies that an executive with α_E close to $\bar{\alpha}^{ER}$ must strictly prefer to retain the investigator when she drops a case, which is a contradiction with the fact that the executive mixes in this information set.

Because σ_D does not converge to zero, in the equilibrium in part 2 of Lemma 10, $\bar{\alpha}^1 - \bar{\alpha}$ is bounded away from zero as $\alpha_E \to \bar{\alpha}^{ER}$, and thus the magnitude of the accountability-induced increase in the executive's utility from appointing a random-draw in the first period is bounded away from zero.

Thus, there exists some neighborhood of $\underline{\alpha}^{ER}$ such that an PN1 executive within this neighborhood would choose random draw over a dogmatist in the first period if (contrary to the assumptions of our model) he were allowed to make that choice.