A Theory of Organizational Design in the Presence of Time Inconsistency: Delegating Authority or Seeking Advice?

Rodney D. Ludema* Anders Olofsgård†

February 2006

Abstract

This paper considers a principal’s decision of whether to delegate authority to an informed agent or only seek the agent’s advice, within an environment of time inconsistent preferences. It is well known that time inconsistency may give the principal an incentive to delegate authority over a policy action to an agent with different preferences from her own. The first main finding of the paper is that the principal can do equally well with a strategic choice of expert, from which she solicits advice instead of delegating authority, as long as the time inconsistency problem is not too severe. The second main finding is that the principal may strictly prefer seeking advice to delegating authority if there is prior uncertainty with respect to the preference distance between the principal and the agent. [Keywords: Delegation, Communication, Organizational Design, Time Inconsistency. JEL-codes: ]
1 Introduction

This paper is about delegation within organizations. More precisely, we ask the question of whether an uninformed principal would prefer to delegate decision-making authority to an informed agent or retain the decision power and only ask the agent for advice. For example, governments regularly appoint agents to gather information necessary to make informed policy decisions. In some cases, the agent is given authority to decide on policy (e.g., a supreme court or central bank), and in other cases, the agent merely makes recommendations or reports findings to the government (e.g., an intelligence agency or investigatory commission). What criteria should a principal use to decide between these organizational forms? Previous work on this question (e.g., Aghion and Tirole, 1997; Aghion, Dewatripont and Rey, 2002; Dessein, 2002) found that preference differences between the principal and agent play a key role. However, as the above examples suggest, the principal can often shape the agent’s preferences by choosing whom to appoint. This poses a problem for the existing literature because, if the principal simply appoints an agent who shares her preferences exactly, the organizational form becomes irrelevant. To make headway, therefore, we need a model in which the principal has a reason to choose an agent with preferences different from her own. For that reason, we examine delegation versus communication in a setting of time inconsistency.

By addressing delegation and communication in a setting of time inconsistency, we tie together two strands of the delegation literature that have heretofore been separate. The literature on “strategic” delegation views delegation as a means for a principal to commit to a course of action in environments of time inconsistency. It is normally modeled as a two-stage game of complete information: in the first stage, the principal appoints an agent from a set of potential agents, differing by type; in the second stage, the agent plays a game with other players (possibly other agents). Generally, the principal chooses an agent with a type different from her own. Applications have ranged from oligopoly (Vickers, 1985) and central bank independence (Rogoff, 1985) to representative
democracy (Persson and Tabellini, 1994; Besley and Coate, 2001).

The second, and more recent, strand of literature treats delegation as a means of addressing informational asymmetries within an organization. In Dessein (2002), for example, the uninformed principal can either delegate or communicate with an informed agent of a given type. If the two players have different types, communication is noisy. Thus, the principal faces a trade-off between making the decision herself based on noisy information (communication) and having an agent decide based on perfect information but bad preferences (delegation). Dessein finds that delegation is preferred when the distance between the principal and agent is positive but not too large. If the two have the same type, the first best is achieved regardless of the delegation decision.

There are numerous reasons why linking these two views of delegation adds value. First, given the importance of preference differences to the informational delegation literature, it is important to analyze how and why these differences arise within a unified framework. Second, given that organizations involved in strategic situations almost always stand to benefit from strategic delegation, it is worth asking whether this reinforces or weakens the case for delegation based on informational asymmetries. Third, the basis of all delegation theory is a rather strong (however plausible) assumption about contract incompleteness, namely, that contracts cannot be written on actions but tasks (or more generally, property rights) can be contractually assigned. Permitting the principal to choose the type of agent to assign with a task considerably lightens the burden of this assumption and allows for the study of a far richer array of organizational forms.

Finally, there are many practical applications where time-inconsistency and informational asymmetries are both present and where diversity in organizational design is observed. Central banks, courts, investigatory commissions, etc., besides gathering information and differing in organizational form, all have the feature that they are intended to be independent of the government. To insure independence, steps are taken to insulate the agency from government intervention after the initial appointment, such as limiting the government’s
oversight, guaranteeing the agency’s funding, or granting lengthy terms of office.\footnote{The literature has suggested two reasons why this kind of commitment might be valuable to the government. One is provide the agent with the proper incentive to gather information (e.g., Aghion and Tirole, 1997). The other is to enable the adoption of a policy that the government might prefer ex ante but may not care to adopt ex post, i.e., time-inconsistency. This second direction is the one taken in this paper.} An interesting example from the international trade realm is the common reliance of governments on commissions to investigate anti-dumping, countervailing duties and safeguards cases, purportedly to maintain the consistency of such policies in the face of political pressure. In the EU, these cases are investigated by the European Commission but decided upon by the Council of Ministers. In the US, the International Trade Commission (ITC) investigates such cases; however, in anti-dumping and countervailing duties cases, an affirmative decision by the ITC results directly in protection of domestic industries, whereas, in safeguards cases, the ITC only recommends action to the President, who makes the final decision.\footnote{The President also appoints the commissioners to ten-year terms.} Thus, the choice between delegation and communication may vary not only between organizations serving the same function but also between different policy functions of the same organization.

Our question is general and can be applied to many areas of organizational design both within politics and within firms, but we focus on a political application in which we extend a simple time inconsistency model to incorporate delegation and communication. The players of the game are the government (the uninformed principal), a public agency (the informed agent) and a firm (who is also informed). The firm faces a decision of whether or not to make an investment in a project that is costly to the firm but beneficial to the public. Because of the private cost, the firm will only make the investment if it expects to receive “protection” (e.g., a subsidy or tariff) from the government. The decision to protect is taken either by the agency (in case of delegation) or by the government, based on information provided by the agency (in case of communication). The welfare cost (e.g., dead-weight loss) of protection is unknown to the government but known to the firm and the agency. The optimal decision rule for the government is to protect the firm only when the cost of protection
is below a certain threshold level. However, this threshold is generally different ex ante (before the investment) than ex post (after the investment). For example, if the public benefit from investment is large, the government might like to announce a generous protection plan ex ante to induce investment but be unwilling to deliver protection ex post, if it believes the cost of protection is high. This is commonly known as a “hold up” problem. Alternatively, if the public benefit of investment is small, the government might announce a very conservative protection plan ex ante but be unable to resist protecting ex post, if the cost of protection is low (since government cares about profits). This is known as a “soft budget” problem.

Within this basic framework, it is straightforward to show how delegation to the agency can solve these problems: simply appoint an agent whose ex post decision rule is the same as the government’s ex ante rule. In the holdup case, this is done by choosing a pro-business agent, who can be counted on to be generous with protection ex post. In the soft budget case, a tightfisted, anti-business agent is optimal.

The first main contribution of the paper is to show that the government generally prefers delegation to communication but only strictly prefers delegation when the time-consistency problem is severe. If the time-consistency problem is not too severe, communication achieves the same outcome as delegation. The reason is that an agent who cares more (less) about profits than the government will endogenously bias the information it sends in such a way that the government in equilibrium, based on this information, will have a more generous (less generous) ex post decision rule than if the government and the agent shared the same preferences. Thus the government, by assigning a more pro-business (anti-business) agent, commits to receiving information that makes him more (less) protectionist. If the magnitude of the time inconsistency problem is not too big, i.e. if the metric distance between the government’s ex ante and ex post cost thresholds is not too wide, then the government can achieve its first best by appointing an agent with an ex post threshold equal to its own ex ante threshold. To borrow the terminology of Aghion and Tirole (1997), the delegation of
formal authority here is irrelevant, because the real authority is in the hands of the agent who controls the information. Hence, delegating formal authority is not necessary. This result echoes that of Olofsgård (2004, 2006).

However, as in all games of communication, signals will only be credible if the preference distance between the sender and the receiver is not too large. Therefore, if the time inconsistency problem is too large, an agent with an ex post threshold equal to the government’s ex ante threshold will not be deemed as credible by the government ex post, causing the government to make its decision based only on its prior. In this case the best the government can do is to assign the most biased agent that can still signal with credibility. This will result in either too much or too little investment, depending on the nature of the underlying problem. In this case, delegation dominates communication.

The second contribution of the paper is to show how things may change in the presence of political uncertainty. At a generic level, we assume that the government is uncertain of the final preference distance between itself and the agent at the time it chooses the institution and the identity of the agent. What we have in mind is that the preference distance between the two may be a function of the state of the world, the realization of which is not known at the stage of these initial decisions. The political consequences of not offering protection, for example, may depend on media attention and other factors hard to anticipate. What we then show is that as political uncertainty increases, the benefits of delegation decrease, since the uncertain political outcome must be accommodated in the choice of agent. On the other hand, the discretion inherit when the government retains the decision power and communicates makes it possible to ignore the agent and base the decision on the prior when politics weigh heavily, which makes accommodation in the choice of agent less necessary.

3 The political science literature has since long argued that delegation within politics may also be motivated by less benevolent reasons than time inconsistent preferences or asymmetric information (see Epstein and O’Halloran 1999 for a survey). This has also more recently been picked up in the economics literature. For instance, Alesina and Tabellini (2005) show in a model with career concerned bureaucrats and politicians motivated by re-election that the politicians prefer to delegate tasks that are risky, have negative rents and which bring little campaign contributions, whereas they prefer to retain decision power over redistributive tasks. Our politicians are generally less cynical, but political shocks may still bring a wedge between their preferences and those of the bureaucrats.
Hence, the government trades off the ability to credibly communicate with the benefits of discretion in his choice of organizational design. We then show that this basic trade-off leans more towards delegating authority when the magnitude of the time inconsistency problem is large, and more towards communication when political uncertainty is large.

The remainder of this paper is organized as follows. In Section 2, we lay out our model and discuss the time inconsistency problem. In Section 3, we look at the soft budget problem and solve the model with no political uncertainty, first for the case of delegation, and then for the case of communication with a well-chosen expert. A comparison of these cases produces our first main result. The hold-up problem yields the same results, and only differs slightly in the analysis. We highlight these differences in the appendix. In Section 4, we add uncertainty about the political pressure faced by the government and once again compare delegation and communication. This section yields our second main result. Section 5 concludes.

2 The Model

There are three players in the model, the government (g), the agent (a), who is chosen endogenously from a large pool of potential agents, and the firm (f). The game proceeds in four stages: design, investment, communication and protection. In the design stage, the government selects an agent and either grants the agent authority over the protection decision or retains the authority for itself. Following this, two vital pieces of information are revealed: \( \beta_g \), the political pressure faced by the government to support the firm, and \( c \), the cost of granting protection. All players learn the former, while the latter is revealed only to the agent and the firm. In the investment stage, the firm decides whether or not to make an irreversible investment in some project. If government retained authority, then the game moves to the communication stage (otherwise, this stage is skipped), in which the agent sends a message \( m \) to the government, and the government updates its beliefs about \( c \). Information is assumed to be soft,
and no constraints are imposed on the set of messages that can be sent. Finally, in the protection stage, either the government or the agent, depending on the design, chooses whether or not to protect the firm, at which point all payoffs are realized. The solution to this game is a perfect Bayesian equilibrium.

2.1 Payoffs

We assume the firm has a single, indivisible unit of capital that it must decide to invest or not invest in a particular project. The firm’s choice is denoted $I \in \{\text{investment, no investment}\}$. Investing in the project earns the firm $p + \sigma$, where $p$ is a fixed return and $\sigma$ is the level of protection provided by the government/agent. Protection can take on one of two values, $\sigma \in \{0, 1\}$. If the firm does not invest in the project, it earns a guaranteed return of $r$. The profit function of the firm is thus given by,

$$
\pi(I, \sigma) = \begin{cases} 
p + \sigma & \text{if } I = \text{investment} \\
r & \text{if } I = \text{no investment} 
\end{cases}
$$

(1)

We assume $p + 1 > r > p$. Thus, investment in the project is profitable if and only if protection is positive.

The government cares about profits but also derives a benefit $b$ from investment in the project and bears the cost of protection $c$. The benefit may be thought of as a social benefit generated by local investment, while the cost might be a deadweight loss on consumers from protection. Let $\beta_g$ denote the weight the government assigns to $\pi$ and $b$ relative to $c$ in its objective function. Any weighting of social benefits relative to profits is taken to be implicit in the definition of $b$. The government’s utility function is therefore,

$$
U_g(I, \sigma) = \beta_g[\pi(I, \sigma) + b] - \sigma c
$$

(2)

All potential agents have the same utility function as the government, differing only in the weight assigned to $\pi(\cdot) + b$, which we denote $\beta_a$. We can interpret $\beta_a$ as representing either an agent’s ideology or its susceptibility to
political pressure, as determined by the government’s design of the agency. We assume the government can choose $\beta_a$ to be any value on the interval $[0, 1]$.

The two random variables of the model, $c$ and $\beta_g$, are also drawn from the unit interval. The cost of protection has a continuous probability distribution $G$, with density $g$ and mean $\tau$, while $\beta_g$ is drawn from the distribution $H$, with density $h$.

### 2.2 Optimal Decision Rules

Next we compare the optimal decision rules of the government before and after investment. The purpose is to clarify the time inconsistency problem and to establish the first-best benchmark. By “decision rule” we mean a mapping from triplets $(I, c, \beta_g)$ to policy choices $\sigma$. An optimal decision rule is a statement about how the government would like to see the policy implemented, putting aside the issues of who implements it or how the necessary information is obtained.

If the investment has already been made, the government obtains a payoff of $\beta_g(p + 1 + b) - c$ by protecting the firm and $\beta_g(p + b)$ by not protecting. Comparing these to outcomes, it follows that protection is preferred if and only if,

$$c \leq \beta_g$$  \hspace{1cm} (3)

This defines the optimal ex post decision rule: protect whenever the cost of protection is below the threshold defined by the government’s political pressure parameter $\beta_g$.

In a similar way we can find the government’s optimal ex ante decision rule. With protection, the firm invests and the government receives $\beta_g(p + 1 + b) - c$. Without protection, the firm does not invest and the government receives $\beta_g r$. Thus, the government’s optimal ex ante decision rule is to protect if and only

---

4 Although the delegation literature generally assumes that only property rights are contractable, this can be relaxed slightly in our model. By allowing contracts to be written on the choice of $\sigma$ or on the outcome $\pi(\sigma) + b$, we could interpret $\beta_a$ as part of an incentive contract.
if,

$$c \leq \alpha \beta_g$$ (4)

where \(\alpha \equiv b - (r - p) + 1\).

If \(\alpha \neq 1\), then there exists a time inconsistency problem, in that the government would like to commit ex ante to a different decision rule than it would like ex post. If \(\alpha > 1\), the government is less protectionist ex post than ex ante. That is, for all costs in the interval \([\beta_g, \alpha \beta_g)\), the government would like protection to be offered ex ante but not ex post. If the firm anticipates ex post rule, then it invests less often than the government would like. This is commonly known as a hold-up problem. If \(\alpha < 1\), we have the opposite problem, known as a soft budget problem\(^5\). In this case, the government is more protectionist ex post than ex ante. For costs in the interval \([\alpha \beta_g, \beta_g)\), the government would like protection ex post but not ex ante. If the firm anticipates the ex post rule, it would invest against the government’s wishes. The severity of the time inconsistency problem can be measured by \(|\alpha - 1|\). This has a straightforward interpretation as the difference between the social benefit \(b\) and the private cost \(r - p\) of investment.

3 Organizational Design without Political Uncertainty

The government would like to implement its optimal ex ante decision rule. To achieve this, however, it must either relinquish decision-making authority or remain, at least partially, uninformed. If it retains authority and becomes fully informed, it will follow its optimal ex post decision rule, which is generally suboptimal. In this section, we examine these two alternatives in detail. Throughout the section, we assume \(H\) to be degenerate, postponing any actual political uncertainty until Section 4. Also, we restrict attention to the soft budget problem, and turn to the hold-up problem in Section 5.

\(^5\)For a thorough discussion of the soft budget problem, see Kornai, Maskin and Roland, 2003.
3.1 Delegation

It is straightforward to see how delegation of authority to the agent can solve both the time-inconsistency and the asymmetry of information problems. Even though the government does not know the realized cost of protection, it knows that the agent knows. It also knows that the agent’s optimal ex post decision rule is to protect whenever the cost of protection is no greater than $\beta_a$. To implement its optimal ex ante decision rule, therefore, the government simply appoints the agent whose ex post cost threshold equals the government’s ex ante cost threshold. The optimal choice of agent is thus

$$\beta_a^D = \alpha \beta_g.$$  (5)

In the case of the soft budget problem, the optimal agent cares relatively less about profits than does the government. The opposite is true in the holdup problem.

3.2 Communication Equilibrium

In this subsection we look at the case when the government retains decision power and seeks advice from the appointed expert. This corresponds to the common use of public agencies and congressional committees as institutions of expertise rather than actual decision-making bodies. However, as in all games of communication, there is no way to guarantee that the information conveyed by the agent is true, so the government must take the agent’s incentives for misrepresentation into consideration when evaluating the actual informational value of the message.

We will follow the common approach within communication games to focus on equilibria in which the agent partitions the support of $c$ into intervals and truthfully, but imprecisely, reports in which interval the actual realization of $c$ lies. Following Olofsgård (2004), we restrict attention to an equilibrium of the communication game in which the agent partitions the support of $c$ into two parts. One part contains realizations such that the agent prefers to protect the
firm, \( c \in [0, \beta_a] \), and the other, realizations such that it prefers to abstain from protection, \( c \in [\beta_a, 1] \). Then the agent truthfully (though imprecisely) reports in which of these two partitions the actual realization of \( c \) lies. We will therefore refer to his equilibrium strategy as being a truthful recommendation, based on the agent’s preferences, of the level of protection, labeled as \( m \in \{0, 1\} \).  

**Definition 1** There exists a perfect Bayesian equilibrium with the following set of strategies and beliefs.

1. The agent truthfully signals its preferred level of protection.

\[
m = \begin{cases} 
1 & \text{if } c \in [0, \beta_a] \\
0 & \text{if } c \in (\beta_a, 1] 
\end{cases}
\]  

2. The government updates its beliefs based on the message according to Bayes’ Rule.

\[
E[c \mid m] = \begin{cases} 
\tau_1(\beta_a) & \text{if } m = 1 \\
\tau_0(\beta_a) & \text{if } m = 0 
\end{cases}
\]

where \( \tau_1(\beta_a) = \int_0^{\beta_a} \frac{cg(c)}{G(\beta_a)} dc \) and \( \tau_0(\beta_a) = \int_{\beta_a}^{1} \frac{cg(c)}{G(\beta_a)} dc \).

3. The government protects the firm according to

\[
\sigma_g = \begin{cases} 
1 & \text{if } E[c \mid m] \leq \beta_g \\
0 & \text{if } E[c \mid m] > \beta_g 
\end{cases}
\]

4. The firm invests according to

\[
I = \begin{cases} 
\text{investment} & \text{if } c \in [0, \beta_a] \text{ and } \tau_1(\beta_a) \leq \beta_g \\
\text{no investment} & \text{if } c \in [0, \beta_a] \text{ and } \tau_1(\beta_a) > \beta_g \\
\text{invest} & \text{if } c \in [\beta_a, 1] \text{ and } \tau_0(\beta_a) \leq \beta_g \\
\text{no invest} & \text{if } c \in [\beta_a, 1] \text{ and } \tau_0(\beta_a) > \beta_g 
\end{cases}
\]

---

6 Note that we are not imposing any restrictions on the possible strategies, which can take many different forms. We are just describing a certain equilibrium. The reason for the existence of this relatively simple equilibrium is that the decision space of the government is binary, whether to protect the firm or not. As in all communication games, though, there are multiple equilibria (at least unless refinements of the Perfect Bayesian equilibrium solution concept are not applied). However, in this case it can be shown that all informative equilibria are pay-off equivalent in the sense that they only differ in terms of the signaling strategy of the agent, which doesn’t enter directly into the utility functions (see Olofsgard 2004). Crawford and Sobel (1984) refer to these equilibria as economically equivalent. Hence, one can think of the single-partition equilibrium as being representative of this class of informative equilibria. There do exist non-informative (babbling) equilibria as well though.
Based on the signal from the agent, the government updates its beliefs about the actual value of $c$ taking into account the agent’s incentives. It does this by truncating its prior either on the right (if the agent recommends protection, $m = 1$) or on the left (if the agent recommends no protection, $m = 0$) at $\beta_a$. This produces a posterior expected cost of protection of either $\bar{c}_1(\beta_a)$ or $\bar{c}_0(\beta_a)$, respectively. The government’s protection decision is made by comparing the posterior expected cost of protection with the ex post cost threshold, $\beta_g$. Finally, since the firm knows $c$, it is capable of calculating the equilibrium level of protection. The firm invests if it anticipates protection and does not invest otherwise.

Does the government actually follow the agent’s advice? That is, does the government protect when the agent is for it, and not protect when the agent is against it? This depends on the preferences of both the agent and the government, because $\beta_a$ determines the posterior expectation of $c$ and $\beta_g$ determines the ex post cost threshold. What is certain, however, is that no matter what the agent’s type, the government’s posterior expectation of $c$ is lower if the agent recommends protection than if it does not. Thus, it is never an equilibrium for the government to diametrically oppose the agent (i.e., choose $\sigma_g = 0$ when $m = 1$, and $\sigma_g = 1$, when $m = 0$). The government will either follow the agent’s advice or ignore the agent entirely.
From equations 7 and 8, we see that the government follows the agent’s advice if and only if, \( c_1(\beta_a) \leq \beta_g \leq c_0(\beta_a) \). This result is illustrated in Figure 1. The combinations of preferences for which the government follows the agent’s advice is the shaded region. For points to the right of the shaded region, where the government is highly protectionist relative to the agent, the government offers protection, regardless of the agent’s advice. To the left of the shaded region, the government never protects, regardless of the agent’s advice. We shall refer to the shaded region as the credible communication set (CCS). This is not to suggest that the agent would lie if the preferences were outside of this set. Rather, it is the set in which the agent can credibly signal information that affects the behavior of the government. Outside the set, even though it may update its beliefs based on the agent’s message, the government behaves in accordance with its priors, i.e., protects if and only if, \( \pi \leq \beta_g \).

Figure 1 is drawn for the special case where \( c \) is distributed uniformly. In this special case, the government can always choose an expert that lies outside of the CCS, and thereby effectively commit itself to ignoring the agent. Thus a benefit of our modelling approach (i.e., the endogenous choice of agent) is that it gives the government a fuller range of options. It commits to delegate, communicate or “go it alone” in ignorance.
case, the prior expected cost of protection is $\bar{c} = \frac{1}{2}$, the posterior expectation is,

$$E[c | m] = \begin{cases} \frac{\bar{c}}{1+\beta_g} & \text{if } m = 1 \\ \frac{\bar{c}}{2} & \text{if } m = 0 \end{cases}$$

and the CCS is given by $\beta_a \leq 2\beta_g \leq 1 + \beta_a$. For general distributions, the boundaries of the CCS are nonlinear; however, they retain the main characteristics shown in the diagram. In particular, $\tau_1^{-1}(\beta_g)$, which represents the most protectionist agent that can credibly induce the government to protect, is continuous and monotonically increasing from 0 to 1 on the interval $[0, \bar{c}]$. Likewise, $\tau_0^{-1}(\beta_g)$, the least protectionist agent that can credibly induce the government not to protect, is continuous and monotonically increasing from 0 to 1 on the interval $[\bar{c}, 1]$. Neither boundary may cross the diagonal, as this would imply the government would ignore the advice of a like-minded agent.

### 3.3 Choosing an Expert

Next consider the optimal choice of agent. We have already seen that if the government delegates, the optimal agent is obtained by setting $\beta_a = \alpha \beta_g$, and this agent is ideal in that it implements the optimal ex ante decision rule of the government. This solution is drawn in Figure 1 as a ray from the origin with slope $\alpha$. The ray lies below the diagonal ($\alpha < 1$), since we are here focusing on the soft budget problem. If the government were to choose the agent from along this ray, it would follow the resulting advice only if the agent is in the CCS, i.e., on segment OA. If this is the case, then the government can appoint the ideal agent ex ante, follow its advice ex post, and thereby implement its optimal ex ante decision rule. Communication with a well-chosen expert, therefore, produces the exact same outcome as delegation to a well-chosen decision-maker.

If $\beta_g$ is so large that the corresponding ideal agent is not on segment OA, then the government cannot appoint the ideal agent and follow its advice. Put differently, if the ideal agent cares too little about profits relative to the government, it cannot credibly signal information that would lead the government to refuse protection. The government has two alternatives. One would be to
go ahead and appoint an agent outside the set, ignore the agent’s advice, and
decide on the basis of his priors. Since the range of $\beta_g$ in which this problem
arises is such that $\beta_g > \overline{c}$, this appointment strategy would lead the govern-
ment to protect regardless of the agent’s advice. The second alternative is to
choose $\beta_a = \alpha_{\beta_g}$, which is the least protectionist agent who’s advice the
government would follow. It lies on the boundary of the shaded region, on seg-
ment AB. In this case, the government protects for $c \in [0, \alpha_{\beta_g}^{-1}(\beta_g)]$. This is a
more protectionist decision rule than is optimal ex ante, but it is better than
protecting all the time. Thus the second alternative is superior to the first.
Nonetheless, since it does not always implement the optimal ex ante decision
rule, delegation is strictly preferred to communication.

Although the graphical analysis above was based on the uniform case, we
can draw several general conclusions that hold for any distribution of $c$. First,
the government’s optimal choice of expert under communication is given by

$$\beta_a^C = \max \left[ \alpha \beta_g, \alpha_{\beta_g}^{-1}(\beta_g) \right].$$

That is, the government opts for either the ideal agent or the least protectionist
agent who’s advice it can trust, whichever is more protectionist.

Second, for any given $\beta_g$, we can partition the range of $\alpha$ into two parts:
one in which the government implements its optimal ex ante decision rule under
communication and thus is indifferent between communication and delegation;
the other in which it cannot implement its optimal ex ante decision rule under
communication and thus strictly prefers delegation to communication. More-
over, the partition in which communication is inferior is always bounded away
from $\alpha = 1$. That is, delegation is strictly preferred only when the time in-
consistency problem is sufficiently severe. This is the content of the following
proposition.

**Proposition 1** For all $\alpha \geq \alpha_{\beta_g}^{-1}(\beta_g)/\beta_g$, the government chooses the ideal
agent $\beta_a^C = \alpha \beta_g$ and implements the optimal ex ante decision rule. If
$\alpha < \alpha_{\beta_g}^{-1}(\beta_g)/\beta_g$, then the government chooses the least protectionist
agent it can follow, \( \beta_a^C = \tau_0^{-1}(\beta_g) \), and strictly prefers delegation to communication.

A third conclusion is that communication is undermined only if the government has protectionist priors. This is intuitive, because a government that is already inclined to protect relies on the agent for information about when not to protect. An agent that cares very little about profits (which is necessary to solve a soft budget problem) almost always recommends against protection, so he cannot have enough influence on the government’s beliefs to change its behavior. On the other hand, if the government would choose not to protect the firm on the basis of its liberal priors, then a sufficiently severe hold up problem (which would require a more protectionist agent) cannot be solved completely by communication.

Finally, we can measure the expected loss of government utility from using communication instead of delegation. In general, any credible agent \( \beta_a \) confers an expected loss on the government, relative to the optimal ex ante decision rule, of

\[
\Lambda(\beta_a) = \left[ \alpha \beta_g - \bar{c}_0(\alpha \beta_g) \right] G(\alpha \beta_g) - \left[ \alpha \beta_g - \bar{c}_0(\beta_a) \right] G(\beta_a).
\] (12)

The two terms in (12) measure the net expected government benefit from protection, multiplied by the probability of protection, given the ideal agent and \( \beta_a \), respectively. Evaluating \( \Lambda(\beta_a) \) at \( \beta_a^C \) gives the expected loss from communication.

In the uniform case \( \Lambda(\beta_a) \) simplifies to

\[
\Lambda(\beta_a) = \frac{1}{2}(\alpha \beta_g - \beta_a)^2.
\] (13)

Based on equation (13) we can calculate the expected loss from communication in equilibrium as follows.

**Proposition 2** The expected loss from communication in the uniform case is given by

\[
\Lambda(\beta_a^C) = \begin{cases} 
\frac{1}{2} \left( \alpha - 2 + \frac{1}{\beta_g} \right)^2 \beta_g^2 & \text{if } \beta_g > 1/(2 - \alpha) \\
0 & \text{if } \beta_g \leq 1/(2 - \alpha)
\end{cases}
\] (14)
To conclude this section, we note that our results contrast markedly with Dessein (2002), who finds that delegation is preferred when the preference difference between the principal and agent is positive but not too large. The reason for Dessein’s result is that both the quality of the information under communication and the quality of the decision-making under delegation deteriorate as the preference difference between principal and agent grows. It so happens that the information deteriorates faster at first but is eventually surpassed by the deterioration of decision-making. To compare this with our model, suppose we had an exogenous agent whose type lay between that of the government and the ideal agent. As the preference difference between the government and agent grows, the quality of the information under communication may deteriorate but the quality of the decision-making under delegation improves (up to the point of the ideal agent). Thus, if the preference difference between the government and the ideal agent is large enough, the ability to choose the agent makes delegation superior. We conclude that the relative merits of communication and delegation depend strongly on the underlying reason for the preference difference between the principal and agent.

4 Uncertain Political Pressure

The previous section showed that delegation is always weakly preferred to communication and sometimes strictly preferred. Why then do we observe communication in environments where the agent’s type can be chosen by the government? In this section, we explore one possible explanation, namely, uncertainty about the government’s preferences. We first look at a simple case in which the level of political pressure can take on only two values, in order to illustrate the underlying intuition as clearly as possible. We then turn to a case with a continuous distribution of political pressure to derive more general results.
4.1 Two States of Political Pressure

In this section we assume that the cost of protection is distributed uniformly and that the parameter $\beta_g$ can take on one of two values, $\beta_g = \bar{\beta} + \epsilon$ or $\beta_g = \bar{\beta} - \epsilon$, with equal probability. At the time the government appoints the agent, only $\bar{\beta}$ is known. After the appointment of the agent, $\beta_g$ is realized and becomes known to all players. Equivalently, we could assume the there are two separate projects, identical except for $\beta_g$, and the government must appoint a single agent to either administer protection or report on both projects.

Under delegation of authority the government selects an agent so as to minimize the expected loss relative to the optimal ex ante decision rule

$$\Lambda(\beta_a) = \frac{1}{2} \int_{\beta_a}^{\alpha(\bar{\beta} + \epsilon)} \left[ \alpha (\bar{\beta} + \epsilon) - c \right] g(c) dc - \frac{1}{2} \int_{\alpha(\bar{\beta} - \epsilon)}^{\beta_a} \left[ \alpha (\bar{\beta} - \epsilon) - c \right] g(c) dc.$$ 

For uniform $G$, this becomes

$$\Lambda(\beta_a) = \frac{\alpha^2 \epsilon^2}{2} - \frac{1}{2} (\alpha \bar{\beta} - \beta_a). \quad (15)$$

The results in the following proposition follow directly from equation (15).

**Proposition 3** In the uniform case with a binary state of political pressure, the optimal agent under delegation is given by $\beta_a^D = \alpha \bar{\beta}$. The expected loss of over- and under-protection is given by $\Lambda(\beta_a^D) = \frac{\alpha^2 \epsilon^2}{2}$. 

A graphical representation of this problem can be seen in Figure 2. Suppose the average government weight is $\bar{\beta}$. The government’s choice of $\beta_a$ determines the position of the horizontal line segment directly above $\bar{\beta}$ in the figure. The width of this segment is $2\epsilon$. Its endpoints are $(\bar{\beta} + \epsilon, \beta_a)$ (right arrow) and $(\bar{\beta} - \epsilon, \beta_a)$ (left arrow), corresponding to the two possible states that follow the choice of the agent. As drawn, both of these endpoints lie off the ray $\alpha \beta_g$. The distance between each endpoint and the ray measures the error from having the “wrong” agent in each state. As the government’s ex ante utility loss is a quadratic function of this distance, minimizing the expected loss entails choosing $\beta_a$ so as to equalize the distance from the ray at the two endpoints. This is achieved by setting $\beta_a = \alpha \bar{\beta}$. 

19
If instead of delegating authority the government seeks advice, the solution is unchanged for the case of $\beta$. This is because the two endpoints of the segment lie in the shaded region, so the government will follow the agent’s advice in both states. However, in the case of $\bar{\beta}'$, this is not true. Setting $\beta_a = \alpha \bar{\beta}'$ would imply that the government would not follow the agent’s advice in the state $\bar{\beta}' + \epsilon$.

As before the government has two options. One is to choose $\beta_a$ high enough so that the right endpoint lies on the boundary of the CCS, i.e., $\beta_a = 2(\bar{\beta}' + \epsilon) - 1 \equiv \tilde{\beta}$. This implies a relatively small error in the high state but a large error in the low state. As drawn in Figure 2, both of these errors are due to the agent being more protectionist than the government’s optimal decision rule in the corresponding state. However, this is only true if $\tilde{\beta} > a \bar{\beta}'$. Otherwise, the agent is more protectionist in the low state and less protectionist in the high state than the government’s optimal ex ante decision rule. But, even in this case, the errors are not equalized. Thus, the expected loss is unambiguously higher at $\tilde{\beta}$ than under delegation of authority.

The second option for the government is to choose $\beta_a$ low enough that the left endpoint lies on $\alpha \beta_g$, i.e., $\beta_a = \alpha (\bar{\beta}' - \epsilon) \equiv \hat{\beta}$, while the right endpoint lies outside the CCS. Thus, if the low state occurs, the agent advises the govern-
ment to follow its optimal ex ante decision rule and the government heeds this advice. Both the asymmetric information and the time inconsistency problems are solved, and there is zero loss. However, in the high state, the government ignores the agent’s advice and protects. This is equivalent to choosing $\beta_a = 1$ in the high state. Thus, we can measure the error by the distance between 1 and $\alpha(\tilde{\beta}' + \epsilon)$, labeled as the “ignorance error” shown in the figure. The expected loss is,

$$\hat{\Lambda} = -\frac{1}{2} \int_{\alpha(\tilde{\beta} + \epsilon)}^1 \left[ \alpha(\tilde{\beta}' + \epsilon) - c \right] g(c)dc \quad (16)$$

which under uniform gives,

$$\hat{\Lambda} = \frac{1}{4} \left[ 1 - \alpha(\tilde{\beta}' + \epsilon) \right]^2 \quad (17)$$

Which of the two options would the government choose? In the previous section, the government always chose the first option. That is, it preferred a constrained agent whose advice it could follow to one it would ignore. Here it is different, because the agent is ignored in the high state but is ideal in the low state. Thus, it is entirely possible that the loss under $\hat{\beta}$ is smaller than under $\tilde{\beta}$.

However, the more important comparison is between $\hat{\beta}$ and the optimal choice under delegation of authority. This tells us whether or not it is possible for the government to actually prefer communication to delegation. We have already noted that delegation is preferred to seeking advice from agent $\tilde{\beta}$. Thus, if the government were to choose $\tilde{\beta}$ over $\hat{\beta}$, communication could never be strictly preferred to delegation. Thus, the only interesting question that remains is whether it is better to delegate or communicate with an agent the government intends to ignore in the high state. Communication is strictly preferred if $\hat{\Lambda} < \Lambda(\beta^D_a)$. Solving this yields the following result.

**Proposition 4** Communication is strictly preferred to delegation when $\epsilon > \epsilon(\alpha, \tilde{\beta}') \equiv \frac{\alpha}{1 + \sqrt{2}}$. The threshold $\epsilon(\alpha, \tilde{\beta}')$ decreases as $\alpha$ and $\tilde{\beta}'$ increase.
Thus, communication is preferred to delegation for a high enough $\epsilon$, and the more severe the political uncertainty (a higher $\epsilon$) and the less severe the soft budget problem (a higher $\alpha$) the more likely it is that seeking advice will be preferred. Proposition 4 summarizes the main finding of the paper, that the decision whether to delegate real authority or just asking for advice depends on the severity of the time inconsistency problem relative to the cost of political uncertainty. To get a more general understanding of this logic, though, we move to a more elegant framework in which $\beta_g$ has a continuous distribution.

4.2 Continuous Distribution of Political Pressure

In this section, we assume $\beta_g$ is a continuous random variable on the support $[0,1]$. That is, $\beta_g$ can take on any value in the unit interval just as $c$ can. Among other things, this implies that no matter what agent the government appoints, it cannot be sure of following the agent’s advice. For now, we allow $h$ to be a continuous density with full support. However, we continue to assume that $c$ is uniformly distributed, so that the expected losses are easy to compute.

Under delegation of authority, the expected loss is

$$\Lambda^D(\beta_a) = \frac{1}{2} \int_0^1 (\alpha x - \beta_a)^2 h(x)dx$$

(18)

This is just the mean squared error between $\beta_a$ and $\alpha \beta_g$. Minimizing $\Lambda^D(\beta_a)$ yields the following results.

**Proposition 5** In the uniform case with a continuous distribution of political pressure, the optimal agent under delegation is given by $\beta_a^D = \alpha \hat{\beta}$.

The expected loss of over- and under-protection is given by $\Lambda(\beta_a^D) = \frac{\alpha}{2} \int_0^1 (x - \beta)^2 h(x)dx$.

This solution is shown as point B in Figure 3. The error is the sum of the shaded triangles on either side of the ray representing the ideal agent.
Figure 3.

If the government seeks advice instead of delegating authority, the problem becomes one of choosing $\beta_a$ so as to minimize,

$$\Lambda^C (\beta_a) = \int_0^{\frac{\beta_a}{2}} \frac{1}{2} (\alpha x)^2 h(x) \, dx + \int_{\frac{\beta_a}{2}}^{1+\frac{\beta_a}{2}} \frac{1}{2} (\alpha x - \beta_a)^2 h(x) \, dx + \int_{1+\frac{\beta_a}{2}}^{1} \frac{1}{2} (1 - \alpha x)^2 h(x) \, dx$$

(19)

For any given $\beta_a$, there are three distinct intervals of $\beta_g$, corresponding to the three terms in (19). The first interval is $[0, \beta_a/2)$. If the government discovers that $\beta_g$ is in this interval, it knows that its selected agent cannot credibly signal information that would make protection attractive. Thus, the government ignores the agent’s advice and refuses to protect. The first term in (19) measures the loss of not protecting when the optimal ex ante decision rule would protect. Of course, the size of this loss depends on the choice of $\beta_a$. For the purpose of comparing these errors with those of the delegation solution, Figure 3 assumes $\beta_a = \alpha \bar{\beta}$ (which is not necessarily the optimal expert). In this case, the relevant interval is everything to the left of point A. The corresponding error is the dotted region down in the lower left corner. The second interval is $[\beta_a/2, (1+\beta_a)/2]$, between A and C. For $\beta_g$ in this interval, the government follows the agent’s advice and the resulting loss is the same as under delegation. Finally, for $\beta_g$ in the third interval, $((1+\beta_a)/2, 1]$, the government ignores the agent’s advice.
and protects. The third term in (19) measures the loss of protecting when the optimal ex ante decision rule would not protect. The error is shown as the dotted region in the upper right-hand corner of Figure 6.

Differentiating $\Lambda^C (\beta_a)$ with respect to $\beta_a$ gives the first order condition,

$$
\int_{\frac{1+\beta_a}{2}}^{1+\beta_a} (\beta_a - \alpha x) h(x) dx - \frac{1 - \alpha}{4} \left[ (1 - \beta_a^2) h \left( \frac{1 + \beta_a}{2} \right) + \beta_a^2 h \left( \frac{\beta_a}{2} \right) \right] = 0
$$

(20)

The distribution of $\beta_g$, truncated by the boundaries of the credible communication set, is given by

$$
\phi [x \mid \beta_a] \equiv \frac{h(x)}{H \left( \frac{1+\beta_a}{2} \right) - H \left( \frac{\beta_a}{2} \right)} I \left( \frac{\beta_a}{2}, 1+\beta_a \right) (x)
$$

This enables us to rewrite (20) in a marginally more convenient form:

$$
\beta_a = \alpha \int_{\frac{1+\beta_a}{2}}^{1+\beta_a} x \phi [x \mid \beta_a] dx + \frac{1 - \alpha}{4} \left\{ (1 - \beta_a^2) \phi \left[ \frac{1 + \beta_a}{2}, \beta_a \right] + \beta_a^2 \phi \left[ \frac{\beta_a}{2}, \beta_a \right] \right\}
$$

(21)

Equation (21) reveals that the optimal agent under communication is determined by the sum of two terms, reflecting the losses within, and outside of, the credible communication set, respectively. The first term is ($\alpha$ times) the expected value of $\beta_g$ taken over the CCS. If we were to ignore losses outside of the CCS, this term alone would determine optimal choice of agent, because it minimizes the mean squared error relative to the optimal ex ante decision rule over this set. The second term is an adjustment which in the case of a soft budget is positive, reflecting losses outside of the CCS.

The intuition can be seen in Figure 3. The dotted line running up the spine of the CCS is the expected value of $\beta_g$ taken over the CCS. Ignoring errors outside of the CCS would yield an optimal expert at point D. Notice that this would be a more liberal agent than the optimal agent under delegation, which is already more liberal than the average government ex post (but identical to the average government ex ante). But consider the errors outside of the CCS. Because $\alpha < 1$, the error associated with ignoring the agent and protecting, in

---

8In general this is a curve. It is a straight line only in the case of a uniform $h(\cdot)$. 

| 24 |
case of high $\beta_g$ (top right), is greater than the error associated with ignoring
the agent and not protecting, in case of low $\beta_g$ (bottom left). To counter this
bias, the government would like to increase the weight that the agent assigns to
profits. By making the agent more protectionist, the government reduces the
chances that it will ignore the agent (and protect) when $\beta_g$ is high. This pushes
in the direction of making the optimal expert more protectionist, and thus more
in line with the average government ex post, than the optimal agent under
debtigation. In general, the position of the optimal agent under communication,
relative to the optimal agent under delegation, is ambiguous.

We can resolve this ambiguity somewhat by restricting attention to distributions that are symmetric around $\frac{1}{2}$. The result is as follows.

**Proposition 6** If $h(\cdot)$ is symmetric around $\frac{1}{2}$ and $\alpha = 1$, then $\beta_C^a = \beta_D^a = \frac{1}{2}$
and $\frac{d\beta_C^a}{d\alpha} < \frac{d\beta_D^a}{d\alpha} = \frac{1}{2}$. Thus, if the time inconsistency problem is small,
then the optimal agent under communication is more (less) protectionist
than that under delegation when the problem is one of a soft budget (hold
up).

**Proof** In Appendix 1.

Notice that the effect of $\alpha$ in the two terms of (21) work in opposite direc-
tions. The first term, representing the government’s concern about losses within
the CCS, increases with $\alpha$. That is, the government wants a more protectionist
agent the higher is its average ex ante desire for protection, just as in the case of
debtigation. However, an increase in $\alpha$ also increases the relative loss associated
with low realizations of $\beta_g$, where the government ignores the agent and denies
protection. This effect would cause the government to choose a less protectionist
agent, one that is credible even for low realizations of $\beta_g$. If $h(\cdot)$ is symmetric
and the time-inconsistency problem is small, then the government’s response to
changes in $\alpha$ under communication will tend to be dampened. Put differently,
if the average government is ex post unbiased, then the optimal agent under
communication will be less biased than under delegation.
We can make further progress by adding more structure to \( h(\cdot) \). If \( h(\cdot) \) is uniform, then the solution to (21) is simply \( \beta_a^C = \frac{1}{2} \), point E in Figure 3. Thus, the dampening effect is complete: the optimal agent under communication is entirely independent of \( \alpha \). The optimal expert is always unbiased, while the optimal agent under delegation, \( \beta_a^D = \frac{\alpha}{3} \), is biased according to the time-inconsistency problem. The fact that the optimal expert is unresponsive to the time-inconsistency problem does not imply that delegation is superior. Communication has the advantage that the government can ignore the expert when political factors weigh heavy. The uniform \( h(\cdot) \) also allows us to obtain closed-form solutions of the expected losses. They are,

\[
\Lambda^D (\beta_a^D) = \frac{\alpha^2}{24},
\]

\[
\Lambda^C (\beta_a^C) = \frac{\alpha^2}{6} - \frac{\alpha 11}{32} + \frac{3}{16}.
\]

Thus, communication is strictly preferred to delegation for all \( \alpha \in \left( \frac{3}{4}, 1 \right) \).

Combining these result produces interesting predictions for a cross-section of different policies. For policies characterized by minor time-inconsistency, the government chooses communication with an unbiased expert. For policies with severe time inconsistency, the government delegates to a highly biased agent. As the threshold between the two is crossed, there is a discontinuous jump in the bias of the agent.

To illustrate the effects of more interesting distributions, we consider three different parameterizations of the Beta distribution

\[
h(x) = \frac{x^{a-1}(1 - x)^{b-1}}{\int_0^1 x^{a-1}(1 - x)^{b-1}dx},
\]

with parameters \( a \) and \( b \). The numerical solutions are shown in Figure 4. Figure 4A shows the uniform case \( (a = 1, b = 1) \), which we have already considered. It is there for reference. Figure 4B shows a distribution that is also symmetric \( (a = 3, b = 3) \) but with a lower variance, \( \frac{1}{32} \), as opposed to the uniform variance of \( \frac{1}{12} \). We see that the optimal agent under communication does become
more protectionist with $\alpha$, but the effect continues to be dampened relative to delegation. There is a far smaller range of $\alpha$ over which the government prefers communication to delegation. As the variance goes to zero, delegation is strictly preferred for all $\alpha$ as shown in Section 3.

Figure 4C shows an asymmetric distribution ($a = 1, b = 3$). This distribution is skewed to the right, with mean, $\frac{1}{4}$. The variance is $\frac{3}{384}$, which is only slightly lower than the uniform. It is interesting to see that the agent in this case is strictly more protectionist under communication even when $\alpha = 1$. The reason is that, with $\alpha = 1$, the optimal agent under communication is chosen to minimize the expected loss over the CCS, while under delegation it is chosen to minimize the expected loss over the entire unit interval. Under delegation, this is simply $\beta_D^a = \frac{1}{4}$, but this is less than the average $\beta_g$ on the CCS in the neighborhood of $\beta_a = \frac{1}{4}$ (think of point B in Figure 3 being southwest of point D). Thus, the optimal agent under communication is more protectionist than under delegation even in the absence of time inconsistency.

![Figure 4a: Uniform.](image-url)
5 Conclusions

In this paper we have analyzed a principal’s decision whether to delegate real authority to an informed agent or only seek the agents advice (communica-
tion) within an environment of time inconsistent preferences. By doing so we have bridged two previously disjoint literatures on delegation, one relying on a strategic motive and the other on an asymmetric information motive. This not only makes it possible to analyze a richer set of situations, but it also makes it possible to relax some rather strong assumptions in the existing literature. In particular, we do not need to impose any restrictions on the preferences of the available set of experts in order to generate interesting results, as is done in the literature assuming asymmetric information.

The first main finding of the paper is that the principal can do equally well with communication as he can do with delegation as long as the time inconsistency problem is not too severe. With communication, the agent will bias information to influence the principal’s decision, something that is known by both the principal and his counterpart in the time inconsistency problem. The choice of agent thus effectively work as a commitment device for the principal, determining the information set on which he will make his decision. This mode of commitment requires that communication is credible, though, which becomes a binding constraint when the inconsistency problem becomes too severe. This result suggests that principals that are formally constrained in their ability to delegate real authority may be able to solve a time inconsistency problem anyway by choosing agents of expertise which are known to have certain preferences. For instance, delegating decisions over fiscal policy to politically unaccountable bureaucrats is generally deemed in conflict with a democratic constitution. But our first result suggests that politicians should be able to at least partly solve a political business cycle problem in fiscal policy by appointing known fiscal conservatives to important non-political advisory positions.

The second main finding of the paper is that the principal may even strictly prefer communication if there is prior uncertainty over the preference distance between the principal and the agent (political uncertainty). With political uncertainty, the principal must accommodate all potential outcomes in his choice of agent, trading off over-investment in some states of the world against under-investment in others. The benefit of communication is that the need to ac-
commodate becomes smaller, because the principal has the option to ignore the agent’s message and make his decision based on his prior. In the binary case, the principal can appoint the optimal agent in one state of the world and then base his decision on his prior in the other, rather than choosing the best compromise for both states. The choice of organizational design then becomes a matter of the degree of political uncertainty relative to the severity of the time inconsistency problem. This result can help us better understand how firms as well as politics is organized. As pointed out in the Introduction, there is a large degree of variation in the choice between delegation and communication both between different organizations, and within organizations for different tasks. The extent to which the existing variation fits the predictions of the existing model goes beyond the ambition of this paper. However, it is indeed an interesting question for future research.
References


Appendix

A.1 The Hold up Problem

To keep the analysis tractable, we have so far focused on the soft budget problem. The main results are the same in the hold up case, but the details of the analysis of the communication game are slightly different.

The first difference is illustrated in Figure 5. As drawn, the ray representing the ideal agent $\beta_a = \alpha \beta_g$, lies entirely within the shaded region (up to point A). Thus, if the government appoints an expert along this ray, it will always follow the resulting advice. For $\beta_g$ to the right of point A, the optimal agent is $\beta_a = 1$. This agent always recommends protection, and the government always protects (as $\beta_g > 1$). Thus, contrary to the soft budget case, regardless of $\beta_g$ the optimal ex ante decision rule is implemented. However, if $\alpha$ is large enough that the ray lies entirely outside of CCS, then for all $\beta_g \leq \bar{\tau}$ (the range such that the government would refuse protection on the basis of its priors), the government cannot follow the advice of the ideal agent, because the ideal agent is too protectionist. As in the soft budget case, the solution is to appoint $\beta_a = \tau^{-1}(\beta_g)$, the most protectionist agent that the government would follow.

![Figure 5.](image-url)

A key difference between the hold-up problem with liberal priors and the
soft-budget problem with protectionist priors is thus that the ability of the government to solve the former by seeking advice does not depend on $\beta_g$. This is an artifact of the uniform distribution, though. In general, $\tau^{-1}_1(\beta_g)/\beta_g$ does depend on $\beta_g$. Nevertheless, the difference between the two in the uniform case is illustrated in Figure 6. The shaded regions are the parameters for which delegation is strictly preferred to communication. These are defined by, $\tau^{-1}_1(\beta_g)/\beta_g = 2$ and $\tau^{-1}_0(\beta_g)/\beta_g = 2 - \frac{1}{\beta_g}$.

![Figure 6.](Image)

Introducing political uncertainty once again changes things. We here focus on the case with two potential realizations of $\beta_g$. Figure 6 illustrates the problem assuming $2 > \alpha > 1$.

![Figure 7.](Image)
Again communication and delegation are the same in the case of $\bar{\beta}$. In the case of $\bar{\beta}'$, they are not, as $\beta_a = \alpha \bar{\beta}'$ would imply that the government ignores the agent’s advice in the low state. The two options for the government are either to lower $\beta_a$ to $\tilde{\beta}$ or raise it to $\hat{\beta}$. At $\tilde{\beta}$ the government follows the agent’s advice in both states but suffers a larger loss in the high state. At $\hat{\beta}$ the government follows the agent’s advice in the high state without loss but ignores the agent’s advice in the low state and suffers an ignorance loss. The resulting expected loss is,

$$\hat{\Lambda} = \frac{1}{2} \int_{0}^{\alpha (\bar{\beta}' - \epsilon)} [\alpha (\bar{\beta}' - \epsilon) - c] g(c) dc$$

(22)

which works out to $\frac{1}{4} \alpha^2 (\bar{\beta}' - \epsilon)^2$.

We are interested in whether it is better to delegate authority or to seek advice from an agent the government intends to ignore in the low state. Seeking advice will be strictly preferred if, $\hat{\Lambda} < \Lambda (\beta_a^D)$, which yields the following results.

**Proposition 7** Communication is strictly preferred to delegation when $\epsilon > \bar{\epsilon} (\bar{\beta}') \equiv \sqrt{2} \bar{\beta}' / (1 + \sqrt{2})$. The threshold $\bar{\epsilon} (\bar{\beta}')$ decreases as $\bar{\beta}'$ decreases.

Again the main conclusion is that seeking advice is preferred for high enough $\epsilon$, but under the holdup problem the threshold increases with $\bar{\beta}'$ and, as long as $\alpha < 2$, it is independent of $\alpha$. Thus, although greater severity in political uncertainty increases the likelihood that communication is preferred, this result is independent of the severity of the holdup problem, as long as that problem is relatively moderate. Once $\alpha \geq 2$ this is no longer true, though, and communication becomes less attractive as the holdup problem becomes more severe, as with the soft budget case.

A.2 Proof of Proposition 2:

Under delegation, we have $\beta_a^D = \alpha \bar{\beta}$, and $\frac{d\beta_a^D}{d\alpha} = \bar{\beta}$, which is evaluated at $\bar{\beta} = \frac{1}{2}$ and $\alpha = 1$. Under communication, the optimal agent is determined by
equation (21). Evaluating at $\alpha = 1$ gives $\beta_a = \int_{\beta_a}^{1+\beta_a} x\phi [x | \beta_a] \, dx$. As $h$ is symmetric, the solution is $\beta_a^C = \frac{1}{2}$. Total differentiation of (20), yields,

$$
\frac{d\beta_a^C}{d\alpha} = \frac{\int_{\beta_a}^{1+\beta_a} x h(x) dx - \frac{1}{4} \left[ (1 - \beta_a^2) h \left( \frac{1+\beta_a}{2} \right) + \beta_a^2 h \left( \frac{\beta_a}{2} \right) \right]}{H \left( \frac{1+\beta_a}{2} \right) - h \left( \frac{\beta_a}{2} \right) - \frac{\alpha}{4} h \left( \frac{1+\beta_a}{2} \right) + \Psi (\beta_a)}
$$

where $\Psi = (\beta_a - \frac{5\alpha}{4}) \left( h \left( \frac{1+\beta_a}{2} \right) - h \left( \frac{\beta_a}{2} \right) \right) - \frac{1-\alpha}{4} \left[ (1 - \beta_a^2) h' \left( \frac{1+\beta_a}{2} \right) + \beta_a^2 h' \left( \frac{\beta_a}{2} \right) \right]$. Evaluating at $\alpha = 1$ and $\beta_a = \frac{1}{4}$, and noting that symmetry implies, $h \left( \frac{3}{4} \right) = h \left( \frac{1}{4} \right)$, gives

$$
\frac{d\beta_a^C}{d\alpha} = \frac{\frac{1}{4} \left( H \left( \frac{3}{4} \right) - H \left( \frac{1}{4} \right) \right) - \frac{1}{4} h \left( \frac{3}{4} \right)}{H \left( \frac{3}{4} \right) - H \left( \frac{1}{4} \right) - \frac{1}{4} h \left( \frac{3}{4} \right)} = \frac{1}{2} - \frac{1}{8} h \left( \frac{3}{4} \right) < \frac{1}{2}
$$

$\blacksquare$