Delegation and Political Turnover

Greg Sasso

Bocconi University

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Abstract

We study a 2 period delegation model with an uncertain future principal. In the first stage, an incumbent principal decides whether to delegate policy making authority to an agent or make policy herself. Before the second stage there is an election, and another principal with different preferences may take power. The main result is that the incumbent can exploit the uncertainty over the future principal to extract policy surplus from the agent. This surplus makes the incumbent better off than she would be without the possibility of turnover. We also find that policy stability can increase as elections become more competitive. We then show that increased polarization between legislators has an ambiguous effect on the likelihood of delegation and on legislator welfare. Finally, as the incumbent becomes more likely to retain office, she prefers more policy conflict with the agent.

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Introduction

Consider two problems commonly faced by politicians while in office. First, they try create policies intended to outlast their time in office. However, future politicians may move or reverse policy once the previous office holder is out of power. Political turnover therefore leads to policy instability and has negative consequences for the politician.

Politicians must also sometimes delegate policy-making to other actors such as bureaucrats, states or businesses. This creates the canonical principal-agent problem. The politician gives up some authority to the expert to incentivize the expert to work effectively. The agent, however, must believe that the principal will not revoke this authority in the future.

By analyzing both problems together, however, we show that these two problems are fundamentally connected. Delegation in the face of turnover can help solve the problem of policy instability even when the agent does not expect the delegating politician to remain in power in the future.

We see examples of principals and agents anticipating this possibility of turnover all the time. In 2014, Washington and Colorado became the first two states two implement a fully legal marijuana program. In effect, the federal government delegated marijuana policy to the states. The states could only be certain they would have a Democrat controlled justice department for two years however. Therefore they would have to either be prepared to have their policies possibly overturned after the election, or create policies that both parties would accept. Both states touted the large increase in tax revenue they expected to receive from legalizing marijuana. By stressing the revenue creation, they were hoping to appeal to people who were not drug legalization proponents.

Sometimes policies are overturned anyway. For example, the Congressional Review Act (CRA) allows congress to pass legislation overturning recent agency-promulgated rules. The 115th Congress successfully used the CRA to overturn 15 Obama-era agency rules, the most since the CRA became law. Rule overturns are subject to presidential veto, and as such, agencies during the end of the Obama administration may have felt the probability of a unified Republican government was not high enough to worry about when promulgating new rules. We want a theory of delegation and turnover that can account for both of these situations.

We study the connection between delegation, political turnover, and policy stability with a model of two legislative principals and one agent. The agent could be thought of as state, a bureaucratic agency or a private firm. Policies have two components: a location and a quality.

At date one, an incumbent legislator decides whether to delegate policy making authority to an agent or to retain authority for himself. If she retains authority, the legislator chooses any policy location she wishes with zero policy quality. If she delegates authority, the agent chooses both a policy location and a policy quality.

In between periods, there is an exogenous probability the Incumbent legislator will be replaced by a Challenger. The first period policy, both the location and quality, remains in place at the beginning of date two.

The date two legislator again chooses between delegating policy making authority to an agent or retaining it for herself. If the legislator retains authority, she again chooses any policy location with zero quality or retain the first date policy location and quality. If she delegates authority, the agent can again choose any policy location and policy quality.

Unlike the legislators, the agent can develop policy quality that appeals to all players. The agent can use quality to get legislators to compromise on policy location. This then creates a dynamic linkage between the two periods. Delegation today affects the tomorrow's policy because of the agent's monopoly on quality generation. If legislators abandon the agent's policy in the second stage, the associated quality vanishes. Therefore, an increase in quality increases the cost of policy movement to the legislators.

With delegation, the possibility of turnover can make the politician better off than when she wins reelection for sure. The agent is uncertain over who will oversee the second period. This then induces the agent to implement a policy that satisfies both legislators. This policy often requires enough quality that it more than makes up for moving the policy farther from the first politician's ideal policy location and leaves the Incumbent better off policy wise than with certain reelection.

The Incumbent can use the agent's monopoly on quality generation to her advantage. By divesting herself of formal first stage policy authority, the Incumbent can rely on the agent's ability to produce a compromise policy. This compromise policy helps the first stage legislator hedge her bets in case she does not win the election and stay in power in the second stage.

Therefore, delegation acts as *insurance* in the face of turnover. This can occur in two ways. First, the agent could choose a compromise policy such that both legislators will accept in the second period. This removes the possibility of the second principal choosing her own extreme position upon winning the election.

Second, the agent could choose a policy only the Challenger would accept. This would necessarily be worse for the Incumbent than her own ideal point. This may still be worthwhile due to the dynamic incentives. By compromising in the first stage, the Incumbent ties the hands of the Challenger. This insurance benefit can be seen as self-sustaining bureaucracy. Even without a say in creating an agency, future politicians may find it beneficial to use an agency relationship created by a political rival

Delegation becomes more attractive as the Incumbent becomes more likely to lose power. Perhaps more surprisingly, increasing the preference conflict between legislators may also make delegation more likely. As the two legislators move farther apart, the Challenger's ideal point becomes increasingly unattractive for the Incumbent. Avoiding this more extreme position becomes more important relative to getting one's own ideal point. At the same time, the Incumbent's ideal point becomes less attractive to the agent. Therefore a compromise policy through delegation may become more appealing for the agent when faced with greater legislator polarization.

We then allow the Incumbent to appoint an agent. We find that as the Incumbent becomes more likely to win reelection, she prefers an agent farther away from her (the Incumbent's) own ideal point. The Incumbent can gain more from a somewhat misaligned agent willing to choose a stable policy than with a perfectly aligned agent who provides no insurance benefit.[1] These results highlight that the connection between principal-agent conflict of the legislator and agent and the policy conflict between the two legislators.

This paper speaks to the small but growing empirical literature looking at bureaucratic responses to political transitions. Most of this literature focuses on the *timing* of agency rule promulgation. For example, Potter (2017) and O'Connell (2011) both show how agencies push new rules when their ideological allies are in power and hold off on rules when ideological foes take over. This paper, on the other hand, analyzes how the *content* of agency policy should change as the chances of turnover increase. Policy content due to turnover is understudied, and this paper points towards how empirical work can move forward on this issue.

That principals and agents should be forward looking is not a new concern and has been much discussed for decades. McCubbins et al. (1987), McCubbins et al. (1989), and Calvert et al. (1989) all talk about how politicians try to insulate their policies from future bureaucratic drift. To insulate policies, principals often restrict the actions of the bureaucratic agent at the expense of policy efficiency. Horn and Shepsle (1989), Moe (1989), and Moe (2012) are concerned with political turnover of the principal or legislative drift. By delegating and implementing inefficient insulation mechanisms, the principals can often tie the hands of the future legislators and secure policy even when the current legislators lose power. This paper shows how policies themselves can insure the legislator against political turnover.The agent's ability to produce compromise policies acts as policy insulation without the addition of inefficiencies. In essence, bureaucratic drift helps counteract legislative drift.

[1]Other results in the spirit of this ally principal violation: Gailmard and Hammond (2011) shows that bicameral legislators often prefer negotiators unrepresentative of the chamber as a whole. Bubb and Warren (2014) finds that agents have more incentive to increase information acquisition when their preferences diverge from the principal. These results are similar, but the mechanisms are quite different.

De Figueiredo (2002) provides a canonical model for dynamic bureaucratic politics. In his framework, cooperation between competing parties increases as election get more competitive. However, when one party is likely to lose power, they often choose to insulate their policies against repeal even though this is inefficient. However, de Figueiredo does not model the delegation problem explicitly. Instead, the politicians can simply choose an insulated or non-insulated policy, leaving the delegation problem as a black box. Agencies have their own policy preferences (Clinton and Lewis, 2008; Clinton et al., 2012), and principals cannot freely implement their preferred policy. By explicitly modeling the agent's problem, we can show how the agent's distance from both legislators affects the benefits of delegation. We can also extend the analysis to different areas such as optimal agency appointments. Jo et al. (2017) also looks at appointments with political turnover (within a bargaining framework) and similarly finds that politicians appoint agents to insulate themselves from even worse options in the future. Again, however, there is no explicit modeling of the agent's behavior as in the current paper.

The separation of policy quality and policy location has been used in in a wide variety of other settings. Open rules produce more committee specialization in legislatures than closed rules in Hirsch and Shotts (2012). Hirsch and Shotts (2015) shows how competition between two agents produces better policies for a single principal. Ting (2011) shows how the level of quality specificity affects investments in bureaucratic capacity. Hitt et al. (2017) uses policy quality to separate legislators by ability or effectiveness. In contrast to my paper, these papers assume the principal stays constant. Without turnover, the agent can always tell ex-ante whether the principal will accept the agent's proposal.

Policy specific quality has also been used in a dynamic setting. Callander and Raiha (2017) models infrastructure investments over time by an elected government. However, the legislator in this case can choose both the policy location and the policy quality. He is also beholden to voters, and must calibrate policy decisions to best win election. This is in contrast to this paper, where the the legislator must give up formal authority to the agent in order to see any level of positive quality and the probability of turnover is exogenous.

This paper departs from the canonical models of bureaucracy and delegation. In this setting, the principal will often set a discretion interval under which the agent has full policy making authority. This constraint allows the principal to expropriate some of the agent's expertise investment for himself. Epstein and O'Halloran (1994), Gailmard and Patty (2007), and Huber and Shipan (2002) provide some classic approaches to delegation under policy uncertainty. Callander et al. (2008) provides a middle ground between entirely general expertise and entirely policy specific expertise. In this model, the principal can never completely learn the state of the world from the agent's policy choice, but can learn something about the mapping from policy to outcomes. [2]

Model

This is a two date game with three players. There is one agent, and two legislative principals. To fix ideas, we will often refer to the principals as legislators. This is a game of full information will fully observable actions; there is no uncertainty in the mapping between policies and outcomes.

Policies have two components, a location $p \in \mathbb{R}$ and a quality $q \in \mathbb{R}^+$. We will denote a single policy as a pair of location and quality: $(p,\ q)$. Players are entirely outcome motivated; there are no rents to office. Players have quadratic loss utility over policy location, with location utility maximized at their ideal points. The Incumbent and Challenger have ideal points I and C respectively and we normalize the agent's ideal point to 0. Without loss of generality, we will assume $I > 0$, although we will make no assumptions on C. Policy quality and policy location are additively separable, with all players valuing quality regardless of the policy location[3].

[2] Gailmard and Patty (2012) and provides a further summary and Bendor and Meirowitz (2004) provides a good overview of the technical details.

[3] There are a few different interpretations of what quality means in this setup. One, there could simply be a portion of the policy that both parties can agree on. However, with quadratic utility, the model presented

Agents must exert effort to develop quality. This effort cost is proportional to the amount of quality developed, costing $\kappa \cdot q$ for quality level q.[4] However, policy quality is persistent. If the agent develops policy quality q in period 1 and the legislator does not move the policy location in period 2, no effort is needed to keep quality at q. For example, once the administrative apparatus is set up to collect taxes in the first period, we assume there is no cost to continue using this system in the second period as long as tax policy remains the same.

Therefore the payoff legislator $L \in \{I,\ C\}$ receives in stage j for a policy with location p and quality q is

$$U_L^j\left(p,\ q\right) = -\left(p - L\right)^2 + q$$

The payoff the agent receives in stage j for a policy with location p and quality q is

$$U_A^j\left(p,\ q\right) = -\left(p - 0\right)^2 + q - I\kappa q$$

where $I = 1$ if the agent developed policy in period j, 0 otherwise.

Players weigh the outcomes in both periods equally. Total utility for player $i \in \{A,\ I,\ C\}$ is

$$U_i = U_i^1\left(p^1,\ q^1\right) + U_i^2\left(p^2,\ q^2\right)$$

In the first stage, the Incumbent can choose a policy location herself, or she can delegate policy making authority to an agent. If she delegates, the agent can choose any policy location he wishes plus choose an associated level of quality for this location.[5] The first stage ends.

here is isomorphic to a model in which policy implementation is uncertain. The agent with expertise can lower the variance associated with policy implementation. See Turner (2017) for more details.

[4] κ is bounded below by 2. If $\kappa \leq 2$, the marginal benefit of increasing quality is always greater than the marginal cost of producing quality. The agent would therefore produce infinite quality for any policy. Imposing $\kappa > 2$ will allow us to restrict attention to cases where the agent uses quality as a costly tool to move policy closer to his ideal point, but does not invest in extra quality purely for quality's sake.

[5] Shapiro (2002) convincingly argues that unconstrained delegation is quite frequent in many contexts.

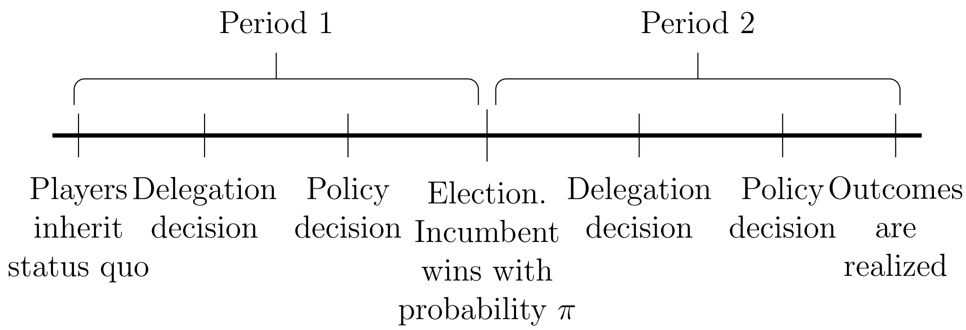

Figure 1: Game Timing

Before the second stage, there is an exogenous probability[6] that the Incumbent will be replaced by a Challenger. After the election, the legislator in power can again delegate policy making authority to the same agent, or choose policy herself. If she retains authority, she can again choose another policy location or she can retain the first stage policy with its associated quality. If she delegates, the agent can again choose any policy location he wishes plus an associated level of quality for this location. The second stage ends, and payoffs are realized. The timing is summarized in figure 1.

For example, a legislator could choose a policy located at point p. However, only the agent could choose policy location p with quality $q > 0$. Any policy a legislator picks must have quality 0. If the agent chose p with quality q in period 1, either legislator could keep $(p,\ q)$ in the second period. On the other hand, if they chose a new policy location p', p' would have quality 0.

Analysis

Baseline

We will first look at a baseline case of no turnover, allowing us to highlight the principal-agent conflict. A few definitions will make the rest of analysis clearer:

[6]We keep the election probability exogenous to focus on the pure policy making and delegation incentives. The extra strategic layer of policy affecting the election probabilities is left to future work.

Definition: A path of play is considered *stable* if the first stage policy and the second stage policy are the same with probability 1. A first period policy that results in a stable path of play will be called a *stable policy.* An equilibrium path with a stable first period policy will be called a *stable policy equilibrium.*

Definition: A path of play is considered *partially stable* if the first stage policy and the second stage policy are the same with probability less than 1 but greater than 0. A first period policy that results in an partially stable path of play will be called a *partially stable policy.* An equilibrium path with an partially stable first period policy will be called an *partially stable policy equilibrium.*

We begin from the final stage with the agent's second period policy choice. Once the legislator delegates, she forfeits all policy oversight in the second stage. Therefore the agent can choose any policy he wishes without fear of reversal. As the second stage policy choice has no bearing on future legislator behavior and quality is costly, the agent will never create quality in the second stage.

Now consider the Incumbent's second stage policy choice. Because her policy location choice is unrestricted, the Incumbent can always guarantee herself at least her own ideal point location. Therefore she will only retain the first period outcome if it guarantees her a utility of at least 0. This implies two facts about the legislator's second period decision. One, the legislator will only delegate in the second stage if the agent created quality in the first stage and would also retain the first stage policy. Two, the legislator will always move policy in the second stage if the agent implemented his own ideal point in the first stage.

The agent then must take this into account when deciding on the first period policy. This gives us the following lemma for the agent's first period policy choice (all proofs are in the appendix).

Lemma 0.1 (Agent's No Turnover Choice)**.** *Let the Incumbent delegate in the first period. Then there are two possible optimal policy choices for the agent. If $2 < \kappa \leq 4$, then the agent will choose the policy location and quality pair $\left(I - \frac{2I}{\kappa},\ (-\frac{2I}{\kappa})^2\right)$. If $\kappa > 4$, the agent*

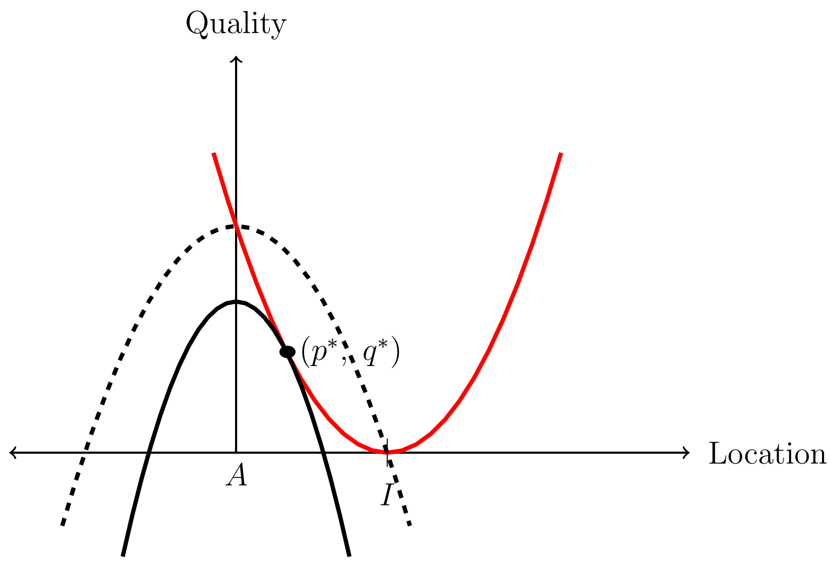

Figure 2: Agent's Policy Choice

will choose the policy location and quality pair $(0,\ 0)$.

We can see the agent's problem graphically in Figure 2. For the agent, utility increases as policy moves downwards. For the Incumbent, utility increases as policy moves upwards. Any policy and quality pair on the upward facing curve gives the Incumbent the same utility as her own ideal point. The tangency of the indifference curves gives the agent's optimal retained first period policy choice. The agent then chooses between this policy and his own ideal point. Lemma 0.1 gives the exact conditions for when the agent implements this compromise policy location.

If the agent does not choose his own ideal point, his policy choice is calibrated to give the Incumbent exactly the same utility as the Incumbent's ideal point. Importantly, $(p^{1*},\ q^{1*})$ lies in between 0 and I. The agent uses his monopoly on quality development to get the legislator to compromise on policy location. However, if producing quality is too expensive, the agent would prefer not to compromise and simply get his own ideal point for one period. This leads directly to the No Turnover equilibria.

Proposition 1 (No Turnover Equilibria)**.** *Let* $\pi = 1$*. Then if* $\kappa > 4$ *there exists a unique equilibrium such that the Incumbent will not delegate in either stage and will choose his own* *ideal point in both both stages.*

If $2 < \kappa \leq 4$*, the equilibria takes this form: In the first stage, the Incumbent delegates. The agent chooses the location and quality given by Lemma 0.1. In the second stage, the first period policy is retained with probability* 1.[7]

In all No Turnover equilibria, policy is stable between periods even without a between period commitment mechanism. The Incumbent's second period decision problem exerts oversight on the agent's first period outcome choice. Period by period, the agent has complete freedom to choose any policy he wishes. However, the principal's second period delegation choice acts as a constraint on first period behavior. The Incumbent can always choose her own ideal location, and the agent must take this into account when choosing first period policy. This dynamic oversight becomes more complicated when the reelection probability is non-degenerate as the agent will not know with certainty which constraint he will actually face in the future. Policy stability will not always occur when principals can rotate.

When the quality cost is too high, the agent chooses his own ideal point in the first period; the threat of the Incumbent's ideal point in the second stage does not outweigh the cost of quality production. The Incumbent, however, could always choose his own ideal point with 0 quality in both periods. This is clearly better than getting the agent's ideal point in the first period. Again, note that no matter the cost of producing quality, policy is still stable.

Delegation with Turnover

Agent's Problem

In between the first and second periods, there is now an exogenous probability of legislator turnover. The Incumbent retains power in the second stage with probability π and the Challenger takes power in the second stage with complementary probability $1 - \pi$, .

[7] The policy can be retained in three ways: One, the Incumbent delegates and the agent retains the the first period policy. Two, the Incumbent does not delegate and himself retains the first period policy. Three, the Incumbent mixes between options one and two.

We say the Incumbent is *aligned* with the agent if $|C| > I$. Similarly, we say the Incumbent is *misaligned* with the agent if $|C| < I$. Whenever the Incumbent is aligned with the agent, the Challenger must necessarily be misaligned and vice versa. We will also call an agent *moderate* if his ideal point lies in between I and C and *extreme* if his ideal point does not lie in between I and C.

The agent's policy choice can now be divided into four categories:

- Retained by both legislators (**Stable Policies**)
- Retained by only the Incumbent (**Incumbent Partially Stable Policies**)
- Retained by only the Challenger (**Challenger Partially Stable Policies**)
- Retained by neither legislator (**Overturned Policies**)

Stable Policies guarantee both legislators a payoff of at least zero. If the agent does not guarantee both legislators a payoff at least as good as their ideal points, at least one of the legislators prefers her own ideal point with zero quality to the agent's policy choice. Graphically, a stable outcome would need to lie on or above both 0 utility indifference curves (Figure 3). Unless the policy lies at the intersection point, one of the legislators must get a strictly positive utility.

Lemma 1.1 (Stable Utility)**.** *If the agent chooses a policy both legislators will accept, the policy will always give the aligned legislator a (weakly) higher utility than it gives the opposing legislator. If the policy does not equal* $p = \frac{I+C}{2}$*, the inequality is strict.*

All stable policy locations will lie in between 0 and $\frac{I+C}{2}$, the midpoint between the legislators' ideal points. If the Incumbent and agent are aligned, a policy location within this interval will be closer to I than to C. Therefore the Challenger requires a higher level of quality than the Incumbent requires in order to retain the agent's policy in the second stage. The Incumbent also gets to enjoy this high quality level coupled with a relatively closer policy location.

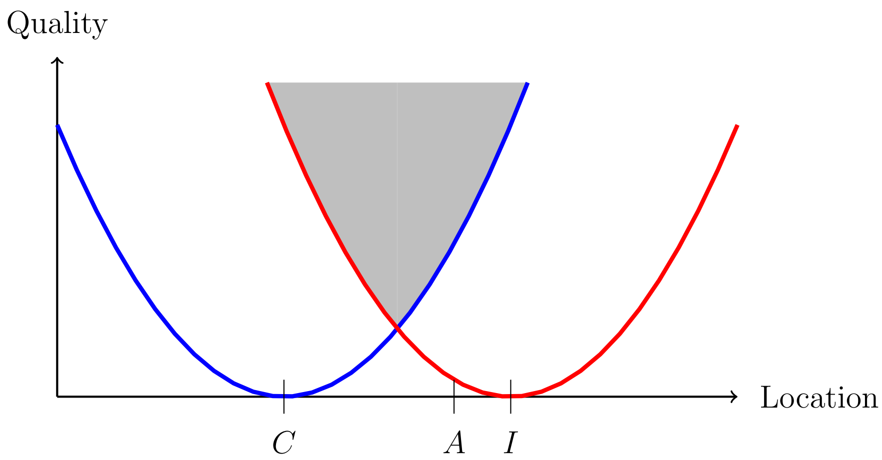

Figure 3: Shaded area includes all stable policies

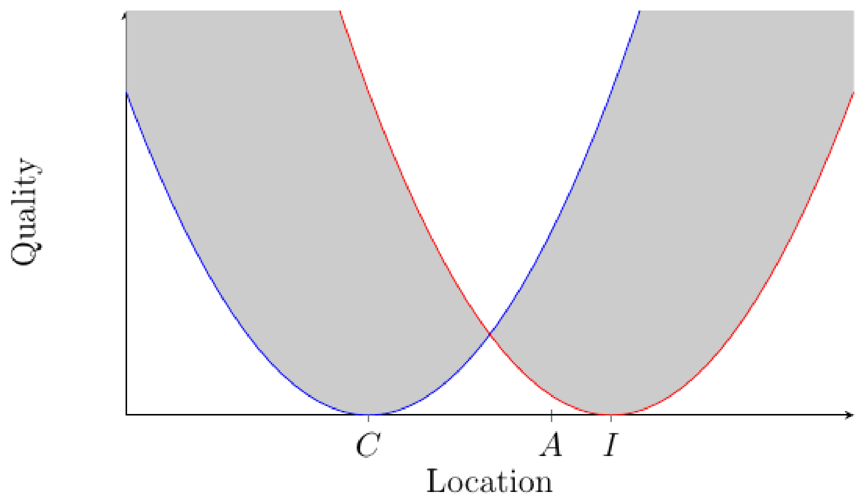

Figure 4: Shaded Area Indicates Partially Stable Policies

Now consider the exact same policy location, but a lower level of quality. This quality level still guarantees the Incumbent a utility at least as great as her own ideal point. However, it gives the Challenger a negative utility. In the second stage, this partially stable policy will only be retained by the Incumbent; the Challenger will choose her own ideal point instead. In Figure 4, these are the areas between the curves, indicated by the arrows.

All policies retained by at least one legislator will lie on one of the legislator's zero-utility indifference curves. Any policy location with quality above one of those curves can be moved to the curve with a reduction in quality. This policy would be cheaper for the agent,

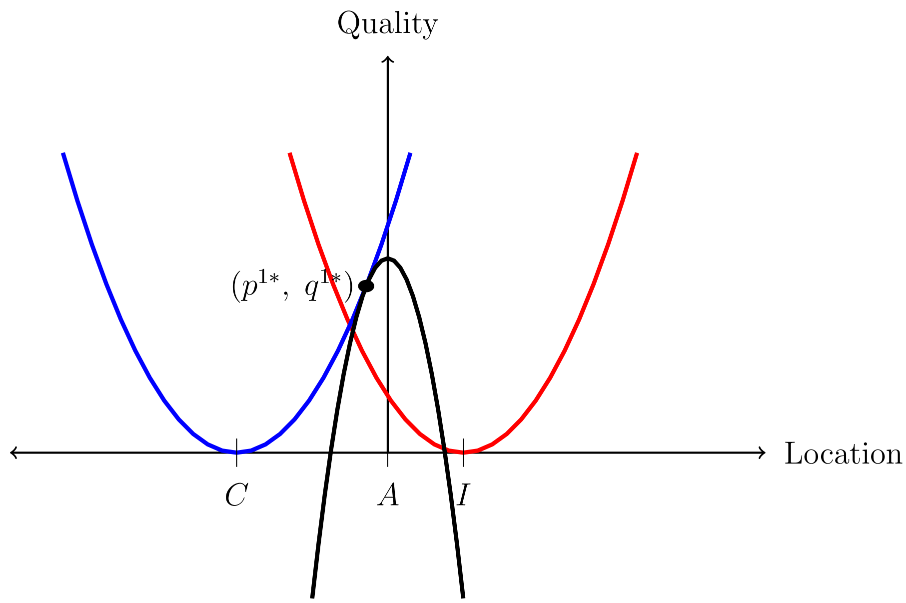

Figure 5: Optimal Stable Policy

but result in the same location. Figures 5 and 6 show examples of optimal policies.

Figure 5 shows that the agent's ideal stable policy lies on the Challenger's indifference curve (the misaligned legislator in this example). The Challenger receives a utility equal to the utility from her own ideal point. This policy lies above the Incumbent's indifference curve, indicating that the Incumbent gets a utility greater than her ideal point.

The agent balances two different considerations in the first period policy. First, how likely is that one legislator would be in power in the second stage? If one legislator is likely to lose, it is not necessary to take her second period actions into consideration. Second, how far are the legislators' ideal points from the agent's ideal point? An ideal point very far away from the agent's ideal point is a terrible outcome; one close to the agent's ideal point, however, would not be so bad.

Figure 7 provides an example for how the agent's utility varies by election probability.[8] When the Challenger is very likely to win the election, the agent chooses a Challenger Partially Stable Policy. As the election gets more competitive, this partially stable policy becomes more and more likely to be overturned by the Incumbent. The agent would bear

[8]This example assumes delegation in the first stage, the agent is aligned with the Incumbent, and $\kappa = 3$

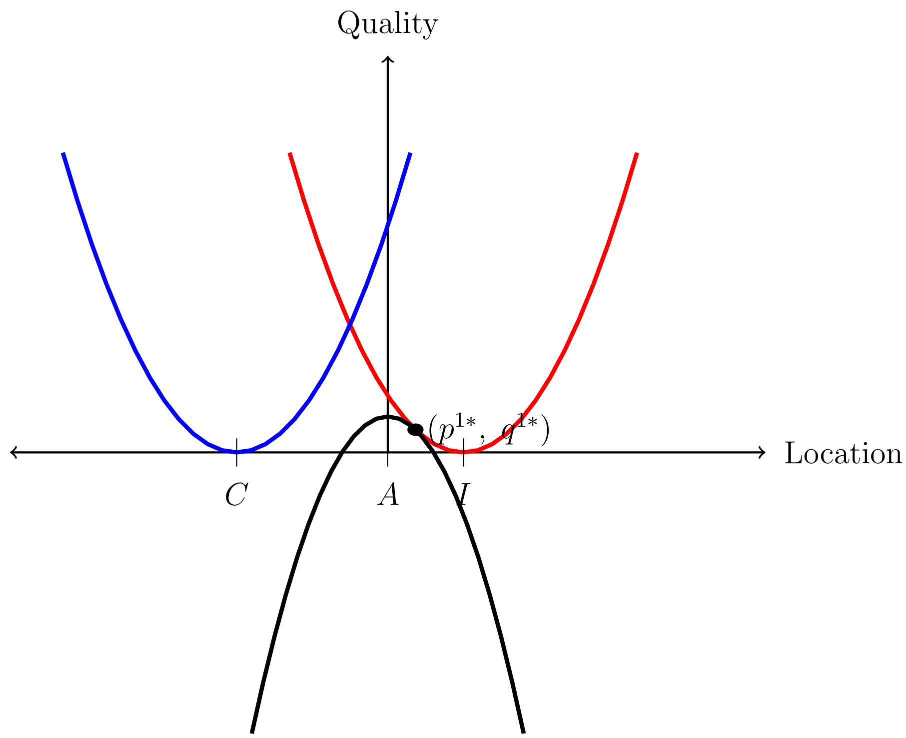

Figure 6: Optimal Incumbent Partially Stable Policy

the cost of developing quality for two periods, yet only receive the benefit for one. At some point this becomes untenable, and the agent prefers get his ideal point in the first period and ignore the second period consequences. A higher election probability for the Incumbent makes both the agent's ideal point and the Incumbent partially stable policy more appealing. With these incentives in mind, we can now explicitly characterize the agent's policy choice.

Proposition 2 (Agent's Policy Choice)**.** *Assume $\kappa \leq 4$. Then there exists $\underline{\pi}(\kappa,\ I,\ C)$, $\overline{\pi}(\kappa,\ I,\ C)$ and $\hat{\pi}(\kappa,\ I,\ C)_C < \hat{\pi}(\kappa,\ I,\ C)_I$ with the following properties:*

- *If the election probability of the misaligned legislator $\in [\underline{\pi}(\kappa,\ I,\ C),\ \overline{\pi}(\kappa,\ I,\ C)]$ the agent implements a stable policy.*
- *If $\pi \geq \hat{\pi}(\kappa,\ I,\ C)_I$ the agent implements a, Incumbent partially stable policy.*
- *If $\pi \leq \hat{\pi}(\kappa,\ I,\ C)_C$ the agent implements implements a Challenger partially stable policy.*[9]

[9]For some of the parameter space, but not all, $\overline{\pi} = \hat{\pi}_I$ and $\underline{\pi} = \hat{\pi}_c$

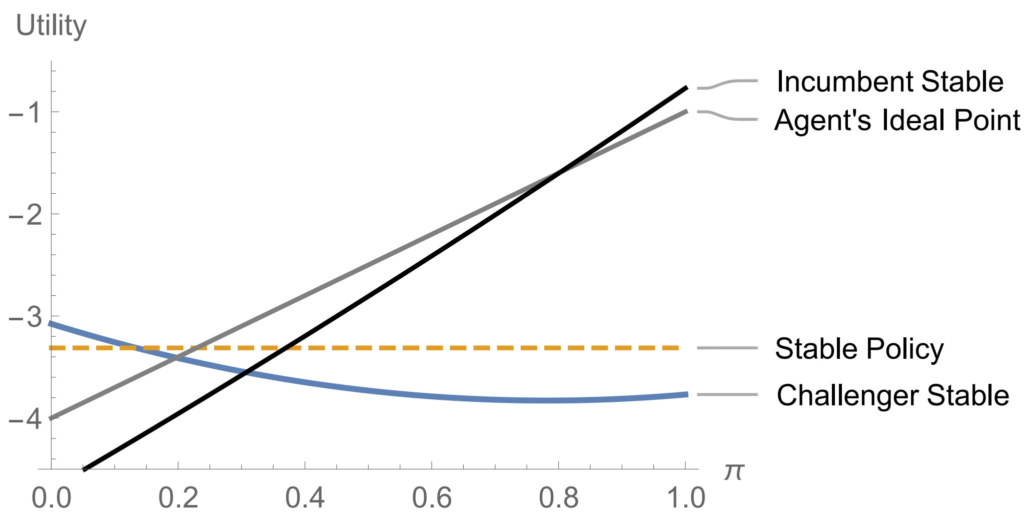

Figure 7: Agent's Utility by Election Probability

- *If π satisfies none of these conditions (or $\kappa > 4$), the agent implements his own ideal point.*[10]

We will call the election probability cutoffs for a stable policy choice $[\underline{\pi}_I, \overline{\pi}_I]$ when the Incumbent is aligned with the agent and $[\underline{\pi}_C, \overline{\pi}_C]$ when the Challenger is aligned with the agent. For convenience, we will suppress the notation inside the parentheses.

It is helpful to think of the agent's problem as deciding between two principal-agent relationships. He has to decide which of the two incentive compatibility constraints (that is, a policy giving the legislator a utility of 0) will bind. Sometimes satisfying the binding constraint will also satisfy the non-binding constraint (stable policies) and sometimes satisfying the binding constraint will not satisfy the other constraint (partially stable policies).

Incumbent's Problem

We now characterize the Incumbent's delegation decision:

Proposition 3 (Delegation Decision)**.** *The Incumbent delegates when the agent implements a*

[10]Unsurprisingly, when quality is too expensive, the agent chooses his own ideal point in the first stage. The benefits of avoiding at least one of the legislators' ideal points are not great enough to compensate the agent for the necessary quality investment.

stable policy or an Incumbent partially stable policy. When the agent implements a Challenger partially stable policy, the Incumbent delegates if four conditions hold:

- *The agent is moderate.*
- $I < -3C$
- $\kappa \leq \tilde{\kappa}$
- $\pi \leq \tilde{\pi}$[11]

First we look at equilibria where the agent chooses a stable policy. With no delegation, stable policies never occur in equilibrium; the Incumbent always chooses her ideal point in the first stage. She can never prevent the Challenger from choosing her ideal point in the second stage. Delegation offers immediate improvement, regardless of legislator alignment. Delegation acts as *insurance* against the Challenger's ideal point. All stable policy equilibria insure the Incumbent against this extreme outcome.

Note again that this stability occurs without an ex-post commitment mechanism. Once the legislator delegates, the agent has complete freedom to choose any policy he wishes. Indeed, in a one stage game the agent would simply choose his own ideal point. The dynamic incentive pushes the agent to invest in quality and to make sure this quality is not wasted. The Incumbent benefits from the agent's dynamic incentives and avoids her rival's ideal policy.

Proposition 4 (Delegation Benefits)**.** *The Incumbent is always weakly better off with any Stable Policy Equilibrium and* $\pi < 1$ *than with* $\pi = 1$*.*

An aligned Incumbent benefits in two separate ways from a stable policy. One, there is the *direct* policy benefit. From Lemma 1.1, we know that the Incumbent's utility from the agent's aligned stable policy choice is greater than the utility from her own ideal point. The agent's ideological conflict with the Challenger works to the Incumbent's advantage.

[11] $\tilde{\kappa}$ and $\tilde{\pi}$ are formally defined in the appendix

In the No Turnover equilibria, there was no extra surplus for the Incumbent to extract; the agent could always calibrate location and quality to make the Incumbent indifferent. Here an aligned Incumbent is able to exploit the agent's desire to please both legislators. The influence of a misaligned Challenger pushes the agent to increase quality past the level he would create with no electoral competition. This benefit is independent of winning the election, as both legislators will retain the stable policy.

Two, the Incumbent also receives an *insurance* benefit from delegation. The agent's policy choice leaves the Challenger indifferent between retaining the agent's policy and choosing her own ideal point. In equilibrium, the Challenger always retains the agent's policy. By delegating, the Incumbent avoids the Challenger's ideal point. Avoiding C with certainty is impossible when delegation is not an option.

When the Incumbent and agent are misaligned, she no longer receives the direct policy benefit of delegation; the agent chooses policy to leave the Incumbent exactly as well off as she would be with his ideal point. However, she still receives the insurance benefit. The Challenger will again retain the agent's policy, and not choose her own ideal point. While a misaligned Incumbent is not made strictly better off with electoral competition, delegation and turnover together are clearly better than turnover without delegation.

A stable policy is always good news for the Incumbent, even if she is misaligned with the agent. She always avoids the Challenger's favored policy. However, the agent will not always chooses a stable policy. Instead, he may choose a policy only one of the legislators will retain. These partially stable policies do not always offer the Incumbent any protection from a loss of power in the future.

Consider a situation where the Incumbent is very likely to win reelection. The agent has little to fear from the Challenger, and therefore does not need to worry much about the Challenger moving policy in the second stage. The agent can tailor his policy choice purely for the Incumbent. The agent chooses a policy that would be moved by the Challenger in the unlikely event the Challenger wins the election. These policies are analogous to the no turnover case; the Incumbent receives no insurance benefit and no direct benefit. He runs the same risk of the Challenger's ideal point whether or not he delegates. This policy, however, still gives the Incumbent a utility equal to the utility he would receive from choosing his own ideal point.

Now let the election be more competitive with the Incumbent winning with a lower probability. The threat of turnover is now more salient. The agent may still choose an partially stable policy, but does not invest quite as much in quality. The policy location lies closer to the Incumbent's ideal point but has a lower level of quality than when the Incumbent was more likely to retain power. The agent does not invest in as much quality when there is a greater chance the quality will be worthless in the second stage. In this case, the Incumbent would be strictly better off without electoral competition; the presence of an agent does not help mitigate the conflict of interest between the first and Challengers as it does in the Stable Policy Equilibria.

When the agent chooses a Challenger Partially Stable Policy, the Incumbent can now use the agent to keep the Challenger from choosing her ideal point in the second period. This policy choice gives the Incumbent negative utility in the first period, a negative direct benefit. However, it is also gives the Challenger a utility of 0. The Challenger will retain this policy in the second stage. By retaining this policy, the Challenger does not choose her own ideal point. The Incumbent still receives an insurance benefit.

There is a dynamic trade off between the negative direct benefit and insurance benefit; the Incumbent cannot receive the insurance benefit without also incurring the policy cost. If the Incumbent is very likely to lose power, this dynamic trade off between giving up policy benefits today for stability tomorrow is worth it. As the Incumbent becomes more likely to remain in power, she prefers to gamble by choosing her ideal point in the first period.

This is another instance of the Incumbent exploiting the agent's presence to help mitigate her ideological conflict with the Challenger. The agent provides a link between the first and second stages. With no possibility of delegation, there is no way to choose policy today and tie the hands of the Challenger tomorrow. It is worth emphasizing that this requires no second period commitment device. The Incumbent does not commit to keeping the agent's policy choice or delegating again in the future, yet he is still able to use the agent to moderate the Challenger's policy choice.

For a moderately large quality cost and an aligned Incumbent, delegation occurs only when the election is relatively *uncompetitive*. Figure 8 shows this clearly; there is a no delegation wedge in between the Partially Stable Policy Equilibria and Stable Policy Equilibria. As it becomes more expensive to create quality, both stable and partially stable policies become less appealing to the agent. This happens both directly (the policies are simply more expensive) and indirectly through the election probability.

A high reelection probability for the Incumbent makes the partially stable policy appealing to the agent. The agent does not have to worry much about the Challenger being in power in the second stage, and therefore tailors his policy choice specifically to the Incumbent.

Similarly, a low reelection probability for the Incumbent (conversely, a high election probability for the Challenger) makes the stable policy more attractive. The agent wants to avoid the Challenger's ideal point, the worst possible outcome. However, this stable policy is expensive. Therefore the benefit of avoiding the Challenger's ideal point becomes less important as the Challenger becomes less likely to hold power in the second stage. This again leads the agent to prefer his own ideal point over investing in quality. If the agent will choose his own ideal point, the Incumbent never delegates. When quality is expensive, we should see less delegation, and therefore less policy stability, with more competitive elections.

Comparative Statics on Ideal Points

Now that we have characterized equilibrium behavior, we can analyze how delegation responds to changes in polarization. Most importantly, how does the change in legislator ideal points impact the agent's policy? Does increasing polarization make delegation more or less

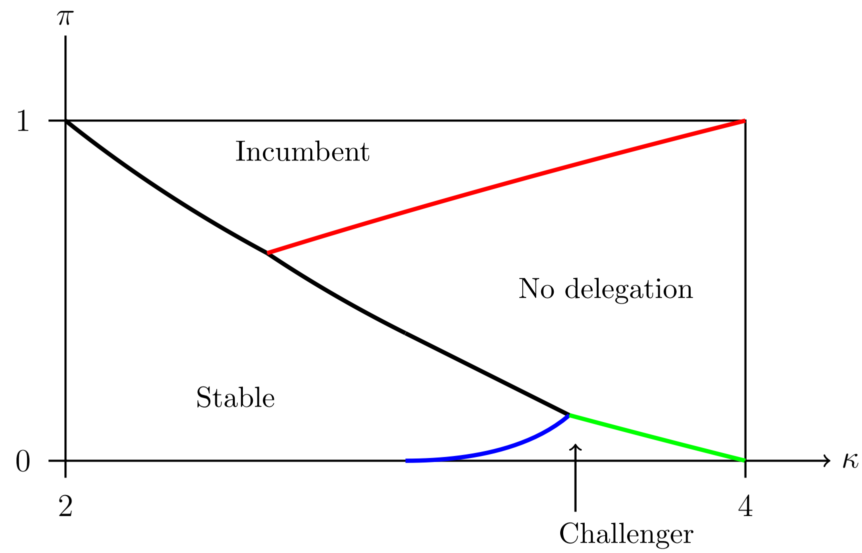

Figure 8: Equilibria for $I = 1$ and $C = -3$

likely? Perhaps surprisingly, it depends on which legislator changes position. We will show the comparative statics in terms of an aligned Incumbent, but note that the same pattern holds regardless of legislator alignment.

Proposition 5 (Comparative Statics for a Moderate Agent)**.** *Let $C < 0 < I$ and there be an aligned Incumbent. Then there exists a $\tilde{\kappa}_I$ such that if $\kappa < \tilde{\kappa}_I$ two statements are true:*

1. *Increasing legislator polarization by increasing I strictly increases $\overline{\pi}$ and weakly increases $\underline{\pi}_I$.*[12]

2. *Increasing legislator polarization by decreasing C strictly decreases $\overline{\pi}$ and weakly decreases $\underline{\pi}_I$.*

Notice that the change in polarization ($|I - C|$) is not enough information. As legislator ideal points move, they not only move farther away from the other legislator's ideal point, but also from the agent. This underscores the interconnected nature of the principal-agent and policy stability problems.

[12]Recall that the agent chooses a stable policy when $\pi \in [\underline{\pi}, \overline{\pi}]$.

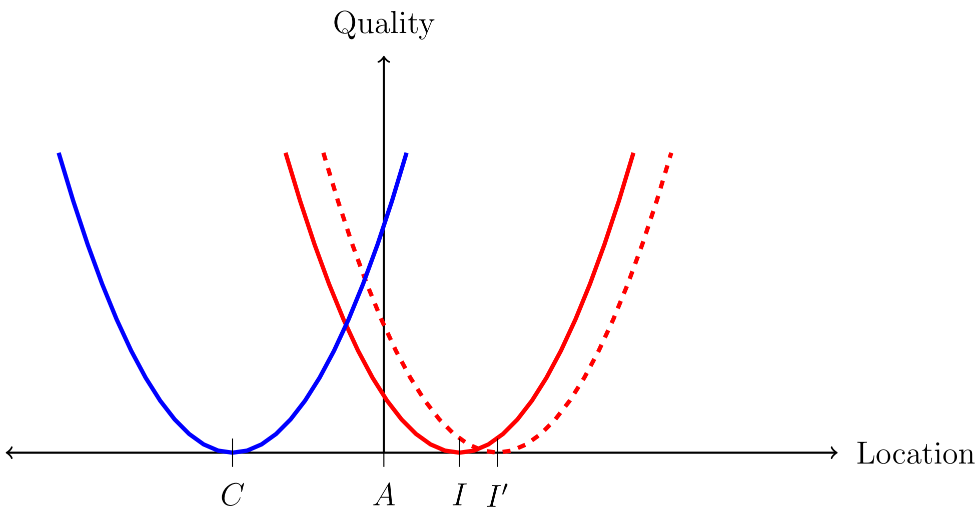

Figure 9: Increase in I

Consider an increase in I when the agent is moderate. This increase has two effects. First, it makes the Challenger's ideal point worse for the Incumbent. Second, it increases the distance between the agent's ideal point and I and makes the Incumbent's ideal point worse for the agent. These two effects work in concert to determine the equilibrium policy.

Because avoiding the Incumbent's ideal point is more important to the agent, he is more willing to invest in policy quality and choose a stable policy. Remember that if the agent implements his own ideal point in the first stage, both legislators would choose their ideal points in the second stage. As the Incumbent's ideal point moves farther away from the agent's, the agent prefers a stable policy for a larger range of election probabilities.

However, the increase in I presents the agent with some difficulties. Notice in Figure 9 the intersection of the two legislator indifference curves is now closer to A (the interval of equilibrium stable policies is this intersection to the agent's ideal point). The agent now has less flexibility in choosing a stable policy as the interval of stable policies is smaller. The minimum quality required for a stable policy is now higher. This lack of flexibility becomes particularly salient as the cost of quality increases. The agent will now choose a Challenger Partially Stable Policy for more values of κ. Figure 11 shows how the equilibria change in response to a change in I.

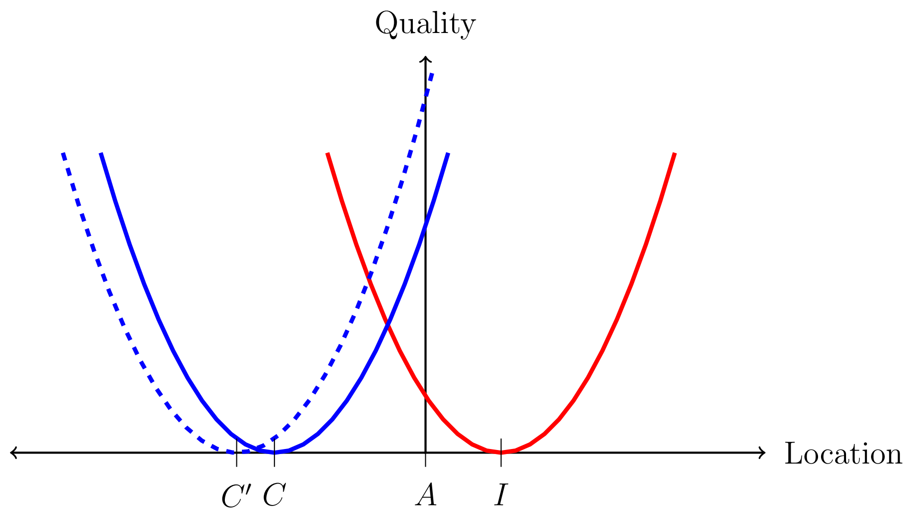

Figure 10: Decrease in C

Now consider a change a decrease in C. The Challenger's ideal point becomes worse for the agent, increasing the benefit of a stable policy. However, because the Challenger is now farther away from the agent's ideal point, the agent now has to spend more on quality to implement a stable policy (see Figure 10). These two effects run in opposite directions, with the second effect generally dominating.

Moving C farther away from I does give the agent some more flexibility in choosing a stable policy. Note that this is the *opposite* effect as when I moves. This increased flexibility induces the agent to choose a stable policy for greater values of κ than he did previously. Both effects are highlighted in Figure 12.

Proposition 6 (Comparative Statics for an Extreme Agent)**.** *Let* $0 < I < C$. *Then there exists a* $\tilde{\kappa}_I$ *such that if* $\kappa < \tilde{\kappa}_I$ *two statements are true:*

1. *Increasing legislator polarization by decreasing* I *strictly decreases* $\overline{\pi}$*.*

2. *Increasing legislator polarization by increasing* C *strictly increases* $\overline{\pi}$*.*

Note the contrast with Proposition 5. The same parameters change, but their effect is different. Consider what happens as I shifts away from C. With a moderate agent, I moves farther away from 0, the agent's ideal point. However, with an extreme agent, moving I away

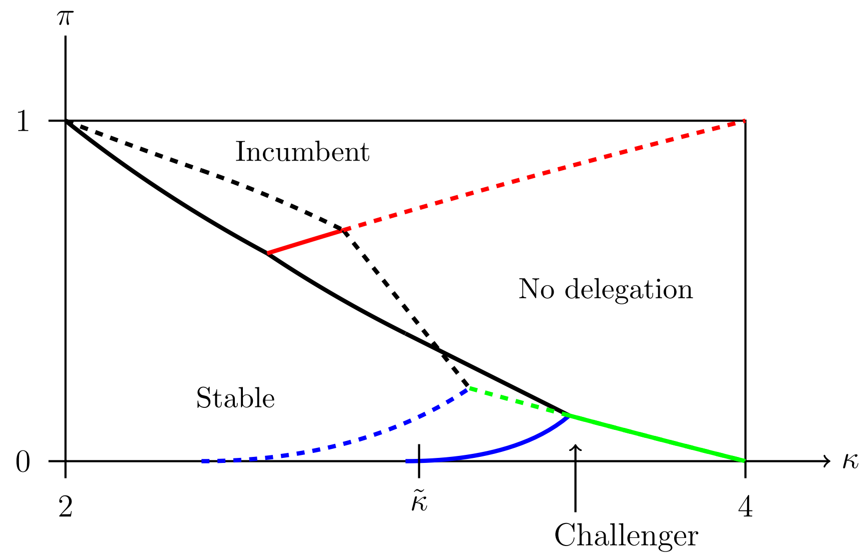

Figure 11: Change for an increase in I (starting from $I = 1$ and $C = -3$)

from C moves it *closer* to 0. As the Incumbent's conflict with the Challenger increases, the conflict with the agent decreases. An Incumbent Partially Stable Policy is now cheaper for the agent, making it more appealing than when the Incumbent was farther away. This makes the agent less likely to choose a Stable Policy. More congruence with the agent can actually work against the Incumbent's interests.

In some cases, the Incumbent benefits from increased polarization. As the legislators move farther apart, some combinations of election probability and quality cost now induce the agent to choose a stable policy. This stable policy is always better than any partially stable policy or the agent's ideal point. Incumbents can benefit from both more extreme challengers and from being more extreme themselves. This point will be highlighted further in the next section.

Appointments

Incumbents often have the ability to appoint an agent. Does the Incumbent want an agent that perfectly shares her views? Or instead, does she prefer an agent with some preference divergence. To analyze this question, we will let the Incumbent choose the agent's ideal

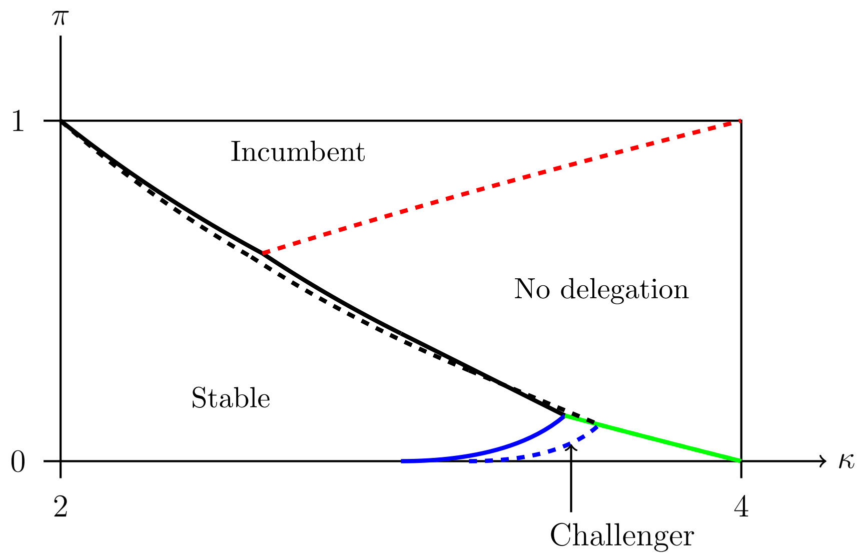

Figure 12: Change for a decrease in C (starting from $I = 1$ and $C = -3$)

point before the first period. Instead of assuming the agent's ideal point is 0, we let A vary.

This choice may be constrained by outside factors, such as the available talent pool or probability of confirmation. For this reason, we will place an upper bound $\bar{A}$[13] on the available agent pool. Without loss of generality, we will also assume $C < I$. We can then characterize the Incumbent's optimal appointment.

Proposition 7 (Incumbent's Optimal Agent Choice)**.** *Let $C < I$. Then the Incumbent will appoint the agent with the largest ideal point from the set $\left[\frac{I+C}{2}, \bar{A}\right]$ that would also implement a stable policy.*

Figure 13 shows the intuition with two agents. The gap between the indifference curves represents the Incumbent's surplus. The stable policy moves farther from C as the distance between A and C grows, and in turn, the surplus grows with it. The Incumbent clearly wants A as far from C as possible. Therefore she sets A a the farthest point that still results in a stable policy.

If possible, the optimal agent ideal point lies on the other side of I from C. The Incumbent wants the agent as far from C as possible; she does not want a perfectly aligned

[13]This upper bound is formally defined in the appendix.

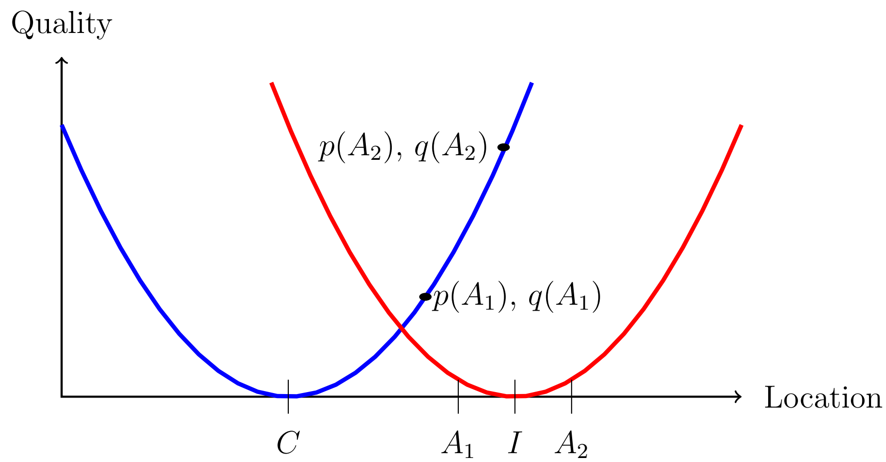

Figure 13: Stable Policy Choice of Different Agents

agent (that is, $A = I$). If two agents would both choose a stable policy, a relatively extreme agent is more beneficial than a perfect ally. The extreme agent implements a higher quality policy than the moderate agent and therefore the Incumbent can expropriate more surplus. The Incumbent can exploit the ideological conflict between the other two players and indeed the more conflict between the agent and Challenger, the better.

As the agent's ideal point moves farther away from C, the stable policy doesn't just become better for the legislator; it also becomes more expensive for the agent. As the agent moves farther away from the Challenger's ideal point, he becomes more likely to choose his own ideal point instead of investing in quality. Therefore the optimal agent location depends on the specific situation.

Sometimes the Incumbent would choose an agent relatively aligned with the Challenger. An agent closely aligned with the Incumbent has a large incentive to choose an Incumbent Partially Stable Policy. A misaligned agent, on the other hand, has more of an incentive to avoid a policy favorable to the Incumbent. Therefore the misaligned agent will choose a stable compromise policy even when the Incumbent is very likely to win. This dynamic is then reversed if the Incumbent is very likely to lose. Similar to the comparative statics on Incumbent ideal points, more conflict with the agent results in stable policies for a wider reelection probabilities. When the Incumbent is very likely to win, she prefers more

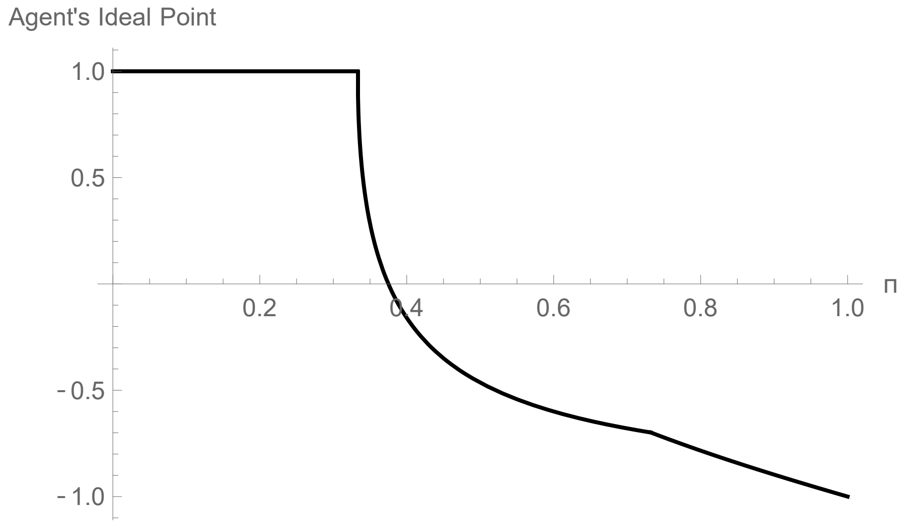

Figure 14: Optimal Agent Location by Election Probability ($I = 1, C = -3$)

conflict with the agent; when she is likely to lose, policy congruence is more valuable. Figure 14 shows this trade-off.

Conclusion

Analyzing policy competition and principal-agent problems at the same time shows how these two strategic settings are connected. The agent must contend with uncertainty over his future boss; the principal can exploit this uncertainty to solve her own policy stability problem. The agent's optimal policy is a function of both possible principals. Looking at policy competition between only an agent and a principal or only between two legislators obscures how these questions connect.

Political turnover enriches the strategic implications of delegation to experts. It provides the principal with a way to mitigate the ideological conflict with his political rival, a conflict that does not exist without electoral competition. This allows us to see delegation as a form of political insurance, protecting the Incumbent from an election loss.

This paper also shows how including the agent as a strategic actor instead of as a black box reveals important insights. As a player with his own preferences, the agent must balance the interests of both legislators. This allows the Incumbent to benefit from the conflict between the agent and the Challenger.

Crucially, the absolute polarization level between politicians is not enough to predict policy outcomes. The relative alignment between the politicians and the agent is just as important if not more than the conflict between the politicians.

Traditional accounts of policy stability often rely on repeated interactions or inefficiencies built into the institutions. In this model, we see stability arise purely from the policy itself. The agent values stability, and is able to create a policy accepted by both legislators. This removes any incentive for either legislators to implement a new policy in the future. The bureaucracy is self-sustaining.

The results point to new directions for empirical work. Using ideal point estimates of both elected officials and agencies, we can analyze how appointments change due to both reelection probabilities and different policy conflicts between both elected officials and the agencies. The model predicts that an incumbent will appoint less aligned agents as she becomes more likely to win the election and this is a testable implication.

The model also predicts more policy stability as the incumbent becomes more likely to lose the election. Specifically, we should see policy movement after big upsets. Compromise is unnecessary when elections are believed to be uncompetitive and this provides lots of room for surprise winners to change policy. We can test this prediction by looking at post-election policies combined with pre-election polling data.

There are still unexplored avenues for future research. We have assumed throughout that the election probability is exogenous. In many, if not most policy areas, this is a reasonable assumption. However, this need not be the case. It would be worthwhile to think about the reelection probability also being a function of the first period policy. The agent's incentives may change if he could influence the election outcome with his policy choice. Perhaps a simple version of this model could be embedded within an electoral accountability framework.

We can also extend the idea of turnover to other models. For example, the agents may also face turnover. Governors can lose elections just as legislators can and it would be illuminating to see how and when delegation occurs when the agent implementing policy may be different halfway through the project.

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A Appendix - Proofs

Proof: Lemma 0.1. Any policy, quality pair the legislator will accept must satisfy the incentive compatibility constraint of

$$q - (p - I)^2 \geq 0$$

Optimality requires the agent make this an equality. Therefore We can substitute

$$q = (p - I)^2$$

and the agent's maximization problem becomes

$$\max_p \; 2(p - I)^2 - 2(p - 0)^2 - \kappa(p - I)^2$$

Taking the derivative and then solving for p^* gives

$$p^* = I - \frac{2I}{\kappa}$$

q^* is then

$$q^* = (-\frac{2I}{\kappa})^2$$

□

Proof: Proposition 1. From Lemma 0.1, if the agent chooses an outcome the legislator will accept, he will chooses $\left(I - \frac{2I}{\kappa},\ (-\frac{2I}{\kappa})^2\right)$. This gives him a utility of

$$U_A(I - \frac{2I}{\kappa}) = \frac{4\,(I)^2}{\kappa} - 2\,(I)^2$$

If the agent chooses his own ideal point in the first period, he will choose (0, 0) and get a utility of

$$U_A(0) = 0 - (I)^2$$

If the agent chooses $\left((I - \frac{2I}{\kappa})\right),\ (-\frac{2I}{\kappa})^2$, in the first period, his second period utility of keeping this policy is

$$\frac{(4 - \kappa)\,(I)^2}{\kappa}$$

which is weakly greater than 0 if $\kappa \leq 4$.

If the agent chooses (0, 0) in the first stage, $U_I(0) < 0$ so the legislator will not delegate. Therefore delegation only occurs in the first stage if $\kappa \leq 4$.

Consider a strategy profile for the legislator where he delegates in the first stage, but puts positive probability on choosing his ideal point in the second stage and let the agent choose $\left(I - \frac{2I}{\kappa},\ (-\frac{2I}{\kappa})^2\right)$ in the first stage. The agent could deviate by choosing $\left(I - \frac{2I}{\kappa},\ (-\frac{2I}{\kappa})^2 + \epsilon\right)$ in the first stage. Then retaining the agent's policy strictly dominates the Incumbent's ideal point. Therefore putting positive probability on the legislator choosing his own ideal point cannot be an equilibrium.

Because both the agent and legislator will retain $\left(I - \frac{2I}{\kappa},\ (-\frac{2I}{\kappa})^2\right)$ in the second stage, any mixed strategy putting positive probability only on delegation and non-delegation with policy retainment can be supported in equilibrium. □

Proof: Lemma 1.1. Any policy accepted by both legislators must give both a utility of at least 0. For any q, $U_I = U_C$ only at $p = \frac{I+C}{2}$. Therefore for any stable $(p,\ q) \neq \frac{I+C}{2}$, any $(p,\ q)$ such that $U_{L_i}(p,\ q) = 0$ and $U_{L_j}(p,\ q) \geq 0 \implies U_{L_j}(p,\ q) > 0$.

Assume $p \neq \frac{I+C}{2}$. Then for any q, there are exactly two policy locations such that a) both legislator receive weakly positive utility and b) one legislator receives a utility of exactly 0. These two policies cost the agent the same amount of effort because their quality is the same. Therefore the agent will always choose the policy location closer to his own ideal point. Because of the quadratic utility, this policy location must be in between $\frac{I+C}{2}$ and 0. This policy location gives the misaligned legislator a utility of exactly 0.[14] □

Lemma 1 (Stable Policy Location)**.** *The optimal stable policy location for an aligned Incumbent is $p^* = C - \frac{2C}{\kappa}$. The optimal stable policy location for a misaligned Incumbent is $p^* = I - \frac{2I}{\kappa}$.*

Proof: Lemma 1. From Lemma 0.1, we know the agent's policy choice that gives the Incumbent a utility of exactly zero is $p^* = I - \frac{2I}{\kappa}$. Similarly, the agent's policy choice that gives

[14]Let $L_j < |L_i|$ and $U_{L_j}(p,\ q) = U_{L_i}(p',\ q)$ and $U_{L_j}(p',\ q)$, $U_{L_i}(p,\ q) > 0$. Then due to the quadratic utility, $|p| < p'$ and $U_A(p,\ q) > U_A(p',\ q)$.

the Challenger of exactly zero is $p^* = C - \frac{2C}{\kappa}$. From Lemma 1.1, we know that the agent will always give the misaligned legislator a utility of exactly 0 when choosing a stable policy. Therefore the optimal stable policy location for an aligned Incumbent is $p^* = C - \frac{2C}{\kappa}$ and the optimal stable policy location for a misaligned Incumbent is $p^* = I - \frac{2I}{\kappa}$. □

Lemma 2 (Interior Stable Location)**.** *The stable policy location for an aligned Incumbent is interior if $\kappa \leq \frac{4C}{C-I}$. The stable policy location for a misaligned Incumbent is interior if $\kappa \leq \frac{4I}{I-C}$. If κ does not satisfy these conditions, the stable policy must lie at $\frac{I+C}{2}$*

Proof: Lemma 2. From Lemma 1.1, we know that that a stable policy must be in between $\frac{I+C}{2}$ and 0. $C - \frac{2C}{\kappa}$ lies in between $\frac{I+C}{2}$ if $\kappa \leq \frac{4C}{C-I}$. $I - \frac{2I}{\kappa}$ lies in between $\frac{I+C}{2}$ if $\kappa \leq \frac{4I}{I-C}$. □

Lemma 3 (Agent partially stable outcome choice)**.** *The policy choice for an Incumbent partially stable policy is. $I - \frac{(1+\pi)I}{k}$, The policy choice for a Challenger partially stable policy is $C - \frac{(2-\pi)C}{k}$*

Proof Lemma 3. Choosing a policy only the first principal accepts results in this maximization problem for the agent:

$$\max_p (1 + \pi - \kappa)(p - I)^2 - (1 + \pi)(p)^2 - (1 - \pi)(C)^2$$

which gives an optimal policy of

$$p_I^* = I - \frac{(1 + \pi)I}{\kappa}$$

Similarly, the maximization problem for a policy only the second principal accepts is

$$\max_p (1 + (1 - \pi) - \kappa)(p - C)^2 - (1 + (1 - \pi))(p)^2 - \pi(I)^2$$

which gives an optimal policy of

$$p_C^* = C - \frac{(2 - \pi)C}{\kappa}$$

$\square$

Proof: Proposition 2. We will characterize the cutoffs for all of the agent's policy choices at once. We will show specifically for aligned Incumbent; a misaligned Incumbent is similar. Denote the stable policy as σ.

The agent prefers the stable policy to his own ideal point if

$$U_A(\sigma) \geq U_A(0)$$

This inequality holds if

$$\pi \leq \frac{C^2(4-\kappa)}{\kappa(C^2-I^2)}$$

and

$$\kappa \leq 4$$

Similarly, the agent prefers the stable policy to the Incumbent partially stable policy if

$$U_A(\sigma) \geq U_A\left(I - \frac{(1+\pi)I}{k}\right)$$

this inequality holds if

$$\pi \leq \frac{k(I^2-C^2) - 2I^2 + \sqrt{16I^2C^2 + k^2(I^2-C^2)^2}}{2I^2}$$

Finally, the agent prefers the stable policy to the Challenger partially stable policy if

$$U_A(\sigma) \geq U_A\left(C - \frac{(2-\pi)I}{k}\right)$$

this inequality holds if

$$\pi \geq 2 - \frac{\kappa}{2} + \frac{\kappa I^2 - \sqrt{\kappa I(I-C)(9C^2 + \kappa I^2 + \kappa IC - 2\kappa C^2)}}{2C^2}$$

Therefore the agent will choose the stable policy if

$$2 - \frac{\kappa}{2} + \frac{\kappa I^2 - \sqrt{\kappa I\,(I - C)\,(9C^2 + \kappa I^2 + \kappa IC - 2\kappa C^2)}}{2C^2}$$
$$\leq \pi \leq$$
$$min\left[\frac{C^2\,(4-\kappa)}{\kappa\,(C^2 - I^2)}, \frac{k(I^2 - C^2) - 2I^2 + \sqrt{16I^2C^2 + k^2(I^2 - C^2)^2}}{2I^2}\right]$$

and $\kappa \leq 4$.

The agent will choose an Incumbent partially stable policy if

$$\pi \geq max\left[\sqrt{\kappa} - 1,\ \frac{k(I^2 - C^2) - 2I^2 + \sqrt{16I^2C^2 + k^2(I^2 - C^2)^2}}{2I^2}\right]$$

The agent will choose a Challenger partially stable policy if

$$\pi \leq min\left[2 - \sqrt{\kappa},\ 2 - \frac{\kappa}{2} + \frac{\kappa I^2 - \sqrt{\kappa I\,(I - C)\,(9C^2 + \kappa I^2 + \kappa IC - 2\kappa C^2)}}{2C^2}\right]$$

Finally, the agent will choose her own ideal point if

$$\kappa > 4$$

or π does not satisfy any of the conditions for the other policy choices. □

Proof: Proposition 3. If the agent would choose a stable policy, the Incumbent will clearly delegate. If the agent would choose an Incumbent partially stable policy, the Incumbent is indifferent between delegation and non-delegation and will delegate by assumption. That leaves a Challenger partially stable policy.

Because this is a partially stable policy, the Incumbent would choose his ideal point in the second stage while the Challenger would retain the agent's policy. The Incumbent will only delegate if

$$U_I\left(C - \frac{(2-\pi)C}{\kappa}\right) \geq U_I\left(I\right)$$

This is only true if three conditions hold:

1. $\pi \leq 2 - \sqrt{\frac{\kappa(C-I)}{2C}}$
2. $I \leq -3C$
3. $\kappa \leq \frac{8C}{C-I}$

□

Proof: Proposition 4. Straight consequence of Lemma 1.1 and Proposition 2. If the first principal is aligned with the agent, then she gets a (weakly) positive surplus in a stable equilibrium. □

Proof: Proposition 5 and Proposition 6. We will show the proof first for a moderate agent and aligned Incumbent. Then we show for an extreme agent and an aligned Incumbent. Recall that $\bar{\pi}_I = \frac{k(I^2-C^2)-2I^2+\sqrt{16I^2C^2+k^2(I^2-C^2)^2}}{2I^2}$ or $\frac{C^2(4-\kappa)}{\kappa(C^2-I^2)}$ and that $\underline{\pi}_I = 2-\frac{\kappa}{2} + \frac{\kappa I^2-\sqrt{\kappa I(I-C)(9C^2+\kappa I^2+\kappa IC-2\kappa C)}}{2C^2}$

$$\frac{\partial\bar{\pi}_I}{\partial I} = \frac{1}{2}I^2\left(\frac{4I\kappa^2(I^2-C^2)+32IC^2}{2\sqrt{\kappa^2(I^2-C^2)^2+16I^2C^2}} + 2I\kappa - 4I\right)$$
$$+ I\left(\sqrt{\kappa^2(I^2-C^2)^2+16I^2C^2} + \kappa(I^2-C^2) - 2I^2\right)$$

or

$$\frac{\partial\bar{\pi}_I}{\partial I} = \frac{2IC^2\left(4-\kappa\right)}{\kappa\left(C^2-I^2\right)^2}$$

Both of which are ≥ 0. Therefore $\bar{\pi}_I$ increases when I increases. Next,

$$\frac{\partial\bar{\pi}_I}{\partial C} = \frac{1}{2}I^2\left(\frac{32I^2C-4C\kappa^2(I^2-C^2)}{2\sqrt{\kappa^2(I^2-C^2)^2+16I^2C^2}} - 2C\kappa\right)$$

or

$$\frac{\partial\bar{\pi}_I}{\partial C} = \frac{2I^2C\left(4-\kappa\right)}{\kappa\left(C^2-I^2\right)^2}$$

both of which are ≤ 0. Therefore $\bar{\pi}_I$ increases when C decreases. For $\underline{\pi}_I$ we have

$$\frac{\partial \underline{\pi}_I}{\partial I} =$$
$$\frac{1}{2C^2}(-I\kappa\sqrt{I^2\kappa + IC\kappa - 2C^2\kappa + 9C^2} - \kappa(I-C)\sqrt{I^2\kappa + IC\kappa - 2C^2\kappa + 9C^2}$$
$$- \frac{I\kappa(I-C)(2I\kappa + C\kappa)}{2\sqrt{I^2\kappa + IC\kappa - 2C^2\kappa + 9C^2} + 2I\kappa})$$

which is ≥ 0. Therefore $\underline{\pi}_I$ increases when I increases. Next

$$\frac{\partial \underline{\pi}_I}{\partial C} =$$
$$\frac{I^2\kappa(-4\sqrt{I^2\kappa + IC\kappa + C^2(9-2\kappa)} + 4I^2\kappa + IC\kappa + C^2(18-5\kappa))}{4C^3\sqrt{I^2\kappa + IC\kappa + C^2(9-2\kappa)}}$$

which is ≤ 0. Therefore $\underline{\pi}_I$ increases when C decreases. For an extreme agent, we have $C > 0$. This reverses the signs on the derivatives and therefore we have:

$$\frac{\partial \bar{\pi}_I}{\partial I} \leq 0$$

$$\frac{\partial \bar{\pi}_I}{\partial C} \geq 0$$

Therefore $\bar{\pi}_I$ increases when I decreases and $\bar{\pi}_I$ increases when C increases. □

Proof: Proposition 7. Without loss of generality, assume $C < I$. First, note that any $A \leq \frac{I+C}{2}$ that chooses a stable policy gives the Incumbent exactly the same utility. Therefore we will only consider agent ideal points (weakly) greater than $\frac{I+C}{2}$.

The agent's maximization problem when choosing a stable policy is

$$\max_p (2-\kappa)(p-C)^2 - 2(p-A)^2$$

which gives

$$p^* = \frac{2A - (2-\kappa)C}{\kappa}$$

When substituted into the Incumbent's utility function, we get

$$U_I\left(p^*\right) = \frac{8A\left(I-C\right)}{\kappa} - \frac{8C\left(I-C\right)}{\kappa} + 2\left(I-C\right)\left(C-I\right)$$

Note that this is strictly increasing in A, and therefore the Incumbent would like to appoint the highest A possible.

It remains to show when the agent would choose a stable policy over a partially stable policy and her own ideal point.

$$U_A\left(stable\right) \geq U_A\left(A,\ 0\right)$$

when

$$A \leq C - \frac{\left(I-C\right)\left(\kappa\pi + \sqrt{\kappa\pi(\kappa\pi+\kappa-4)}\right)}{\kappa-4}$$

or

$$A \geq C - \frac{\left(I-C\right)\left(\kappa\pi - \sqrt{\kappa\pi(\kappa\pi+\kappa-4)}\right)}{\kappa-4}$$

Similarly,

$$U_A\left(stable\right) \geq U_A\left(partially\ stable\right)$$

when

$$A \leq \frac{C(\kappa\pi+\kappa-4)-(\pi+1)I(\kappa-\pi-1)-(I-C)\sqrt{(\pi+1)\left(\kappa^2((\pi+1))+\kappa\left(\pi^2+2\pi+5\right)-4(\pi+1)\right)}}{\pi^2+2\pi-3}$$

or

$$A \geq \frac{C(\kappa\pi+\kappa-4)-(\pi+1)I(\kappa-\pi-1)+(I-C)\sqrt{(\pi+1)\left(\kappa^2((\pi+1))+\kappa\left(\pi^2+2\pi+5\right)-4(\pi+1)\right)}}{\pi^2+2\pi-3}$$

It is unreasonable to expect the legislator to be able to appoint an infinitely extreme agent. Therefore, we will impose a feasibility assumption that the appointed agent must less extreme than the minimum of

$$C - \frac{\left(I-C\right)\left(\kappa\pi - \sqrt{\kappa\pi(\kappa\pi+\kappa-4)}\right)}{\kappa-4}$$

and

$$\frac{C(\kappa\pi+\kappa-4)-(\pi+1)I(\kappa-\pi-1)+(I-C)\sqrt{(\pi+1)\left(\kappa^2((\pi+1))+\kappa\left(\pi^2+2\pi+5\right)-4(\pi+1)\right)}}{\pi^2+2\pi-3}$$

With this assumption, the optimal agent ideal point is

$$A^* = \min\left[C - \frac{(I-C)\left(\kappa\pi + \sqrt{\kappa\pi(\kappa\pi+\kappa-4)}\right)}{\kappa-4}, \frac{C(\kappa\pi+\kappa-4)-(\pi+1)I(\kappa-\pi-1)}{\pi^2+2\pi-3} - \frac{(I-C)\sqrt{(\pi+1)\left(\kappa^2((\pi+1))+\kappa\left(\pi^2+2\pi+5\right)-4(\pi+1)\right)}}{\pi^2+2\pi-3}\right]$$

$\square$