Cabinet Instability and Delegation in Parliamentary Democracies

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In most parliamentary democracies, two things are true: cabinet ministers delegate to bureaucrats and coalition governments replace cabinet ministers with little advance notice. Many people claim that *cabinet instability* (i.e., uncertainty about the timing of ministerial replacements) allows bureaucrats to ignore ministerial orders. To evaluate this claim, we present a delegation model that introduces cabinet instability as a variable. We discover numerous cases in which instability has no effect on bureaucratic behavior. We also identify circumstances in which instability causes bureaucrats not to choose policies that would otherwise make both them and their ministers better off. Such outcomes are caused by *the bureaucrats' dilemma*—the fear that a bureaucrat's efforts will be unrewarded, or even punished, if the incumbent minister is replaced unexpectedly. In general, we find that instability's effects on delegation are usually taken for granted and often misunderstood. With this model, we seek to improve on both counts.

All over the world, politicians delegate to bureaucrats. Some delegate by relying on bureaucratic expertise to draft laws. Others delegate by relying on bureaucrats to implement the policies they adopt. Delegation can help politicians accomplish many policy objectives, but it does not always produce the ends that they desire. For if bureaucrats choose to pursue their own interests while casting legislative mandates aside, then delegation is akin to abdication.

In recent years, formal models have clarified how *incentives* and *information* affect delegation (see reviews in Spence 1997 and Huber and Shipan 2000). Some examine how legislative interventions such as monitoring (Banks 1989), oversight (Lupia and McCubbins 1998, McCubbins and Schwartz 1984) and sanctions (Weingast and Moran 1983) induce bureaucrats to serve legislative interests. Others show how information asymmetries affect the extent to which politicians can profitably engage in delegation (e.g., Bawn 1995, 1997; Calvert, McCubbins, and Weingast 1989; Epstein and O'Halloran 1999).

Many delegation models are developed with empirical studies of the U.S. Congress in mind. Delegation, however, is also an essential feature of parliamentary democracy—a more common legislative phenomenon. In what follows, we examine the implications of an important difference between *delegation as it is practiced* in parliamentary democracies and *delegation as it is portrayed* in many formal models.

The difference is cabinet instability. In the U.S. Congress, regularly scheduled elections mean that the terms of most governments end on a date that can be known for years in advance. In many parliamentary systems, by contrast, a government's term of office can end with little or no advance notice. As Lupia and Strom describe, governments "in parliamen-

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We thank John Carey, James N. Druckman, Elisabeth R. Gerber, Joel Sobel, Randy Stevenson, and participants in seminars at Princeton University, the Haas School of Business at UC Berkeley, the London School of Economics, Oxford's Nuffield College, Stanford University, the 1999 annual meeting of the Midwest Political Science Association and the 1998 annual meeting of the American Political Science Association for helpful comments and suggestions. Professor Lupia also acknowledges the support of the Center for Advanced Study in the Behavioral Sciences, and Professor Huber acknowledges support from the National Science Foundation (SBR-9904844).

American Journal of Political Science, Vol. 45, No. 1, January 2001, Pp. 18–33

tary democracies lead a precarious existence. Typically, they can fall on any given day, and sometimes with little or no warning. The circumstances surrounding coalition termination vary greatly, occasionally producing great drama. Some politicians are forced from their cabinet offices in a daze, never knowing what hit them. Others choose their date of departure and leave with smirks on their faces" (1995, 648). Since parliaments can dissolve abruptly and since governments can fall unexpectedly, cabinet ministers can lose their posts with little or no advance warning.

Many U.S.-style delegation models, however, proceed as if a politician who delegates to a bureaucrat is a *stable principal*—a person who is certain to retain his or her office for the duration of the delegation act being studied. For many cabinet ministers in parliamentary systems, such an assumption is obviously problematic. To understand how delegation works in these systems, it is important to incorporate the effects of cabinet instability.

In this paper, we study how variations in cabinet instability (i.e., the perceived probability of ministerial turnover) affect delegation from cabinet ministers to bureaucrats in parliamentary democracies. By so doing, we enter a long-running debate. On one side of this debate are scholars such as Dogan (1975), Putnam (1973), and Peters (1997) who argue that instability causes a transfer of power from politicians to bureaucrats. They are joined by Suleiman (1974) who claims that ministerial turnover during the French Fourth Republic gave civil servants extraordinary power, in part because they could use the prospect of turnover to obstruct ministerial initiatives (see, e.g., Williams (1964) and Scheinman (1965); see also Headey (1974) on Great Britain, and Warwick (1979) for a similar argument about instability in the U.S.). In this view, bureaucrats delay taking actions they do not like because they believe that any minister who disagrees with them will soon be gone. Providing a different perspective is LaPalombara who advises that if the French look not to parliament but rather to the "administrative arena as the place where the aggregation of group interests occurs.... [then] French society may, in fact, derive important benefits from the very patterns [of cabinet instability] that are frequently cited as injurious" (1958, 138).

In recent years, quantitative analyses have played a larger role in the debate. Huber (1998), for example, uses data on eighteen parliamentary democracies' efforts to contain health care costs to test hypotheses about how cabinet instability affects delegation. He finds that short-term increases in cabinet instability within a country make cost containment more difficult (an outcome that is, in part, a consequence of delegation). He does not, however, find that cross-national variations in instability explain *cross-national differences* in cost containment. Huber's analyses remind us the relationship between instability and delegation may not be as simple as "instability causes problems." But what is the relationship? While we believe that instability *can* reduce ministerial control over bureaucratic behavior, there is precious little theory or concrete empirical evidence that clarifies this relationship further.

To this end, we introduce a model that shows how an agent's (e.g., a bureaucrat's) uncertainty about a principal's (e.g., a minister's) future affects delegation. We use the model to address questions such as: "When and how does cabinet instability affect bureaucratic behavior?" and "Should we expect these effects to vary across countries?"

The model describes an interaction between an agent and an *incumbent* minister. During the incumbent's term of office, the agent takes actions for which he can later be held accountable. The agent, however, operates in the shadow of cabinet instability—he is uncertain about whether the incumbent or her successor will be the ultimate judge of his actions. This feature of our model is in contrast to many formal delegation models that either posit stable principals explicitly or ignore the implications of ministerial turnover altogether.

Three insights from our model merit attention. First, we find that uncertainty about ministerial continuity can, but need not, reduce the extent to which ministers benefit from delegation. Of course, the substantive consequence of instability is often a bureaucrat's refusal to act in accord with a minister's interests, which can delay or prevent the implementation of policy outcomes that are important to the incumbent. Our model, however, does not support the idea that instability always has such an effect. Indeed, we identify a wide range of cases in which instability does not affect delegation.

Second, we find something unusual. In many delegation models, conflicting policy preferences between principal and agent cause delegation problems (e.g., moral hazard). When the policy conflicts disappear, so do the problems. The same is not true in our model. We find that cabinet instability can cause agents who would otherwise implement a policy desired by the incumbent not to do so. The *bureaucrat's dilemma* in these cases is caused by the fear that his efforts to serve the incumbent will be unrewarded, or even punished, should the incumbent lose her job. Dilemmas such as this—not commonly seen in models but familiar to empirical scholars—are important to understand. We clarify when they arise.

Third, we discuss how country-specific factors influence the effect of instability on delegation. It is not the case, our model suggests, that the consequences of instability will be the same across nations. Instead, we identify several substantive variables that should affect these consequences in systematic ways.

We continue as follows. Next, we present the model. Then, we present and discuss our findings. We conclude with a brief discussion and suggestions for future research. An appendix contains all required proofs and the technical details of our argument.

The Model

We model delegation as an interaction between an agent and one of two principals—an incumbent minister and her potential replacement. To enhance readability, we assign genders to the principals (females) and the agent (a male).

Stated in brief, the sequence of events in the model is as follows. First, the agent makes a policy decision. His options are many, including implementing the policy that he most prefers and implementing the policy that the incumbent most prefers. Next, an exogenous force (representing a call for new elections or a reshuffling of cabinet portfolios) determines whether or not the incumbent minister keeps her job long enough to hold the agent accountable for his policy decision. If the incumbent does not survive, then the replacement principal gives the agent an opportunity to adapt his behavior to her preferences. Finally, the surviving principal chooses whether to intervene in the agent's activities and, if need be, force him to change his ways.

We now describe the model in greater detail and motivate its central assumptions. Figure 1 depicts the model's sequence of events. Unless otherwise noted, all aspects of the model are common knowledge and all variables are scalars in $\Re$.

An incumbent minister delegates to an agent the authority to determine a particular policy outcome, which we represent as the authority to choose a point on the policy continuum [0, 1]. Each person has policy preferences, which we represent as single peaked-utility functions whose values decrease linearly in the distance between the person's ideal policy and the final policy outcome. We denote the incumbent's ideal policy as I and without loss of generality set $I = 0$. We denote the replacement's ideal policy as R and for simplicity set $R = 1$, also without loss of generality. We denote the agent's ideal policy as $A \in [0,1]$. This assumption is consistent with empirical research that finds many bureaucrats to have centrist policy preferences (Aberbach, Putnam and Rockman 1981).[1]

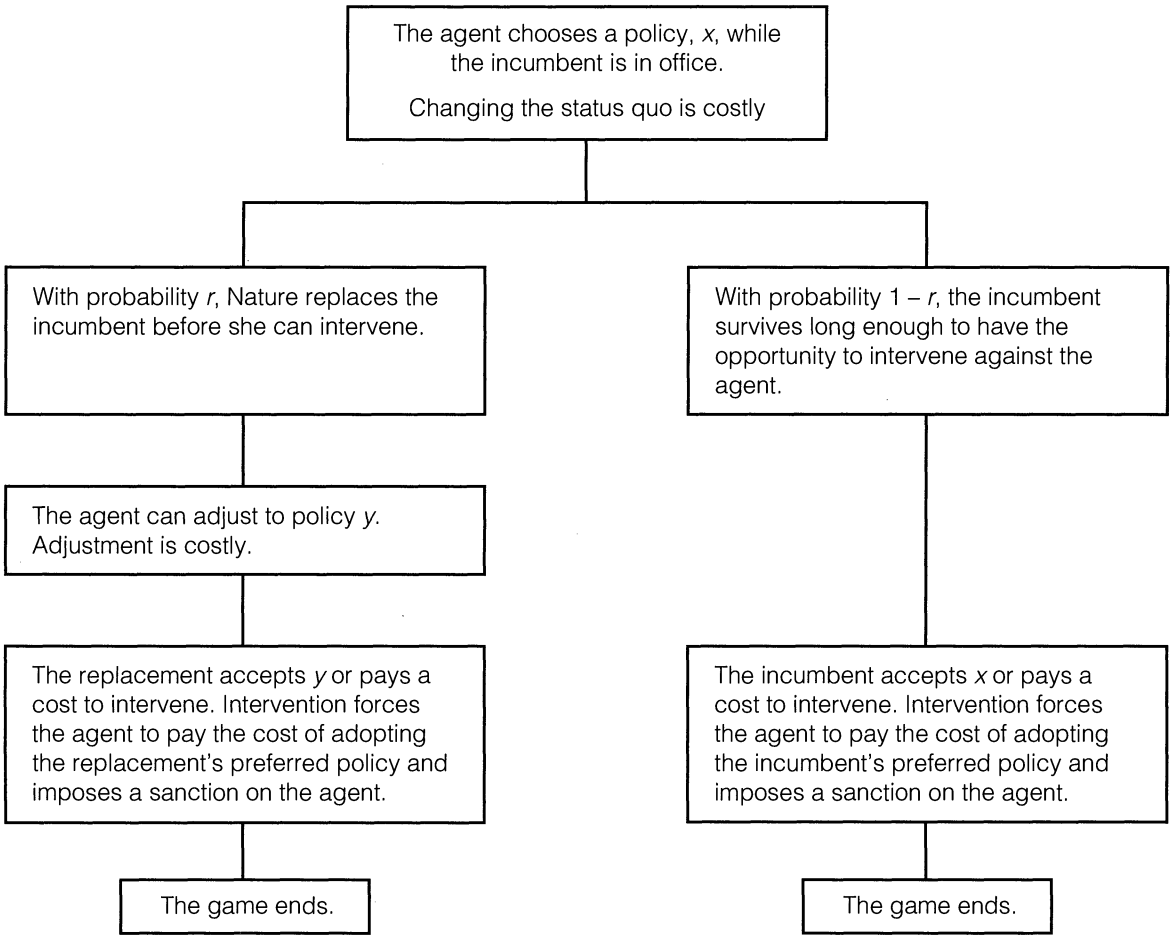
The agent takes the first action by choosing policy $x \in [0, 1]$. We assume that $x = Q \in [0,1]$ represents bureaucratic inaction and that choosing $x \neq Q$ costs the agent an amount $\alpha|Q - x|$, where $\alpha \in (0,1)$. We assume, then, that large policy changes away from the status quo, Q, are more difficult for the agent to implement than small policy changes. In other words, we assume that privatizing one industry is easier than privatizing ten; changing the rules under an existing regulatory structure is easier than creating a new one; and learning new rules to enforce for a welfare program that affects individuals in one income bracket is easier than learning new rules for a program that affects individuals of all incomes. We also assume that unit cost of change, α, can vary, where variations are influenced by the nature of the policy (e.g., technically complex issues, like depletion of the ozone layer, might be more difficult to regulate than well-understood issues, like pollution from mobile sources), the quality of the civil service (some countries, or departments within countries, are believed to have more professionalized civil servants than others), and/or the nature of administrative law (which might dictate a large or small number of procedures that must be followed in the implementation process). Note that if the agent chooses bureaucratic inaction (i.e., $x = Q$), then he does not pay the costs of change (i.e., $\alpha|Q - Q| = 0$).

The game's next stage contains the model's most important feature: cabinet instability. Here, the agent is uncertain about whether or not the incumbent minister will be replaced before she can hold him accountable for his choice, x. This aspect of the model allows us to clarify how cabinet instability affects the agent's willingness to choose actions that are consistent with the incumbent's policy interests.

We represent the agent's uncertainty as follows. After he makes his initial choice, an exogenous event (i.e., an election, a death, or a cabinet reshuffle) determines whether or not the incumbent remains in office. Formally, $r \in (0,1)$ is the agent's belief that the replacement will take office before the incumbent holds him accountable, and $1 - r$ is the agent's belief that the incumbent will

[1] While limiting the ideal policy of the agent to *[0,1]* simplifies the exposition, it does not affect the main substantive themes in the text. For example, when the agent in our model is restricted in the choices he can make in equilibrium, it is easy to show that the same holds for an agent whose ideal point falls outside of [0, 1]. Similarly, when the agent in our model can choose anything he likes in equilibrium, it is easy to show that an agent whose ideal point falls outside of *[0, 1]* is also less restricted.

FIGURE 1 Sequence of Interactions



hold him accountable before she is replaced. The larger the value of r, the greater the agent's belief that change will occur before the incumbent can hold him accountable. ***In most studies of delegation, r is set to zero and ignored. In our model, r is the central independent variable.***

When cabinet changes occur, new governments do not sanction civil servants for actions taken under the previous government. Instead, they instruct the civil servants on what new policies to adopt. Consequently, if ministerial turnover occurs, we do not assume that the replacement minister immediately punishes the agent for the actions he took under the previous minister.[2] Instead, we assume that the replacement gives the agent the opportunity to take actions that are more consistent with her ideal policy. We refer to any such action by the agent as adjustment and denote it as $y \in [0,1]$. Since it may be difficult to change his ways, we assume that adjustment costs the agent $\alpha|x - y|$, where α is defined as above.

The surviving principal then makes the game's final move—a decision about whether or not to intervene in the agent's activities. Intervening allows the minister to force the agent to pay the cost of implementing her ideal policy (again at a cost of α times the distance policy must be moved). Intervening also allows her to impose a sanction $s > 0$ if the agent did not implement her ideal policy—in reality, such sanctions often take the form of lost promotions, jurisdictional transfers away from the agent's department, or cuts in an agency's discretionary budget.

[2]The agent is not allowed to adjust if replacement *does not* occur. The reason for this asymmetry is simple. The key feature of parliamentary democracy is that the players do not know in advance whether the composition of government will change on a given day. The parameter r, which is the agent's belief that his action will ultimately be judged by the incumbent, captures the uncertainty that cabinet instability creates. So, if an agent believes a change in government is sufficiently likely that he acts against the incumbent, he runs a risk that the anticipated change will not occur and that the incumbent will remain in office long enough to intervene against him (i.e., he risks getting his hand caught in the cookie jar).

We denote the incumbent's intervention strategy as $M_I \in \{0,1\}$, where $M_I = 1$ if the incumbent intervenes and $M_I = 0$ otherwise. Similarly, $M_R \in \{0,1\}$ denotes the replacement's intervention strategy. We assume that intervention requires costly effort by the principal—the cost is $k_I > 0$ for the incumbent and $k_R > 0$ for the replacement. These costs represent the opportunity costs a minister must pay if forced to spend time away from other political duties to remedy bureaucratic inaction or malfeasance. If the principal does not intervene, then she does not pay these costs; however, she also forfeits the ability to change the agent's behavior and must accept whatever policy the agent has implemented.

This final stage of our model captures two characteristic features of parliamentary democracies. First, cabinet ministers are often the legal masters of their departments and can, in principal, demand that these departments do their bidding (see, e.g., Laver and Shepsle 1994). Second, enforcing compliant behavior by civil servants can be quite costly to ministers. The magnitude of a minister's intervention costs should depend on a wide variety of factors. One such factor is the extent to which the minister herself has experience with, or expertise on, the policy area in question. Institutional variations are another factor. In some countries, for example, promotion and hiring of civil servants are relatively insulated from political influence (e.g., Great Britain, see, e.g., Butler 1993). In other countries (e.g., Belgium, see Van Hassell 1975 and Moulin 1975), ministers can appoint senior civil servants but not dismiss them. Cabinet ministers in France can appoint and dismiss senior civil servants (Van Hassell 1975). As cabinet minister control over administrative personnel increases, one might expect the cost of intervention to decline. Other institutional factors that might affect the cost of intervention include the level of personal staff at the minister's disposal and the degree of legal authority that individual ministers have to issue regulations or decrees.

Having completed our description of the model, we take a moment to review its key features.

1. The key assumption is that when the agent takes an action during the incumbent's term of office, he is unsure whether the incumbent will stay in office long enough to judge his actions. If he believes that the incumbent will soon be replaced, then he may see an opportunity to act against her interests. Such behavior, however, is risky—for if the anticipated ministerial replacement does not occur, the incumbent may choose to impose costs and sanctions on an agent who acts against her.
2. If the replacement minister does take office, she allows the agent to adjust her actions, though doing so is costly for the agent.
3. The agent can obstruct (i.e, $x = Q$ and $y = Q$). Previous comparative research considers obstruction of ministerial initiatives a central consequence of cabinet instability. Our model clarifies the link between instability and obstruction.
4. By linking the agent's costs both to the distance that policy is moved and to the parameter α, we can examine how instability affects delegation under a variety of assumptions about ministerial policy preferences and bureaucratic opportunity costs.
5. The principals have complete information. In this regard, our work follows an influential tradition of analysis that uses complete information models to clarify how institutional features affect delegation (e.g., Ferejohn and Eskridge 1992; Ferejohn and Shipan 1990; Hammond 1986; Hammond and Miller 1985). We break from this tradition only by allowing the agent to be uncertain about which minister will evaluate his actions. This modeling strategy provides a simple way to compare how principal and agent behavior in the shadow of cabinet instability differs from behavior in its absence.
6. Like most of the existing literature, our primary interest is in understanding how instability affects the consequences of delegation for the incumbent principal. Therefore, we focus primarily on how the threat of ministerial turnover, r, affects the incumbent's utility from bureaucratic action x.

Equilibrium

In this section, we present and discuss our main substantive results in the form of three propositions. These propositions describe how and under what circumstances the value of r affects behavior and outcomes. The appendix contains formal proofs of each proposition.

To simplify the presentation, we begin by describing the surviving principal's equilibrium intervention decision. The surviving principal intervenes only if her utility from the agent's action is less than the utility she would earn by paying the cost of intervening and then forcing the agent to implement her ideal policy. If, for example, the incumbent is the surviving principal, the agent implements the incumbent's ideal policy, and the incumbent's intervention costs are positive, then intervention does not benefit the incumbent. The same logic underlies Lemma 1, which we offer without proof. To simplify notation, let $\underline{I} = k_I$ and let $\underline{R} = 1 - k_R$ (k_I and k_R are the incumbent's and the replacement's respective intervention costs).

Lemma 1. The incumbent's best response is given by

$$M_I^*(x)=\begin{cases}1 \text{ if } x>\underline{I}\\ 0 \text{ or } 1 \text{ if } x=\underline{I}\\ 0 \text{ if } x<\underline{I}\end{cases}.$$

The replacement's best response is given by

$$M_R^*(y)=\begin{cases}1 \text{ if } y<\underline{R}\\ 0 \text{ or } 1 \text{ if } y=\underline{R}\\ 0 \text{ if } y>\underline{R}\end{cases}.$$

In words, $[0, \underline{I}]$ and $[\underline{R}, 1]$ are the sets of policies that are close enough to the incumbent and the replacement ideal policies to prevent intervention given the principals' respective intervention costs.

To further clarify equilibrium behavior in the model, we present Lemmas 2 and 3 to describe the agent's adjustment strategy. Lemma 2 states that when the agent's ideal policy is sufficiently close to that of the replacement, then the agent's best response is to implement his own ideal policy at the adjustment stage.

Lemma 2. If $A \geq \underline{R}$, then $y^* = A$.

Proof. For $y \in [\underline{R}, 1]$, $EU(y) = -\alpha|y - x| - |y - A|$, which, given $\alpha \in (0,1)$ and $A \geq \underline{R}$, is maximized when $y = A$ (yielding $-\alpha|A - x|$). For $y < \underline{R}$, $EU(y) = -\alpha|y - x| - s - (1 - A) - \alpha(1 - y) = -\alpha|1 - x| - s - |1 - A| < -\alpha|A - x|$. *QED.*

Lemma 3 states that if replacement occurs when the agent's ideal policy is not as close to that of the replacement, then the agent's best response is to adjust to $\underline{R}$—the action that is just close enough to the replacement's ideal policy to avert a sanction from her.

Lemma 3. If $A < \underline{R}$, then $y^* = \underline{R}$ and $M_R{}^*(\underline{R}) = 0$.

Proof. For $y \in [\underline{R}, 1]$, $EU(y) = -a|y - x| - |y - A|$, which, given $a \in (0,1)$ and $A < \underline{R}$, is maximized when $y = \underline{R}$ (yielding $-a|\underline{R} - x| - |\underline{R} - A|$). As in Lemma 2, for $y < \underline{R}$, $EU(y) = -a|1 - x| - s - |1 - A| < -a|\underline{R} - x| - |\underline{R} - A|$. Finally note that in equilibrium, $M_R{}^*(\underline{R}) = 0$. If this were not the case (i.e., $M_R{}^*(\underline{R}) = 1$), then the agent would want to choose $y = \underline{R} + e$ (so that $U_R(M_R^*(y) = 0)$. But the agent maximizes utility by making e as small as possible, leaving y undefined. Thus, in equilibrium, when the agent chooses $\underline{R}$, the replacement must accept this policy without intervention. *QED*

Together, Lemmas 1–3 enable us to clarify the logic of the agent's initial choice, x. We now know that if the incumbent is suddenly replaced, then the agent will adjust to the policy he most prefers in the interval $[\underline{R}, R]$. Therefore, the agent must bear in mind that if the incumbent is suddenly replaced, then he will have to reverse any initial move from Q to policies favored by the incumbent—a consideration that can loom large in the agent's initial calculations.

We now explain how instability affects delegation in our model. To do so, we first ask how the incumbent minister and agent would behave if there were no instability (i.e., when $r = 0$). The answer is simple. If $A \leq \underline{I}$ (i.e., the agent and incumbent have similar policy preferences) and $r = 0$, then the agent chooses his own ideal policy and the incumbent does not intervene. If $A > \underline{I}$ (i.e., the agent and incumbent do not have similar policy preferences) and $r = 0$, then the agent chooses the policy closest to his own ideal that also prevents intervention (i.e., $x^* = \underline{I}$).[3] Thus, the incumbent's utility in the absence of cabinet instability is the greater of $-A$ ($-|A - 0|$ when $A \leq \underline{I}$) and $-k_I$ ($-|\underline{I} - 0|$ when $A > \underline{I}$).

The next three propositions describe when and why instability ($r > 0$) causes behavior and outcomes to differ from those that occur when $r = 0$. The propositions are mutually exclusive and collectively exhaustive (i.e., they provide a single prediction about behaviors and outcomes for every possible substantive scenario in the model).

Conditions Where Instability Has No Effect on Behavior

Our first proposition calls into question the stylized fact that increased levels of instability necessarily make the agent act in ways that are detrimental to the incumbent.

Proposition 1. The agent's strategy (and, thus, the incumbent's utility if she is not replaced) is unaffected by the level of cabinet instability (i.e., the value of r) when either of two conditions is met:

(i) $\underline{R} \leq A \leq \underline{I}$, or
(ii) $Q < \min(A, \bar{I})$

Proof. See appendix.

Proposition 1 identifies two conditions under which instability has no effect on the agent's or incumbent's behavior. The logic of condition (i) is very simple: instability has no effect because high intervention costs (or the

[3] Suppose that $M_I^*(\underline{I}) = 1$. Then the agent has an incentive to choose some $x = \underline{I} - \varepsilon$ such that $U_I(M_I^*(\underline{x}) = 0) \geq U_I(M_I^*(\underline{I}) = 1$. But the agent maximizes utility by making ε as small as possible, leaving x undefined. Thus, equilibrium requires $M_I^*(\underline{I}) = 0$.

fact that the two ministers' ideal policies are close together relative to the intervention costs they face) make the prospect of ministerial replacement irrelevant to the agent's decision calculus. This "centrist" agent can implement his ideal policy, which is also what he would do if $r = 0$, without fear of intervention by either minister. Thus, in political systems where the policy preferences of successive ministers are extremely similar, or where the costs of ministerial intervention are very large, we do not expect ministerial instability to affect delegation behavior or outcomes when agents are centrist.

Condition (ii) reveals that instability does not affect the agent's behavior toward the incumbent when the status quo is very favorable to the incumbent (i.e., when it is closer to the incumbent's ideal policy than either the agent's ideal policy or the incumbent's "intervention threshold," $\underline{I}$). Instability has no effect in these situations because with or without instability the agent has no incentive to take an action that the incumbent will sanction—he knows that he can take any such action without the risk of sanction after replacement occurs. In particular, if $A \le \underline{I}$, the agent chooses his ideal policy without fear of sanction (as he would if $r = 0$), and if $A > \underline{I}$, the agent moves policy from $Q < \underline{I}$ to $\underline{I}$ (as he would if $r = 0$). The agent never chooses an initial policy closer to the replacement's ideal point than $\underline{I}$, because doing so can only be in his interests if replacement occurs, in which case he will also have an opportunity to adjust.

This proposition reveals a shaky foundation for the claim that cabinet instability necessarily induces bureaucrats to ignore ministerial orders. For the reasons just described, there exist a variety of cases in which the level of cabinet instability has no impact on delegation. Instead, the agent and incumbent behave exactly as they would if there was no threat of ministerial replacement.

Conditions Where Instability Affects Behavior, but Not the Incumbent's Utility

Our second proposition describes behaviors and outcomes for cases where the incumbent faces an agent whose interests are not similar to her own. Having such an agent is often presumed to be bad for the incumbent. Proposition 2 shows this presumption to be only partially correct. In particular, it shows that instability does not affect the incumbent's utility if she survives, but it does affect the actions that both she and the agent take while she is in office.

Proposition 2. If conditions (i) and (ii) of Proposition 1 are not satisfied and the agent and incumbent do not have similar policy preferences ($A \ge \underline{I}$), then the level of cabinet instability (value of r) does not affect the incumbent's utility from delegation if she survives, but a large value of r can cause the incumbent to intervene.

Proof. See appendix.

If $r = 0$ in the case described in Proposition 2, then the agent chooses $\underline{I}$, the policy farthest from the incumbent's ideal point that she will not sanction, during the incumbent's term of office and the incumbent, in turn, does not intervene. This outcome yields the incumbent a utility of $-k_I$. Proposition 2 reveals that the incumbent realizes the same utility level when $r > 0$, but by different means than before when r is sufficiently large.

To see the difference, note that if $A \ge \underline{I}$ and Proposition 1's conditions are not satisfied, then $Q > \underline{I}$ (i.e., the status quo is far from the incumbent's ideal policy). Consequently, if the incumbent survives, the agent can avoid a sanction only if he moves policy from Q towards the incumbent's ideal policy during the incumbent's term of office. But if the agent makes such a move and replacement occurs, then he will have to pay again to undo this change later in the game. Specifically, he will pay to move policy from Q to $x < Q$ during the incumbent's term and then pay to move policy from $x <$ Q to a policy in $[\underline{R}, 1] > Q$ after the replacement takes the minister's post. He will, in effect, pay $2\alpha|Q - x|$ to accomplish no policy gain, plus $\alpha|max(\underline{R}, A) - Q|$ (from Lemmas 2 and 3) to satisfy the replacement. Since paying once to implement a policy and paying a second time to undo the policy can be costly for the agent, he will choose a policy more favorable to the incumbent during her term of office only if the incumbent is likely to remain in office (r is low). If instability is sufficiently high, then the agent will obstruct—he will choose $x = Q$ (i.e., he will refuse to do anything for the incumbent). The incumbent (if she survives) will intervene at cost k_I and force the agent to implement her ideal point. Therefore, when r is high, delegating will earn the incumbent utility $-k_I$, which is the same utility that she would have derived if $r = 0$.

In sum, when the incumbent faces an agent whose policy preferences differ from her own and a status quo that is far from her ideal policy, then high levels of cabinet instability force her to intervene in order to gain the utility that she would have achieved if $r = 0$. Since both the incumbent and agent pay a cost when intervention occurs, instability causes inefficiencies in such cases.

Conditions Where Instability Leads the Agent to Act in Ways That Are Bad for the Incumbent

Our final proposition describes cases in which the incumbent and her agent have similar policy preferences. This is a situation where the problems of delegation are often thought to be few. When we consider instability explicitly, we find something quite different.

Proposition 3. If conditions (i) and (ii) in Proposition 1 are not satisfied and the agent and incumbent have similar policy preferences ($A < \underline{I}$), then a high level of cabinet instability (large value of r) negatively affects the incumbent's utility if she survives.

Proof. See appendix.

Unlike the previous cases, Proposition 3 is one where instability reduces the incumbent's utility if she survives. To see how, recall that if $r = 0$ and $A < \underline{I}$, then the agent chooses his ideal policy during the incumbent's term of office and the incumbent does not intervene. This outcome provides the incumbent with utility level $-A > -k_I$.

High levels of instability can cause the agent to change his choice. For example, instability can induce the agent to take actions that cause the incumbent to intervene, yielding the incumbent her worst possible utility, $-k_I$. That instability can have such negative effects for the incumbent will surprise few observers, but that it happens when the agent's ideal policy is close to that of the incumbent is an unusual theoretical result and merits discussion.

The problem for the agent with similar preferences to the incumbent is that he faces the *bureaucrats' dilemma*—the fear that his efforts to serve the incumbent will be unrewarded, or even punished, if the incumbent minister is replaced unexpectedly. Indeed, such an agent must weigh the benefits of moving policy closer to his own ideal against the extra costs that such a move will bring should replacement occur. As before, the agent is concerned about having to pay twice (once to enact the policy that the incumbent likes and a second time to undo the policy) for the quixotic privilege of accomplishing little or nothing in terms of policy by the end of the game. The difference here is that the policy move that instability deters would have also been better for the agent if $r = 0$.

This result provides an interesting contrast to Proposition 2. In that case, the agent's preferences were less similar to those of the incumbent and instability did not affect the incumbent's utility (though it did affect the procedural means by which she realized that level of utility). When agent and incumbent interests are more tightly linked, by contrast, high levels of instability cause the incumbent and the agent to suffer a decline in utility. Thus, the means by which cabinet instability affects delegation is not limited to the fact that it *allows* recalcitrant agents greater incentive to obstruct, it also dissuades agents who would otherwise want to serve the incumbent from doing so.

What Makes Cabinet Instability "Sufficiently Large" to Cause Problems?

Propositions 1–3 clarify the circumstances in which the threat of ministerial turnover does (and does not) induce the agent to do something other than take actions that are in the incumbent minister's interests. From Proposition 3, we know that this effect is most serious when (a) the status quo is not favorable to the incumbent (so that $Q > \min(A, \underline{I})$), (b) the agent and incumbent have similar policy preferences (so that $A < \underline{I}$), and (c) the replacement's intervention costs are not too large (or the preferences of the incumbent and replacement not too similar, so that $A < \underline{R}$). When these conditions are satisfied *and* the threat of ministerial turnover is sufficiently large, then the agent implements a policy during the incumbent's term of office that is worse for both he and incumbent minister than the choice he would make given no instability. Moreover, the incumbent minister, if she survives long enough, may be forced to undertake a costly and inefficient intervention.

But what does it mean for the threat of instability to be *sufficiently large*? And how do the variables in our model affect this "instability threshold"? The answer to these questions comes from examining some of the specific results in the proof of Proposition 3. In that proof, we show that three expressions play a critical role in determining the instability threshold (i.e., the value of r that affects behaviors and outcomes). The expressions are: $\frac{1-\alpha}{1+\alpha}$, $1-\frac{2\alpha(Q-A)}{2\alpha\underline{I}+(1-\alpha)A+s}$, and $\frac{s+((1+\alpha)A)}{(2\alpha Q+s+((1-\alpha)A)}$.

Differentiating these expressions with respect to their elements (when possible) can clarify how variations in substantive factors such as the unit cost of policy change, α, the distance between the incumbent's ideal policy and the bureaucratic status quo, Q, and the distance between the agent's and incumbent's ideal policies, A, affect the relationship between instability and delegation. For example, $\frac{d}{d\alpha}\left[\frac{1-\alpha}{1+\alpha}\right] = -\frac{2}{(1+\alpha)^2} < 0$.

In addition, $\frac{\partial}{\partial\alpha}\left[1-\frac{2\alpha(Q-A)}{2\alpha\underline{I}+(1-\alpha)A+s}\right] < 0$ and

$\frac{\partial}{\partial\alpha}\left[\frac{s+((1+\alpha)A)}{(2\alpha Q+s+((1-\alpha)A)}\right] < 0$ when the relevant conditions on A and Q in proposition 3 are satisfied.

Consequently, it is always true in the domain of Proposition 3 that increases in the cost of policy change (increases in α) lower the value of r that changes behavior and outcomes. Put in substantive terms, instability causes the most severe problems for ministers when policy change is costly, which as we discussed above, is most likely when policies are technically complex, when civil servants are relatively unskilled or inexperienced, and when administrative procedures are particularly complex and cumbersome. Therefore, moving policy towards the incumbent's ideal during her term is more likely to be worthwhile for the agent when the cost of policy change is low.

A similar analysis reveals the same effect as Q moves away from the agent's and the incumbent's ideal policies (i.e., the instability threshold *declines* as Q increases). Again, the logic is related to the cost of policy change. As the status quo moves farther away from the agent's ideal policy, then the agent faces greater costs in changing policy to please himself and the incumbent—costs that can double if replacement occurs.

Increases in the model's other variables have the opposite effect. As the size of the sanction s increases, implementing $A \leq \underline{I}$ becomes more attractive to the agent than obstructing (which elicits a sanction). Thus, the instability threshold increases as s increases. Less intuitively, increases in A and k_I also raise the threshold, making instability less problematic for the agent and the incumbent. To see why, notice that as the agent's preferred policy moves away from the incumbent and towards Q, the cost of moving from Q to A declines, decreasing the potential cost of choosing her own ideal policy during the incumbent's term of office.[4] Similarly, as the incumbent's intervention costs increase (as $\underline{I}$ increases), the agent's incentive to adopt his own ideal policy increases (because the utility of adopting $\underline{I} = k_I$ declines).

These substantive insights about how environmental factors affect the relationship between instability and delegation can be summarized as follows:

A given level of instability r becomes more problematic for incumbent ministers as:

- the agent's cost of policy change increases; or
- the status quo moves away from the incumbent's ideal policy.

A given level of instability r becomes less problematic for incumbent ministers as:

- the agent's preferred policy moves *away* from that of the incumbent's;
- the incumbent's cost of intervening increases; or
- the agent's sanctions increase.

[4]As A moves away from I, the value to the incumbent of the agent choosing A declines. But this same decline in utility would occur if $r = 0$, and we are interested in the conditions that lead the agent to adopt policies that are worse than those that would be adopted when $r = 0$.

Conclusion

We use a formal model to examine how cabinet instability affects delegation. In our model, a variable r measures bureaucratic uncertainty about the future of an incumbent minister. This variable not only reflects a common circumstance in parliamentary democracy, but also represents the pressures on any agent who is uncertain about the future of their principal (e.g., an American bureaucrat who is uncertain about who will assume the chairmanship of a Congressional oversight committee). As a result, our model complements existing theoretical work as most delegation models do not include cabinet stability as a parameter—some posit stable principals explicitly, while most ignore the implications of ministerial turnover altogether.

Our results address substantive concerns about the consequences of delegation in democracies with cabinet instability. They suggest that while cabinet instability can affect the ability of cabinet ministers to control civil servants, the logic of these difficulties is different than described in either previous models of political control or empirical studies of parliamentary delegation. In the extant theoretical literature, informational problems of all stripes pose problems for political principals because they give agents who disagree with their principal's policy interests an opportunity to work against those interests. In much of the comparative politics literature, the prevailing wisdom is essentially the same—instability transfers power to bureaucrats.

In contrast to previous models of delegation, our analysis suggests that even without the information problems that principals often face (such as moral hazard), an agent's uncertainty about ministerial turnover can create difficulties for ministers. Moreover, and unlike in previous models, we find that the incumbent suffers most when the agent shares her policy preferences. Indeed, when the prospect of ministerial turnover is sufficiently large, an agent who otherwise would want to implement precisely the policy desired by the minister faces weakened incentives for doing so. Such an agent faces not only the cost of implementing a preferred policy, but also the potential cost of undoing it if replacement occurs. If an agent wants to avoid paying twice to accomplish nothing, then he loses the incentive to be faithful to even his own policy wishes.

Future theoretical research should examine how cabinet instability affects delegation when other informational problems are present. Recall that we derived results about instability and delegation efficiently by isolating the effect of r from other types of uncertainty. So our model assumes, in effect, that the replacement minister is as informed about bureaucratic behavior as the incumbent minister. While such assumptions simplify the model, it ignores the fact that new ministers often lack the knowledge and experience of their predecessors. A useful extension would be to explore how cabinet instability affects delegation when the replacement minister lacks her predecessor's knowledge.

In contrast to previous assertions in the comparative politics literature, we also find a wide range of circumstances under which the presence of instability does not affect the utility of delegating. This is particularly true when the status quo is very close to the incumbent's preferred policy, when the prospective minister has preferences similar to the incumbent's, and when the costs of intervention are very large. In addition, our model suggests that the relevant threshold of instability—i.e., the value of r that creates problems for the incumbent—is contingent on other factors (also see Huber 2000). Specifically, our model indicates that agents who share an incumbent's policy interests face increasing disincentives to act on the incumbent's behalf when the cost of moving policy is large and when the status quo is far from the incumbent's ideal policy. Thus, as the cost of moving policy increases or as the status quo moves away from the incumbent, the level of instability needed to cause problems will decrease. Similarly, the level of instability necessary to cause problems for the incumbent increases as the costs to bureaucrats of being sanctioned increase.

These findings suggest that the problems created by a particular level of cabinet instability can differ across countries. Consider two hypothetical countries, A and B, where civil servants believe that the probability of the principal being replaced before they are held accountable for their actions is one-half. Perhaps everything is the same in these countries except that only one permits ministers to fire civil servants. In other words, the size of the sanction for noncompliant agents is different in the two countries. If country A permits such firings and country B does not, then one could safely assume that s is higher in A than B. Given the important role that s plays in many of our results, the fact that $r = .5$ may be sufficient to cause problems in country B but not country A.

This example highlights one important pathway for future research. In particular, existing research in comparative politics has done little to investigate factors that might affect a principal's cost of intervening, an agent's cost of moving policy, or the ways in which principals can sanction agents. One can easily identify measures of these factors such as the existence of government auditing agencies, the types of informational resources available to civil servants, or rules for hiring, demoting or firing civil servants. Our findings clarify the importance of incorporating such factors into systematic, comparative analyses of bureaucratic performance.

Manuscript submitted February 24, 2000.
Final manuscript received August 3, 2000.

Appendix

To derive conclusions about behavior and outcomes from the model, we use subgame-perfect Nash equilibrium. To simplify the presentation, we invoke a simple tie-breaking rule. We state the results as if the agent chooses the strategy closest to Q when multiple strategies generate equivalent expected utilities. This tiebreaker, while simplifying the presentation of our results, does not affect their substance.

In what follows, let $U_I(M_I|x)$ be the incumbent's utility from intervention strategy M_I given agent strategy x and let $U_R(M_R|y)$ have an analogous definition for the replacement. Note that $U_I(M_I = 1) = -k_I$, $U_I(M_I = 0|x) = -|I - x|$, $U_R(M_R = 1) = -k_R$, and $U_R(M_R = 0) = -|R - y|$.

Let $EU(x,y;M_I^*(x),M_R^*(y),r,Q,A,\alpha,s)$ be the agent's expected utility from the pair of actions, x, y. From Lemma 1, we know that the decision to intervene implies that the agent (a) did not implement the principal's ideal policy, (b) will be forced to do so, and (c) will be sanctioned accordingly. Thus,

$$\begin{aligned}&EU(x,y;M_I^*(x),M_R^*(y),r,Q,A,\alpha,s) = \\ &-(1-r)\Big[\alpha|Q-x|+M_I^*(x)\big[A+\alpha x+s\big]+(1-M_I^*(x))\big[|A-x|\big]\Big] \\ &-r\Big[\alpha|Q-x|+\alpha|x-y|+M_R^*(y)\big(\alpha|1-y|+|1-A|+s\big)+(1-M_R^*(y))|A-y|\Big]\end{aligned} \quad [1]$$

Where it creates no confusion, we will write $EU(x)$ to refer to the agent's expected utility of x, given the straightforward adjustment strategy that follows from Lemmas 2 and 3.

Proposition 1. The agent's strategy (and, thus, the incumbent's utility if she is not replaced) is unaffected by the level of cabinet instability (i.e., the value of r) when either of two conditions is met:

(i) $\underline{R} \leq A \leq \underline{I}$, or
(ii) $Q < \min(A, \underline{I})$

Proof. Condition (i) is straightforward: the incumbent and her potential replacement both face sufficiently large intervention costs that the (centrist) agent can implement his ideal policy without fear of sanction regardless of who occupies the minister's office. This is the same policy he would adopt if $r = 0$.

To establish condition (ii) we consider four mutually exhaustive cases. In the first two cases, $\underline{I} \leq A$, and as in the case where $r = 0$, $x^* = \underline{I}$ and $M_I^* = 0$ for all r.

Case 1: $Q \le \underline{I} \le \min(A, \underline{R})$. As noted, with $r = 0$, $x^* = \underline{I}$ and $M_I^* = 0$. We show that in case 1, $x^* = \underline{I}$, $y^* = \max(A, \underline{R})$ and $M_I^* = M_R^* = 0$. We prove the proposition for $A \ge \underline{R}$. The case $\underline{R} > A$ follows identical logic with $\underline{R}$ replacing A in the equations, and Lemma 3 replacing Lemma 2 as a reference.

From Lemma 2, $y^* = A$, and thus from Lemma 1 (for $A > \underline{R}$), $M_R^*(y = A) = 0$. It remains to show that $EU(x = \underline{I}) > EU(x \neq \underline{I})$ and $M_I^*(\underline{I}) = 0$ in equilibrium.

We first show that $M_I^*(\underline{I}) = 0$ implies $EU(x = \underline{I}) > EU(x < \underline{I})$. First note that $x = Q$ strictly dominates $x < Q$: $EU(x \in [0, Q]) = -[(1-r)(\alpha(Q-x) + A - x)] - [r(\alpha(Q-x) + \alpha(A-x))]$ and $\frac{\partial EU(x \in [0, Q])}{\partial x} = -(1-r)(-\alpha - 1) + 2r\alpha > 0$. Therefore, $EU(x = Q) > EU(x \in [0, Q))$. Similarly, $EU(x \in [Q, \underline{I}]) = -[(1-r)(\alpha(x-Q) + A - x)] - [r(\alpha(x-Q) + \alpha(A-x))]$ and $\frac{\partial EU(x \in [Q, \underline{I}])}{\partial x} = -(1-r)[\alpha - 1] > 0$. Therefore, $EU(x = \underline{I}) > EU(x \in [Q, \underline{I}))$ and, by transitivity, $EU(x = \underline{I}) > EU(x \in [0, \underline{I}))$.

We now show that $M_I^*(\underline{I}) = 0$ implies $EU(x = \underline{I}) > EU(x > \underline{I})$. Note $EU(x \in (\underline{I}, A]) = -(1-r)[\alpha(x-Q) + \alpha x + s + A] - r(\alpha(A-Q)) > EU(x \in (A, 1]) = -(1-r)[\alpha(x-Q) + \alpha x + s + A] - r(\alpha(x-Q) + \alpha(x-A))$. But $EU(x = \underline{I}) = -(1-r)(\alpha(\underline{I}-Q) + A - \underline{I}) - r(\alpha(A-Q)) > EU(x \in (\underline{I}, A]) = -(1-r)[\alpha(x-Q) + \alpha x + s + A] - r(\alpha(A-Q))$. Thus, the agent prefers implementing $\underline{I}$ to implementing any $x > \underline{I}$.

Finally, we establish that $M_I^*(\underline{I}) = 0$ in equilibrium. Suppose that $M_I^*(\underline{I}) = 1$. Then the agent has an incentive to choose some $x^* = \underline{I} - \varepsilon$ so that (by Lemma 1) $M_I^*(x^*) = 0$. The agent maximizes utility by making ε as small as possible, leaving x undefined. Thus, equilibrium requires $\varepsilon = 0$ and $M_I^*(\underline{I}) = 0$.

Case 2: $\underline{R} \le \underline{I} \le A$ and $Q \le \underline{I}$. The logic in this case parallels that of condition (i): the agent can adopt $x^* = \underline{I}$ without fear of sanction from the incumbent. If replacement occurs, then, as per Lemma 2, the agent adjusts to her ideal policy.

In the final two cases, $A \le \underline{I}$, and thus as in the case where $r = 0$, $x^* = A$ and $M_I^* = 0$ for all r.

Case 3: $Q \le A \le \underline{I} \le \underline{R}$. We show that in this case, $x^* = A$, $y^* = \underline{R}$, $M_I^* = M_R^* = 0$.

From Lemma 3, $y^* = \underline{R}$ and $M_R^*(\underline{R}) = 0$. From Lemma 1, $M_I^*(A) = 0$. We thus need only establish that $x^* = A$.

First note that $\frac{\partial EU[x \in [0,Q]]}{\partial x} = -(1-r)(-\alpha - 1) + 2r\alpha > 0$ (implying $EU(x = Q) > EU(x \in [0, Q))$ and $\frac{\partial EU[x \in [Q,A]]}{\partial x} = -(1-r)(\alpha - 1) > 0$, which implies $EU(x = A) > EU(x \in [Q, A))$. By transitivity, $EU(x = A) > EU(x \in [0, A))$. Similarly, $\frac{\partial EU[x \in [A,\underline{I})]}{\partial x} = -(1-r)[\alpha + 1] < 0$, which implies $EU(x = A) > EU(x \in (A, \underline{I}))$.

Next we show that $EU(x = A)$ is greater than $EU(x \in (\underline{I}, 1])$. In the case described, $EU(x = A) = -(1-r)[\alpha(A-Q)] - r[\alpha(\underline{R}-Q) + \underline{R} - A]$, $EU(x \in (\underline{I}, \underline{R}]) = -(1-r)[\alpha(x-Q) + s + \alpha x + A] - r[\alpha(\underline{R}-Q) + \underline{R} - A]$, and $EU(x \in (\underline{R}, 1]) = -(1-r)[\alpha(x-Q) + s + \alpha x + A] - r[\alpha(x-Q) + \alpha(x-\underline{R}) + \underline{R} - A]$. Since $x \in (\underline{I}, 1]$ implies $x > A$, and given $\alpha \in (0,1)$ and $r \in (0, 1)$, then $-(1-r)[\alpha(A-Q)] > -(1-r)[\alpha(x-Q)]$. Therefore, $EU(x = A) > EU(x \in (\underline{I}, \underline{R}])$. The same inequality and the fact that $-r[\alpha(\underline{R}-Q)] > -r[\alpha(x-Q) + \alpha(x-\underline{R})]$ for $x > \underline{R}$ implies $EU(x = A) > EU(x \in (\underline{R}, 1])$. Thus, $EU(x = \underline{A}) > EU(x \in (\underline{I}, 1])$.

Finally consider $x = \underline{I}$. If $M_I(\underline{I}) = 0$, then the above argument applies: $\frac{\partial EU[x \in [A,\underline{I}]]}{\partial x} = -(1-r)(\alpha + 1) < 0$, and the agent prefers A to $\underline{I}$. If $M_I(\underline{I}) = 1$, then we can substitute $x \in [\underline{I}, \underline{R}]$ for $x \in (\underline{I}, \underline{R}]$ in the preceding paragraph, leading to the conclusion that $EU(x = \underline{A}) > EU(\underline{I})$ for any response by the incumbent minister. It therefore follows that $EU(x = A) > EU(x \in [0,A) \cup (A,1])$

Case 4: $Q \le A \le \underline{R} \le \underline{I}$. The logic of this case parallels that of condition (i): the agent can adopt her ideal policy initially ($x^* = A$) without fear of sanction from the incumbent. If replacement occurs, then, as per Lemma 3, the agent adjusts to $\underline{R}$. *QED.*

Proposition 2. If conditions (i) and (ii) of Proposition 1 are not satisfied and the agent and incumbent do not have similar policy preferences ($A \ge \underline{I}$), then the level of cabinet instability (value of r) does not affect the incumbent's utility from delegation if she survives, but a large value of r can cause the incumbent to intervene.

Proof. To see that r does not affect the incumbent's utility from delegation, note that by Lemma 1, the worst utility that the incumbent can obtain in equilibrium is $-k_I$, which occurs either because the agent implements $\underline{I}$ or because the agent chooses $x^* > \underline{I}$ and the incumbent intervenes. If $r = 0$ and $A \ge \underline{I}$ then the incumbent's utility in equilibrium is this minimal value, $-k_I$ because $x^* = \underline{I}$ and no intervention occurs. We show this is the same utility the incumbent receives if $r > 0$.

When the conditions of proposition 2 are satisfied, $A \ge \underline{I}$ and $Q \ge \underline{I}$. Given these assumptions about A and Q, if the agent prefers adopting $x^* = \underline{I}$ to adopting any $x > \underline{I}$, then in equilibrium this policy must not induce intervention by the incumbent. Otherwise, the agent would have an incentive to choose $\max(x < \underline{I})$, which would not elicit a sanction. Then the agent has an incentive to choose some $x^* = \underline{I} - \varepsilon$ so that (by Lemma 1) $M_I^*(x^*) = 0$. The agent maximizes utility by making ε as small as possible, leaving x undefined. Thus, equilibrium requires $\varepsilon = 0$ and $M_I^*(\underline{I}) = 0$. Given $M_I^*(\underline{I}) = 0$, $x = \underline{I}$ strictly dominates $x < \underline{I}$ and $x > \underline{I}$. Therefore, if Equation [1] implies that the agent gains greater utility from

$x^*=\underline{I}$ than from any $x>\underline{I}$, the agent chooses this policy and the incumbent does not intervene. If Equation [1] implies that the agent prefers adopting some $x^*>\underline{I}$, then by Lemma 1, in equilibrium the incumbent intervenes if she survives. In either case, the incumbent's utility is $-k_I$, the same utility she would obtain if $r=0$.

To see that a sufficiently large r can lead to increased intervention, note that intervention does not occur when $r=0$. Thus, an example where intervention occurs for large r is sufficient to establish the claim. Assume $\underline{I}<A<\underline{R}$ and $\underline{I}<Q<\underline{R}$, then $y^*=\underline{R}$, $M_R^*=0$. Given $M_I^*(\underline{I})=0$, the only possible policies that the agent can implement in equilibrium are $\underline{I}$ and Q:

(*i*) $EU(x\in[0,\underline{I}])=-(1-r)[\alpha(Q-x)+A-x]-r[\alpha(Q-x)+\alpha(\underline{R}-x)+\underline{R}-A]$ and $\frac{\partial(EU(x\in[0,\underline{I}]}{\partial x}=-(1-r)(-\alpha-1)+2r\alpha>0$. Therefore, $EU(x=\underline{I})>EU(x\in[0,\underline{I}))$.

(ii) $EU(x\in(\underline{I},Q])=-(1-r)[\alpha Q+s+A]-r[\alpha(Q-x)+\alpha(\underline{R}-x)+\underline{R}-A]$ and $\frac{\partial(EU(x\in(\underline{I},Q]]}{\partial x}=2r\alpha>0$. Therefore, $EU(x=Q)>EU(x\in(\underline{I},Q))$.

(iii) $EU(x\in[Q,\underline{R}))=-(1-r)[\alpha(x-Q)+\alpha x+s+A]-r[\alpha(\underline{R}-Q)+\underline{R}-A]$ and $\frac{\partial(EU(x\in[Q,\underline{R}]}{\partial x}=2\alpha(r-1)<0$. Therefore, $EU(x=Q)>EU(x\in(Q,\underline{R}])$.

(iv) $EU(x\in[\underline{R},1])=-(1-r)[\alpha(x-Q)+\alpha x+s+A]-r[\alpha(x-Q)+\alpha(x-\underline{R})+\underline{R}-A]<EU(x=Q)$. Therefore, $EU(x=Q)=-(1-r)[\alpha Q+s+A]-r[\alpha(\underline{R}-Q)+\underline{R}-A]>EU(x\in(Q,1])$ and $x^*\in\{\underline{I},Q\}$.

Solving for r, $EU(x=Q)>EU(x=\underline{I})=-(1-r)[\alpha(Q-\underline{I})+A-\underline{I}]-r[\alpha(Q-\underline{I})+\alpha(\underline{R}-\underline{I})+\underline{R}-A]$ only if $r>\frac{s+(1+\alpha)k_I}{s+(1-\alpha)k_I+2\alpha Q}$. Thus, $x^*=Q>\underline{I}$ and intervention occurs if $r\geq\frac{s+(1+\alpha)k_I}{s+(1-\alpha)k_I+2\alpha Q}$).

The logic for the general case follows similar logic. Since $Q>\underline{I}$, the agent avoids a sanction from the incumbent by moving policy from Q to $\underline{I}<Q$. If, however, replacement then occurs, the replacement will have to pay an additional cost to move policy back beyond Q to $\underline{R}$ or A (depending on whether A is greater than $\underline{R}$). The agent makes the initial policy move only if r is sufficiently low. *QED*

Proposition 3. If conditions (i) and (ii) in Proposition 1 are not satisfied and the agent and incumbent have similar policy preferences ($A<\underline{I}$), then a high level of cabinet instability (large value of r) negatively affects the incumbent's utility if she survives.

Proof. If $r=0$ and $A\leq\underline{I}$ then $x^*=A$, the incumbent does not intervene, and the incumbent's utility is $-A$. We prove the claim by examining the three possible cases that exist when $A\leq\underline{I}$ and conditions (i) and (ii) in Proposition 1 are not satisfied. For each, we show that when $r>0$, the incumbent can experience the same utility level only if r is sufficiently small. When r becomes too large, the agent adopts a policy that forces the incumbent to intervene, yielding her utility $-k_I<-A$.

Case 1: If $\underline{I}<\underline{R}$, $\max(A,Q)\leq\underline{I}$, and $A<Q$ then $y^*=\underline{R}$ and $M_R^*=0$ and

(A) $x^*=A$ and $M_I^*=0$ only if

$$r<\min\left(\frac{1-\alpha}{1+\alpha},1-\frac{2\alpha(Q-A)}{2\alpha\underline{I}+(1-\alpha)A+s}\right)$$

(B) $x^*=\underline{I}$ and $M_I^*=1$ if $A<Q$ and

$r\in\left[1-\frac{2\alpha(Q-A)}{2\alpha\underline{I}+(1-\alpha)A+s},\frac{1-\alpha}{1+\alpha}\right)$, or if $A<Q$, $r\geq\frac{1-\alpha}{1+\alpha}$, and $s<(1+\alpha)Q-2A-2\alpha k_I$

(C) $x^*=Q$ and $M_I^*=0$ if $A<Q$, $r\geq\frac{1-\alpha}{1+\alpha}$, and $s\geq(1+\alpha)Q-2A-2\alpha k_I$.

From Lemma 3, $y^*=\underline{R}$ and thus $M_R^*=0$.

First we show that if $x^*<\underline{I}$ then either $x^*=A$ or $x^*=Q$. Here, $EU(x\in[0,A])=-(1-r)[\alpha(Q-x)+A-x]-r[\alpha(Q-x)+\alpha(\underline{R}-x)+\underline{R}-A]$ and $\frac{\partial EU(x\in[0,A])}{x}=1-r+A(1+r)>0$. Therefore, $EU(x=A)>EU(x\in[0,A))$. Furthermore, $EU(x\in[Q,\underline{I}))=-(1-r)[\alpha(x-Q)+x-A]-r[\alpha(\underline{R}-Q)+\underline{R}-A]$ and $\frac{\partial EU(x\in[Q,\underline{I}])}{x}=-(1-r)(\alpha+1)<0$. Therefore, $EU(x=Q)>EU(x\in(Q,\underline{I}))$. Moreover, $EU(x\in[A,Q])=-(1-r)[\alpha(Q-x)+x-A]-r[\alpha(Q-x)+\alpha(\underline{R}-x)+\underline{R}-A]$ and $\frac{\partial EU(x\in[A,Q])}{x}=(1-r)(\alpha-1)+2\alpha r$. Therefore, and by transitivity, $EU(x=A)>EU(x\in[0,A)\cup(A,\underline{I}))$ when $r<\frac{1-\alpha}{1+\alpha}$, $EU(x=Q)>EU(x\in[0,Q)\cup(Q,\underline{I}))$ when $r>\frac{1-\alpha}{1+\alpha}$, and $EU(x\in[A,Q])>EU(x\in[0,A)\cup(Q,\underline{I}))$ when $r=\frac{1-\alpha}{1+\alpha}$ (in which case we invoke the tie–breaking rule to deduce that the agent will choose Q). Thus, if $x^*<\underline{I}$ then either $x^*=A$ or $x^*=Q$.

Next we show that if $x^*\geq\underline{I}$ then $x^*=\underline{I}$ and $M_I^*(\underline{I})=1$. Note that $EU(x\in(\underline{I},\underline{R}])=-(1-r)[\alpha(x-Q)+s+\alpha x+A]-r[\alpha(\underline{R}-Q)+\underline{R}-A]=EU(\underline{I})$ if $M_I^*(\underline{I})=1$. In addition, $EU(x\in(\underline{R},1])=-(1-r)[\alpha(x-Q)+s+\alpha x+A]-r[\alpha(x-Q)+\alpha(x-\underline{R})+\underline{R}-A]$. Since $\alpha\in(0,1)$, $r\in(0,1)$, and $-r[\alpha(\underline{R}-Q)]\geq-r[\alpha|x-Q|+\alpha|x-\underline{R}|]$, it must be true that $EU(x\in(\underline{I},\underline{R}])>EU(x\in(\underline{R},1])$. But $\frac{\partial EU(x\in(\underline{I},\underline{R}])}{\partial x}$

$= -(1-r)2\alpha < 0$. Thus, if $M_I^*(\underline{I}) = 0$ (which, from the previous paragraph, implies that $EU(Q) > EU(\underline{I})$), the optimal $x \geq \underline{I}$ is undefined (because if $x^* \geq \underline{I}$ the agent wants to choose the smallest x that is greater than $\underline{I}$). Thus, if $x^* \geq \underline{I}$ then it must be true that $x^* = \underline{I}$ and $M_I^*(\underline{I}) = 1$.

It remains to determine the conditions under which the agent will choose from the only three possible optimal policies: A, Q, or $\underline{I}$. Taking the tie-breaking rule into account, there are two subcases to consider: $r < \frac{1-\alpha}{1+\alpha}$ and $r \geq \frac{1-\alpha}{1+\alpha}$.

Subcase a: $r < \frac{1-\alpha}{1+\alpha}$. In this case, $x^* \in \{A, \underline{I}\}$. Since $M_I^*(\underline{I}) = 1$, $EU(x = \underline{I}) = -(1-r)[\alpha(\underline{I} - Q) + s + \alpha\underline{I} + A] - r[\alpha(\underline{R} - Q) + \underline{R} - A]$. Since $EU(x = A) = -(1-r)[\alpha(Q - A)] - r[\alpha(Q - A) + \alpha(\underline{R} - A) + \underline{R} - A]$. $EU(A) > EU(\underline{I})$ requires

$$r < \frac{[2\alpha(\underline{I} - Q) + s + ((1+\alpha)A)]}{[2\alpha\underline{I} + ((1-\alpha)A) + s]} = 1 - \frac{2\alpha(Q-A)}{2\alpha\underline{I} + (1-\alpha)A + s}.$$

Thus, if $r \in \left[1 - \frac{2\alpha(Q-A)}{2\alpha\underline{I} + (1-\alpha)A + s}, \frac{1-\alpha}{1+\alpha}\right)$ then $x^* = \underline{I}$ and $M_I^* = 1$.

Subcase b: $r \geq \frac{1-\alpha}{1+\alpha}$. Above, we established that $r \geq \frac{1-\alpha}{1+\alpha}$ implies $x^* \in \{Q, \underline{I}\}$. Canceling identical terms in the expected utility functions gives $EU(Q) > EU(\underline{I})$ if $\alpha(\underline{I} - Q) + \alpha\underline{I} + s + A > Q - A$, which is true only if $s > (1+\alpha)Q - 2A - 2\alpha\underline{I}$. Therefore, for this subcase and given the tie-breaking rule, the agent chooses $x = Q$ if $s \geq (1+\alpha)Q - 2A - 2\alpha k_I$ and chooses $x = \underline{I}$ otherwise.

Case 2: $\underline{I} < \underline{R}$ and $Q > \underline{I} \geq A$ then

(A) $x^* = A$, $M_I^* = M_R^* = 0$, and $y^* = \underline{R}$ if

$$r < \min\left(\frac{s + ((1+\alpha)A)}{(2\alpha Q + s + ((1-\alpha)A)}, \frac{1-\alpha}{1+\alpha}\right).$$

(B) $x^* = \underline{I}$, $M_I^* = 0$, $y^* = \underline{R}$, and $M_R^* = 0$

i. $(1-\alpha)/(1+\alpha) \leq r < \frac{s + ((1+\alpha)A)}{s + ((1-\alpha)A) + 2\alpha Q}$ or

ii. $r > \max\left(\frac{s + ((1+\alpha)A)}{(2\alpha Q + s + ((1-\alpha)A)}, \frac{1-\alpha}{1+\alpha}\right)$ and any of the following:

(a) $s < \min[(1-\alpha)k_I - 2A, (1+\alpha)k_I - 2\alpha Q - 2A]$

(b) $s > (1-\alpha)k_I - 2A$ and

$$r < \frac{s + k_I(\alpha - 1) + 2A}{2\alpha Q + s - k_I(1+\alpha) + 2A}$$

(C) $x^* = Q$, $M_I^* = 1$, $y^* = \underline{R}$ and $M_R^* = 0$ if:

i. $\frac{s + (1+\alpha)A}{s + (1-\alpha)A + 2\alpha Q} \leq r < \frac{1-\alpha}{1+\alpha}$ or

ii. $r > \max\left(\frac{s + (1+\alpha)A}{(2\alpha Q + s + (1-\alpha)A}, \frac{1-\alpha}{1+\alpha}\right)$ and any of the following:

(a) $(1-\alpha)k_I - 2A \geq s \geq (1+\alpha)k_I - 2\alpha Q - 2A$

(b) $s > (1-\alpha)k_I - 2A$ and

$$r \geq \frac{s + k_I(\alpha - 1) + 2A}{2\alpha Q + s - k_I(1+\alpha) + 2A}$$

From Lemma 3, $y^* = \underline{R}$ and $M_R^*(\underline{R}) = 0$.

First we show (by process of elimination) that as in case 1, the only possible policies implemented by the agent are $x^* \in \{A, \underline{I}, Q\}$.

(i) The agent will never implement $x > Q$. We will simply paraphrase the logic of the previous proof for this simple case. Given $A < \underline{I}$, it is obvious that the agent will not choose $x > Q$. The only benefit of doing so would be to prevent the replacement from intervening, but (from Lemma 3) we know that such prevention can be accomplished at the adjustment stage. Therefore, the agent gains no advantage from choosing $x > Q$ in the initial stage.

(ii) The agent will not choose $x^* = \underline{I}$ unless $M_I^*(\underline{I}) = 0$ (i.e., $M_I^*(\underline{I}) = 1$ is impossible in equilibrium). Suppose, to the contrary, that $M_I^*(\underline{I}) = 1$. Then $EU(x \in [\underline{I}, Q]) = -(1-r)[\alpha Q + s + A] - r[\alpha(Q - x) + \alpha(\underline{R} - x) + \underline{R} - A]$, and $\frac{\partial EU[x \in [\underline{I}, Q]]}{\partial x} = 2\alpha r > 0$, which implies that the agent prefers implementing Q over implementing $\underline{I}$. Thus, if $x^* = \underline{I}$ then it cannot be the case that $M_I^*(\underline{I}) = 1$.

(iii) The agent will never implement $x^* \in (\underline{I}, Q)$. As noted in (ii), $EU(x \in (\underline{I}, Q]) = -(1-r)[\alpha Q + s + A] - r[\alpha(Q - x) + \alpha(\underline{R} - x) + \underline{R} - A]$, and $\frac{\partial EU[x \in (\underline{I}, Q]]}{\partial x} = 2\alpha r > 0$. Therefore, $EU(x = Q) > EU(x \in (\underline{I}, Q))$.

(iv) The agent will never implement $x \in (A, \underline{I})$. As noted in (ii), $M_I^*(\underline{I}) = 0$. Thus $EU(x \in [A, \underline{I}]) = -(1-r)[\alpha(x - Q) + x - A] - r[\alpha(Q - x) + \alpha(\underline{R} - x) + \underline{R} - A]$ and $\frac{\partial EU\left[x \in [A, \underline{I}]\right]}{\partial x} = (1-r)(\alpha - 1) + 2\alpha r$. When $r < \frac{1-\alpha}{1+\alpha}$, this partial derivative is negative and $EU(x = A) > EU(x \in (A, \underline{I}]$. When $r \geq \frac{1-\alpha}{1+\alpha}$, this partial derivative is positive, and $EU(x = \underline{I}) > EU(x \in [A, \underline{I}))$.

(v) The agent will never implement $x \in [0, A)$. Here, $EU(x \in [0, A]) = -(1-r)[\alpha(Q - x) + A - x] - r[\alpha(Q - x) + \alpha(\underline{R} - x) + \underline{R} - A]$ and $\frac{\partial EU\left[x \in [0, A]\right]}{\partial x} = -(1-r)(-\alpha - 1) - 2r\alpha > 0$. Therefore, $EU(x = A) > EU(x \in [0, A))$.

By (i) through (v), the only possible equilibrium polices that the agent can implement are $x^* \in \{A, \underline{I}, Q\}$.

Second, we consider the circumstances under which implementing A, $\underline{I}$, or Q maximizes $EU(x)$.

We have already established that $EU(A) > EU(\underline{I})$ only if $r < \frac{1-\alpha}{1+\alpha}$ and $EU(A) > EU(Q)$ only if

$$r < \frac{s+(1+\alpha)A}{s+(1-\alpha)A+2\alpha Q}.$$

Thus, $x^* = A$ if

$$r < \min\left(\frac{s+(1+\alpha)A}{2\alpha Q+s+(1-\alpha)A}, \frac{1-\alpha}{1+\alpha}\right).$$

By Lemma 1, if $x^* = A$ then $M_I^* = 0$. This establishes part A of Case 2.

If $r \geq \min\left(\frac{s+(1+\alpha)A}{2\alpha Q+s+(1-\alpha)A}, \frac{1-\alpha}{1+\alpha}\right)$ then $x^* \in \{\underline{I}, Q\}$.

Transitivity implies that if $\frac{1-\alpha}{1+\alpha} \leq r < \frac{s+(1+\alpha)A}{s+(1-\alpha)A+2\alpha Q}$ then $EU(\underline{I}) \geq EU(A) > EU(Q)$ (establishing part $B(i)$), and if $\frac{s+(1+\alpha)A}{s+(1-\alpha)A+2\alpha Q} \leq r < \frac{1-\alpha}{1+\alpha}$ then $EU(Q) \geq EU(A) > EU(\underline{I})$ (establishing part $C(i)$).

It remains to determine $x^* \in \{\underline{I}, Q\}$ for the case $r > \max\left(\frac{s+(1+\alpha)A}{(2\alpha Q+s+(1-\alpha)A}, \frac{1-\alpha}{1+\alpha}\right)$.

Since $EU(x = \underline{I}) = -(1-r)(\alpha(Q-k_I) + k_I - A) - r[\alpha(Q - k_I) + \alpha(\underline{R} - k_I) + \underline{R} - A]$, it follows that $EU(Q) \geq EU(\underline{I})$ if $r[2\alpha Q + s + 2A - k_I(1+\alpha)] \geq s + 2A + k_I(\alpha - 1)$. Note that $k_I < Q$, which follows from the $\underline{I} < Q$ assumption of this proposition, implies $s + 2A + k_I(\alpha - 1) < 2\alpha Q + s + 2A - k_I(1+\alpha)$. We can use this inequality to establish two collectively exhaustive subcases that identify the agent's equilibrium choice from the set choice $\{\underline{I}, Q\}$ when

$$r > \max\left(\frac{s+(1+\alpha)A}{(2\alpha Q+s+(1-\alpha)A}, \frac{1-\alpha}{1+\alpha}\right).$$

Subcase a: $s \leq (1-\alpha)k_I - 2A$

First we show that $s < \min[(1+\alpha)k_I - 2\alpha Q - 2A, (1-\alpha)k_I - 2A]$ implies then $x^* = \underline{I}$. If $s < \min[(1+\alpha)k_I - 2\alpha Q - 2A, (1-\alpha)k_I - 2A]$, then $2\alpha Q + s + 2A - k_I(1+\alpha) < 0$ and $s + 2A + k_I(\alpha - 1) < 0$. Therefore, $EU(x = Q) \geq EU(x = \underline{I})$ if $r \leq \frac{s+k_I(\alpha-1)+2A}{2\alpha Q+s-k_I(1+\alpha)+2A}$. However, $r > (1-\alpha)/(1+\alpha)$, by definition of the case. To satisfy both inequalities on r requires $s > (1-\alpha)Q - 2A$. However, $s < (1-\alpha)k - 2A$ by the assumption of this subcase and $Q > k_I$ by the assumption of the proposition. Therefore, $s > (1-\alpha)Q - 2A$ is a contradiction, implying $EU(\underline{I}) > EU(Q)$ (and establishing part $B(ii)(a)$).

Next we show that if $s \leq (1-\alpha)k_I - 2A$ and $s \geq (1+\alpha)k_I - 2\alpha Q - 2A$ implies $x^* = Q$. Given $s + 2A + k_I(\alpha - 1) < 2\alpha Q + s + 2A - k_I(1+\alpha)$, there are three ways to satisfy $s \leq (1-\alpha)k_I - 2A$ and $s \geq (1+\alpha)k_I - 2\alpha Q - 2A$:

(i) $s = (1-\alpha)k_I - 2A$: This implies $s + 2A + k_I(\alpha - 1) = 0$, and since $s + 2A + k_I(\alpha - 1) < 2\alpha Q + s + 2A - k_I(1+\alpha)$, it follows that $r[2\alpha Q + s + 2A - k_I(1+\alpha)] > s + 2A + k_I(\alpha - 1) = 0$. Thus, $s = (1-\alpha)k_I - 2A$ implies $EU(x = Q) > EU(x = \underline{I})$.

(ii) $(1-\alpha)k_I - 2A > s > (1+\alpha)k_I - 2A - 2\alpha Q$, (which requires $s < (1-\alpha)Q - 2A$). Then $2\alpha Q + s + 2A - k_I(1+\alpha) > 0$ and $s + 2A + k_I(\alpha - 1) < 0$, which implies $EU(x = Q) \geq EU(x = \underline{I})$.

(iii) If $(1-\alpha)k_I - 2A > s$ and $s = (1+\alpha)k_I - 2\alpha Q - s - 2A$, then $s + 2A + k_I(\alpha - 1) < 0 = 2\alpha Q + s + 2A - k_I(1+\alpha)$. Since $r \in (0,1)$, $EU(x = Q) \geq EU(x = \underline{I})$.

Collectively, (i) through (iii) imply that if $r > \max\left(\frac{s+(1+\alpha)A}{(2\alpha Q+s+(1-\alpha)A}, \frac{1-\alpha}{1+\alpha}\right)$ and $s \leq (1-\alpha)k_I - 2A$ and $s \geq (1+\alpha)k_I - 2\alpha Q - 2A$ then $EU(x = Q) \geq EU(x = \underline{I})$ (establishing part $C(ii)(a)$).

Subcase b: $s > (1-\alpha)k_I - 2A$

If $s > (1-\alpha)k_I - 2A$, then $0 < s + 2A + k_I(\alpha - 1) < 2\alpha Q + s + 2A - k_I(1+\alpha)$. Therefore, $EU(x = Q) \geq EU(x = \underline{I})$ if $r \geq \frac{s+k_I(\alpha-1)+2A}{2\alpha Q+s-k_I(1+\alpha)+2A}$ (establishing part $C(ii)(b)$) and $EU(x = \underline{I}) > EU(x = Q)$ if this inequality does not hold (establishing part $B(ii)(b)$).

Case 3: $A \leq \underline{R} \leq \underline{I}$ and $A < Q$. In this case, the agent strictly prefers $x = A$ to $x < A$. In addition, if $Q \leq \underline{R}$, the agent strictly prefers $x = Q$ to $x > Q$. In this case, $EU(x \in [A,Q]) = -(1-r)(\alpha(Q-x)+x-A) - r(\alpha(Q-x)+\alpha(\underline{R}-x)+\underline{R}-A)$.

Given that $\frac{\partial EU[x \in [A,Q]]}{\partial x} = r - 1 + \alpha(1+r)$, $x^* = A$ if $r < \frac{1-\alpha}{1+\alpha}$ and $x^* = Q$ otherwise. Similarly, if $Q > \underline{R}$, the agent strictly prefers $x = A$ to $x < A$ and strictly prefers $x = \underline{R}$ to $x > \underline{R}$. In this case, $EU(x \in [A, \underline{R}])$ is exactly the same as $EU(x \in [A,Q])$ in the previous case. Thus, $x^* = A$ if $r < \frac{1-\alpha}{1+\alpha}$ and $x^* = \underline{R}$ otherwise. *QED.*

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