AGENCY PROBLEMS IN POLITICAL DECISION MAKING

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Agency Problems in Political Decision Making

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Dedicated to my parents and my teachers

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Rotterdam, Winter 2005.

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Chapter 1

Introduction

1.1 Point of Departure

Policy makers frequently have to make decisions about policies where the consequences are complicated and difficult to foresee. To reduce the risk of making wrong decisions, they need pertinent information regarding the policies. Due to a lack of time required to collect information, in addition to the expertise necessary to examine the possible effects of policies, policy makers rely on the consultation of others, like bureaucrats, policy advisers, or other experts.

While specialization facilitates the acquisition of expertise, it also creates agency problems. Those who are capable of providing information often have a vested interest in the policy outcomes; this gives them an incentive to manipulate the information they are relaying.[1] For instance, advisers possess their own ideology or perception towards policies, which may not be in accordance with the policy makers'. They may have an incentive to provide biased information and give recommendations that influence the policy makers to implement policies which are in tune with their interests.

[1]See e.g. Calvert (1985a) and Milgrom and Roberts (1986).

Another agency problem occurs in collective decision making. Small groups such as committees regularly engage in assisting policy makers in the policy decision process. Members of these committees collect information, debate current policies, and devise policy recommendations. The idea that the quality of information is crucially important to the quality of decision making is hardly controversial. However, a potential problem is that committee members may lack the incentives to collect information due to a well-known free rider problem. In addition, committees' incentives to invest in information are also affected by the committees' architectural design of committees–sizes, decision rules, and procedure.

Besides ongoing agency problems in the policy decision process inside the political arena, there are agency problems between policy makers and the citizenry. Through elections, citizens give politicians the authority to formulate and implement a wide variety of policies. This delegation may create agency problems. For instance, politicians may appropriate rents, implement inefficient policies, or otherwise act against the interest of society. In fact, the Transparency International's Global Corruption Report 2005 shows that corruption in politics has been widespread across the world-both developing and industrialized countries. Moreover, a number of surveys suggest that citizens are skeptical about the quality of policy makers–competence and honesty–and their misbehavior.[2]

This thesis is the result of numerous concerns over the aforementioned agency problems. We examine some institutional arrangements aimed at alleviating agency problems in policy decision process. The arrangements studied here are as follows: the introduction of a penalty for lying and reputational concerns as a means to reduce information manipulation by information providers; the role of debate in committee decision making as a

[2]See, e.g. the Pew Research Center for the People & the Press (www.pewresearch.org) for how Americans view government; Langer (2002) for a survey on trust in government.

means to share information and correct mistakes; and the role of elections in disciplining and selecting politicians.

The remainder of this introduction will provide a brief overview of the related literature followed by what aspects of the literature might be missing or incomplete. Subsequently, we provide a road map of the thesis and an overview of our results.

1.2 A Brief Overview of Related Literature

1.2.1 Policy Advice in Policy Decision Process

One main focus in the literature on the role of information providers in the policy decision process is the transmission of information from an information provider to an uninformed policy maker. Basically, a point of departure refers to the situation wherein a policy maker has to make policy decisions under uncertainty. To avoid making a wrong decision, the policy maker typically consults an information provider often referred to as a policy adviser, a bureaucrat, or an expert. Two key questions are: (i) To what extent does the interaction between the two lead to an efficient use of information? and (ii) Who has taken the genuine control over policies?

In response to the first question, as an information provider may not share the same perception or ideology with the policy maker, he may have an incentive to provide biased information. Several authors have identified the conditions under which an information provider reveals truthful information to a policy maker. The common insight is that the probability that the information provider manipulates information is small when the policy maker and the information provider's preferences are closely aligned (see e.g. Crawford and Sobel 1982, Calvert 1985a, Milgrom and Roberts 1986, and Letterie and Swank 1997).[3]

[3]For the case where a policy maker consults multiple information providers, see Krishna and Morgan (2001b).

With respect to the second question, the classic work of Niskanen (1971) shows that bureaucrats can influence policies by using the monopoly power of the information they possess. An implication is that, even though the policy maker has *de jure* authority to make policy decisions, *de facto* authority is in the hands of bureaucrats (Aghion and Tirole 1997).

Many scholars, however, argue that the influence of information providers on policy decisions should not be exaggerated. A main criticism of Niskanen's theory of bureaucracy is that there the role of policy makers is completely passive. In fact, the policy makers can effectively limit the power of bureaucrats by exercising several institutional arrangements. In particular, they can create institutions so as to reduce the bureaucrats' incentive to manipulate information, for instance, through direct monitoring (Downs 1967), oversight (McCubbins and Schwartz 1984), or administrative procedures (McCubbins et al. 1987).

Recently, Lupia and McCubbins (1994, 1998) argue that regardless of a dissimilarity of preference, learning between an information provider and a policy maker is possible if some external measures are put in place. For instance, learning improves when (i) penalties for lying increase, (ii) higher costs are attached with the informed party's actions, and (iii) informed party's transmitted information can be possibly verified at some certain degree.

Besides explicit mechanisms above, scholars suggest that reputation concerns may induce an information provider to act in the interest of the policy maker. The policy maker and information provider do not meet only once but several times. The information provider may not only want to influence only current policy decisions but also future policy decisions. Given this ongoing relationship between the two, the policy maker's power to replace an information provider creates reputational concerns. The desire to put a stamp on future policies can restrain information providers from manipulating information (Wittman 1995, Bendor et al. 2001).

1.2.2 Making Decisions Collectively: Information Collection and Information Aggregation through Debate

In governmental organizations, small groups like committees assist policy makers to make sound policy decisions. Members of committees have to collect information, discuss on the policies of concern, and make a final collective decision through voting. A rationale for making decisions collectively is the improvement of quality of decision making.

The formal study on information aggregation dates back to the Jury Theorem proposed by Condorcet (1785 [1976]). One of the main arguments of this theorem is that a group is more likely to make an accurate decision than a single individual. Loosely speaking, this argument is equivalent to the old saying that "two heads are better than one." The result is implicitly warranted with two behavioral assumptions: (i) individuals each non-strategically (or sincerely) select their choice, and (ii) an individual's incentive to collect information is unrelated to the group size. Information aggregation has attracted much attention from social scientists since the Condorcet's theorem. Both political scientists and economists have attempted to identify conditions under which the above result deserves a caution, and attempted to generalize and reinforce Condorcet's intuition about the informational efficiency of voting institutions (Piketty 1999).

Strategic versus Non-Strategic Voting

Recent literature has questioned non-strategic voting implicitly assumed in the Jury Theorem. Austen-Smith and Banks (1996) show that sincerely voting behavior by all individuals is not a stable situation even when all have identical preferences. Fedderson and Persendofer (1998) apply the Austen-Smith and Banks' framework to study jury procedures in criminal trials and show that it is never optimal for all jury members to vote nonstrategically under unanimity rule. Moreover, it is shown that in equilibrium, there is a higher probability of both convicting an innocent and acquitting a guilty defendant

under a unanimous rule compared to under a wide variety of alternative voting rules, including a simple majority rule.

However, some scholars defend the unanimous jury rule. Gerardi (2000) argues that when jurors behave strategically and are uncertain about how other jurors weigh two conceivable misjudgements–convicting the innocent and acquitting the guilty, the unanimity rule can still protect innocent defendant against wrongful convictions. By either introducing the possibility of mistrial or allowing for limited communication among jurors, Coughlan (2000) shows that informative or sincere voting can result in a Nash equilibrium and that unanimous rule performs better than any alternative rule in minimizing probability of trial errors.

Acquisition of Costly Information

The assumption of costless information collection has been scrutinized as well. In actual practice, acquiring information requires a great deal of time and effort; therefore agents who are delegated to complete this task must be sufficiently motivated. With respect to the relations between information acquisition and group size, more recent studies show that endogenizing information profoundly affects the results derived from the standard model of information aggregation where information is exogenously given. Mukhopadhaya (2003) points out that a jury's information does depend on the size of jury. With majority voting, a larger jury may make poorer decisions compared to a small jury because the free-rider problem can be more severe in a large jury. In a similar vein, Persico (2004) deviates from the standard model of information aggregation by endogenizing information collection. He considers a model of information aggregation where agents must be motivated to collect costly information, and shows that a voting rule requiring larger plurality to upset the status quo is optimal only if each committee member's information is sufficiently accurate. When individual information is noisy, more restrictive rules to upset the status quo weaken the committee members' incentives to collect information.

Recently, Cai (2005) considers a model of committee size where committee members have heterogeneous preferences and information gathering is costly. In his model, the committee members exert costly efforts to acquire information and then report their findings to a principal. Cai points out that when effort cost is sufficiently high, heterogeneous preferences can provide members additional incentives to gather information, thus alleviating the moral hazard problem in information acquisition.

Aggregation of Information through Deliberation

Deliberation (or debate) is a widely observed feature in collective decision making procedures. In a small group decision body, members often meet to deliberate before making a collective decision by vote. For instance, the Federal Open Market Committee (FOMC) members convene before deciding whether interest rates should increase, decrease, or remain unchanged; trial jurors deliberate before arriving at their verdicts; and top management boards meet to discuss before reaching their firms' investment decisions. A rationale for deliberation is learning. Different individuals possess different pieces of information, some correct and some plainly wrong. In essence, deliberation is a *means* of sharing information and correcting mistakes.

Despite the fact that the importance of deliberation is justified by both theoretical ground and actual practice, a large body of existing literature on information aggregation in group decision making confines itself to a study of information aggregation through voting, with a main focus on the informational efficiency of alternative voting rules. Deliberation, as an important stage in the collective decision process, is explicitly absent in most studies and thus is not well understood. A few recent attempts have been made focusing on the role and implications of communication on collective decision making.

Austen-Smith and Fedderson (2002) study a situation where committee members deliberate prior to voting, with a focus on how different voting rules affect information sharing and the quality of decision making. They show that when communication is added,

majority voting rule induces more information sharing and less errors in decision making than unanimity. When committee members share the same preferences, each member would have an incentive to reveal information truthfully. So deliberation may help them to reach better informed decisions. This argument holds true when their preferences are not too far apart (Austen-Smith 1990, Coughlan 2000). Doraszelski et al. (2003) study a situation where committee members differ in their attitudes towards making an error. They show that when the members have different and perhaps conflicting preferences, communication plays a main role of double check: when a member's received information conflicts with his own preferences, he votes in line with his private information only if it is confirmed by the message he receives from another member.

Problems about reputational concerns may also arise when members of committee deliberate. Committee members may differ in their abilities and, when they are asked to reveal their private information, sequences of speech matter. The desire to appear well-informed may induce an agent to suppress his true information (Ottaviani and Sørenson 2001).[4]

Overall, we have learned a great deal from these studies in reference to the presence of communication and its effect on the quality of decision making through a number of mechanisms, depending on the committees' characteristics (i.e. preferences, ability), voting rules, and procedures.

1.2.3 Disciplining and Selecting Politicians

Understanding how elections function is a key in understanding agency problems in politics (Besley 2002). In representative democracies, elections play three key functions: (i) aggregating voters' preferences about policies, (ii) disciplining politicians while in office,

[4]For early treatments of the herding problem in group decision making, see, for instance, Scharfstein and Stein (1990), Banerjee (1992).

and (iii) selecting good politicians to run office.[5] A notion that underlines the importance of elections is that politicians can differ in their competence and motivation in running for public office. One can think of politicians' competence as their ability to reduce waste in the budget process (Rogoff and Sibert 1988), to promote growth with minimum inflation (Persson and Tabellini 1990), or to provide public goods with minimum tax revenues (Caselli and Morelli 2004). Concerning motivation, it may refer to politicians' motive to act in the interest of society. In the traditional public choice literature, politicians are typically assumed to have narrow self-interest. Politicians are opportunistically motivated, meaning they care mostly about diverting public resources for their private gains. This notion seems to leave no room for the selection role of elections, but only the disciplining of politicians. As Buchanan (1989, p. 18) put it, "to improve politics, it is necessary to improve or reform the rules, the framework within which the game of politics is played. There is no suggestion that improvement lies in the selection of morally superior agents who will use their powers in some 'public interest.'" However, when the motivation of politicians matters, political selection becomes increasingly important (Besley 2005).

Disciplining and selecting politicians is not an easy task as voters are typically ill-informed in various aspects. First, they may be ill-informed about the effects of policies because they have weak incentives to gather information about the policy effects due to the well-known free-rider problem (Downs 1957). Second, they may be imperfectly informed about policy makers' preferences (Alesina and Cukierman 1990). Finally, voters may be imperfectly informed about quality of policy makers. For instance, they may be uncertain about the policy maker's competence in promoting public welfare or their motivation in running for public office. Moreover, politicians as policy makers have a

[5]In this thesis, we mainly focus on disciplining and selecting functions of elections. For the role of election in aggregating voters' preferences, see the literature on preelection politics, e.g. electoral competition (Downs 1957, Calvert 1985b, and Alesina and Rosenthal 1995)

privileged access to information and expertise provided by several information providers (Cukierman and Tommasi 1998).

With the presence of voters' incomplete information about the aforementioned aspects, politicians may have an incentive to influence voters' beliefs about the policy effects and/or their characteristics for the purpose of winning elections. Rogoff (1990) finds that if voters have incomplete information about incumbent's competence, an incumbent may distort fiscal policy by creating an easily observable economic surprise ahead of elections so as to enhance his prospect of reelection. In a similar vein, Dur (2001) argues that if politicians sufficiently care about holding office, they may not repeal inefficiently implemented policies as doing so may weaken voters' beliefs about their competence. This would erode their chances of getting reelected. In addition, reputational concerns may also induce politicians to be overly cautious in deciding to undertake actions (Cadot and Sinclair-Desgagné 1992), employ inefficient methods of redistribution (Coate and Morris 1995), or adopt a secret decision procedure (Swank 2000a). This literature has greatly contributed to our understanding of how policies are being chosen and conducted in the light of agency problems between politicians and voters.

1.2.4 What Might be Missing or Incomplete?

The following topics, in our view, are the relevant issues needed to be examined in further detail: penalty for lying; reputational concerns; deliberation as a means of information aggregation; and politicians' motivation, role of elections, and policy choice.

Penalty for Lying

Lupia and McCubbins (1994, 1998) have examined several institutional arrangements aimed at facilitating information transmission from an information provider to an un-

informed policy maker. A penalty for lying is one of proposed external forces.[6] They argue that the extent to which a policy maker can learn from an information provider is nondecreasing in the amount of the penalty for lying. A problem with this argument is that it has implicitly assumed that an informed agent always participates in providing information. This assumption may be innocuous when we study a model of information transmission in which an information provider does not directly suffer from providing advice (i.e. message is cheap talk). Nonetheless, the introduction of a penalty for lying may reduce an information provider's incentive to provide information.

Reputational Concerns

Recently, scholars have argued that the policy maker's power to replace an adviser induces the adviser to act more in line with the policy maker's interests. (see Lupia and McCubbins 1994, 1998, Wittman 1995, and Bendor et al. 2001). The reason is that the adviser's desire to put a stamp on future policy reduces his incentive to manipulate information. Nonetheless, neither of them shows that this is really the case.

Deliberation as a Means of Information Aggregation

A large part of the literature on committee decision making does not allow communication even though in the real world committee members often deliberate before they vote. In a world where information is not free, but costly, the committee members must be motivated to gather the costly information. A number of research programs have focused extensively on how size and rules affect a committee member's incentives to collect information; however, the question of how communication affects the committee members' incentive to collect information has not received much attention.

[6]Lupia and McCubbins (1998) represent penalties for lying as "a cost, $pen \geq 0$, that the speaker must pay when sending a false signal. This penalty directly affects the speaker's utility." (p. 53)

Politicians' Motivation, Role of Elections, and Policy Choice

Traditional literature on public choice typically assumes that political entrepreneurs are purely opportunistic. In the literature, politicians mainly differ in their competence, such as their ability to generate public goods at lowest costs (Barro 1973, Ferejohn 1986, and Rogoff 1990), or to design effective policies (Dur 2001). Citizens reward and punish politicians on the basis of who appears to perform well; politicians' motivations do not really matter. In fact, politicians can differ in their motivations. Public-spirited politicians care about improving the welfare of society, not about appropriating rents, while rent-seeking politicians care about spoiling office for private gains. We thus investigate how elections perform their functions and how policy choices are made in an environment where politicians differ in their motivations.

1.3 What Do We Add?

The following is our contribution to the issues that seem to be missing or incomplete in the literature mentioned above. Chapters 2 and 3 revolve around strategic information transmission between a policy maker and an adviser, with a focus on a penalty for lying and reputational concerns, respectively. Chapter 4 examines the consequences of communication in committee decision making where committee members must be motivated to collect costly information. Finally, Chapter 5 of the thesis studies the disciplining and selecting functions of elections and policy choices where politicians differ in their motivation of running public office. The remainder of the introduction provides an overview of each chapter.

In Chapter 2, we study strategic information transmission between an adviser and a policy maker. A policy maker has to decide on the desirability of a project. There are two alternatives: implementing the project and maintaining the status quo. To make an informed decision, the policy maker consults an adviser. The adviser observes a private

signal in reference to the consequences of the policy and then recommends whether the policy should be implemented or maintained the status quo. Finally, the policy maker decides on the project. The policy maker and the adviser have conflicting preferences as to the desirability of the project; therefore, the adviser may manipulate information to bias the policy maker's decision.

This chapter examines a penalty for lying as a means to reduce information manipulation. We attempt to identify under which conditions a penalty for lying may reduce the adviser's incentives to manipulate information and, in effect, help the policy maker to reach better-informed decisions. We show that the extent to which the policy maker can learn from the adviser's information is not always increasing in the size of the penalty for lying. This result conflicts with Lupia and McCubbins (1994, 1998). A high penalty for lying may restrain an adviser from providing information about the effects of policies; as a result the probability that the policy maker makes a good decision decreases. Second, we show that only when a penalty for lying is endogenous (i.e. ensuring that the adviser is willing to participate in providing information, the penalty for lying helps the policy maker to improve the quality of decision making). This result also exhibits a trade-off between the need to mitigate information manipulation and the need to obtain information.

In Chapter 3, we study the role of reputational concerns in the policy decision process. In particular, we attempt to identify under which conditions reputational concerns induce an adviser to act in the interest of the policy maker. Based on the basic model in the previous chapter, we present a simple two-period model of information transmission from an adviser to a policy maker. In each period, the policy maker has to decide upon the desirability of a policy. There are two alternatives: implementing the policy and preserving the status quo. Before making a decision, the policy maker requests an adviser's recommendation. The type of adviser is his private information. A good adviser is an adviser whose preference towards desirability of the policy is more closely aligned with

that of the policy maker. The policy maker has an opportunity to dismiss and replace the first-period adviser before the second period, based on the first-period advice.

We show that the policy maker's power to replace an adviser in the middle of a sequence of policy decisions may have an adverse effect on the behavior of good advisers and in turn on the policy maker. In particular, the quality of the advice from a good adviser in the first period may deteriorate compared to a case where an adviser cannot be replaced. The reason is that a good adviser may attempt to distinguish himself from a bad type, hence provoking him to distort his advice.

In Chapter 4, we study the implication of communication on information acquisition in collective decision making. We employ a simple model of committee decision making where committee members communicate before casting their vote on an issue. The decisional process is composed of three stages: 1) committee members collect information, 2) they exchange information through a debate, and 3) they vote on the issue. Communication is viewed as a means of improving the quality of decision making. We consider two different views of deliberation: an optimistic view and a pessimistic view. The optimistic view of deliberation is that deliberation may help to distinguish right arguments from wrong arguments while the pessimistic view of deliberation is that a wrong argument may spoil a correct one. An important feature of our model is that we endogenize information acquisition. Acquiring information is costly, thus, in order to improve the quality of collective decision making, committee members must be motivated to collect the costly information. The consequences of deliberation may, however, affect the incentives to collect information by a committee member. We show that even if we take an optimistic view of deliberation, deliberation may result in a decreased incentive to collect information by committee members. The reason for this result is that the free-rider problem may become severe. Accordingly, deliberation may reduce the probability that the committee make better-informed decisions.

In Chapter 5, we develop a simple two-period model to study the importance of the differences in motivation among politicians in describing the roles of elections and explaining policy choices. In our model, politicians differ in their motives for running a public office. Good politicians care about policies while bad politicians care not only about policies but also about the extraction of the rents. Voters want to control politicians' misbehavior as well as to select good politicians. We show that reelection concerns may compel a good politician not to implement a socially desirable policy if they sufficiently care about occurrences of rent extraction in the future. Second, reelection concerns may induce a bad politician not to undertake a socially undesirable policy for fear of being ruled by another bad politician if unseated. This finding exhibits the disciplining function of elections. A striking result is that in an equilibrium, namely 'a cynical equilibrium', bad politicians may act more in tune with the public interest relative to the good politicians.

Chapter 6 summarizes the main findings and provides topics for further research.

Chapter 2

Policy Makers, Advisers, and Penalty for Lying

2.1 Introduction

Policy makers are often poorly informed about the consequences of policies that they have to take decisions upon. To reduce the chances of making wrong decisions, policy makers may find it useful to consult agents who possess better information, like advisers, bureaucrats, and experts. Those who are capable of providing information are usually those who have a vested interest in the outcome (Milgrom and Roberts 1986). This gives them an incentive to provide biased information to the policy makers.

The interaction between policy makers and informed parties has been an important subject of interest by many scholars. In his influential work, Niskanen (1971) argued that informed parties (in his book, bureaucracies) have control over policies because they have a monopoly of information. Many critics, however, point out that the power of informed parties should not be overstated because the policy maker can restraint the power of bureaucracies by direct monitoring (Downs 1967), oversight (McCubbins and Schwartz 1984), and reputational mechanism (Wittman 1995).

Recently, Lupia and McCubbins (1994, 1998) examine the use of external forces aimed at reducing informed parties' incentives to manipulate information. One of these external forces in their study is a penalty for lying.[1] They have argued that the extent to which uninformed parties can learn from informed parties is nondecreasing in the size of the penalty for lying. A problem with this argument is that it seems to disregard the effects of a penalty for lying on the incentives of informed parties in providing information. Certainly, the assumption that informed parties are willing to provide information is innocuous in the standard models of information transmission, because the informed parties never suffer from providing information. However, the introduction of a penalty for lying may affect informed parties' willingness to provide information.

The present chapter studies a penalty for lying as a means to alleviate information manipulation by informed parties. First, we attempt to identify the conditions under which policy makers can induce informed parties not to manipulate information by imposing a penalty for lying. Second, we examine how a penalty for lying affects informed parties' incentives to provide information; this in turn may affect merits of a penalty for lying argued by Lupia and McCubbins. We employ the model of information transmission used by Letterie and Swank (1997). The policy maker has to make a decision about a particular project. There are two alternatives: implementation or status quo. The consequences of the project are surrounded by uncertainty. Without relevant information, the policy maker runs the risk of making a wrong decision. To reduce such a risk, she consults an adviser. The adviser has private information about the consequences of the project; moreover he has a prior perception about the net benefits of the project which is not congruent–but known– with the policy maker's perception. When making a recommendation to the policy maker, the adviser has two alternatives: truthful reporting

[1] Lupia and McCubbins (1998, p. 54) interpret penalties for lying as "the explicit fines levied on people who lie (e.g., in cases of perjury) and the losses in valued reputations for honesty that result from being caught making false statements."

and lying. If a penalty for lying is established, and he is caught disclosing misleading information, he will be penalized.

Our analysis leads to the following results. First, not surprisingly, a penalty for lying has no influence when an adviser is more biased towards the status quo relative to a policy maker. Succinctly, to discover a lie, a project needs to be undertaken – so that its outcomes will be realized; however lying in this incidence leads to the status quo.

Second, contrast to Lupia and McCubbins' result, we have shown that the extent to which the policy maker can benefit from the adviser's information and expertise is *not* always increasing in the amount of penalty for lying. A sufficiently high (exogenous) penalty for lying may induce an adviser to choose not to participate in providing information, resulting in the policy maker's decreased expected utility. Only when the penalty for lying is endogenously determined–i.e. the penalty in which ensures that the adviser participates in giving advice, it can help the policy maker to make better informed decisions.

To understand this result, consider the following situation. Suppose that the adviser is strongly biased in favor of implementation and that the policy maker's default choice towards the project is implementation. Moreover, suppose also that the adviser chooses whether or not to participate in providing information prior to examining the effects of the project. The adviser strongly prefers the project to be implemented. If he chooses to participate, a high penalty for lying would restrict him to act more in accordance with the policy maker's preferences–i.e. recommend the status quo more often compared to when no such penalty is introduced. The higher the penalty for lying is, the higher is the chance that the status quo will be maintained. Without further information about the project, the policy maker is to choose implementing the project. Anticipating this as well as facing with a sufficiently high penalty for lying, the adviser–with strong preferences towards implementation–may avoid the chance that the status quo is chosen by choosing not to participate. Consequently, too high penalty for lying may affect an adviser's

incentives to providing information, resulting in information loss and in turn decreased utility of the policy maker.

Taking into account the effects of penalty for lying on the adviser's participation decision, Lupia and McCubbins' proposition–in that the higher the penalty for lying is, the more is the informative communication between the policy maker and the adviser–is valid only when the adviser is more biased towards the implementation than the policy maker and the policy maker's default choice is the status quo. The penalty for lying leads to better informed decisions.

Our study is closely related to the literature on strategic information transmission in the decision making process. Many scholars have identified conditions under which information transmission is informative or messages can be trusted (e.g. Crawford and Sobel 1982, Austen-Smith and Banks 1999). An important insight from this literature is that communication between informed parties (e.g. advisers, bureaucrats, interested groups) and uninformed parties (e.g. policy makers, ministers, legislators) requires that their interests are sufficiently aligned. Additionally, insofar as the interest of both parties are imperfectly aligned, information transmission is far from being efficient due to the fact that the informed parties may have an incentive to manipulate information.

The question of how to induce informed parties to provide truthful information is not new. Many scholars have studied delegation as a means to avoid noisy communication due to incongruence in interests over the outcomes between informed and uninformed parties (see e.g. Gilligan and Krehbiel 1987, Aghion and Tirole 1997). When deciding whether or not to delegate authority to informed parties, uninformed parties face a trade-off between the loss of control under delegation and a loss of information under communication (Dessein 2002). Apart from the use of delegation, another strand of literature has focused on the implications of reputation mechanism (Sobel 1985, Wittman 1995, and Morris 2001), competition (Milgrom and Roberts 1986), and ex post money transfer mechanism (Groves

1973, d'Aspremont and Gérard-Varet 1979) in shaping incentives of informed parties to reveal truthful information.

The remainder of the chapter is organized as follows. The next section describes the basic model of information transmission with a conflict of interest between a policy maker and an adviser. Section 2.3 introduces a penalty for lying into the basic model, and identifies the conditions under which the penalty for lying may induce an adviser to refrain from manipulating information, as well as the conditions under which the penalty for lying is beneficial to the policy maker. Section 2.4 concludes.

2.2 The Basic Model

Consider a simple game with two players: a policy maker and an adviser. The policy maker has to decide on a public project, X. There are two alternatives: implementation denoted by $X = 1$ and status quo denoted by $X = 0$. When the policy maker chooses maintaining the status quo ($X = 0$), by normalization, her payoff is equal to: $U^P(X = 0) = 0$; and when she chooses implementing the project ($X = 1$), her payoff is given by

$$U^P(X = 1) = p + \mu, \tag{2.1}$$

where p is the policy maker's predisposition towards the project and μ is a stochastic term. The stochastic term μ captures uncertainty about the consequences of the project. We assume that μ is uniformly distributed over $[-h,\ h]$. Under full information, it directly follows from (2.1) that the policy maker would choose $X = 1$ when $\mu > -p$ and $X = 0$ when $\mu < -p$. However, we assume that the policy maker does not observe μ. This implies that if there is no information about μ, the decision on the project depends on p. That is, the policy maker would choose $X = 1$ if she is biased towards implementing the project, $p > 0$ and would choose $X = 0$ if she is biased towards the status quo, $p < 0$.

We consider a situation where the realization of μ is crucial for determining whether the policy maker benefits from implementing the project. Throughout we therefore assume that $h > |p|$, implying that the policy maker has an interest in obtaining information about the realization of μ, because without information about μ the policy maker runs the risk of making a wrong decision about the project.

The policy maker lacks the time and expertise to examine μ. To obtain information about μ, she can consult an adviser. The adviser observes μ and sends a message to the policy maker. We define the adviser's message space as $\{Y, N\}$ where Y implies that the adviser recommends implementing the project and message N implies that the adviser recommends preserving the status quo.[2] After the policy maker has received the message, she takes a decision about the project.

Like the policy maker, the adviser is an interested party who has his own predisposition towards the project, denoted by a, and cares about the outcomes of the project. When the policy maker chooses the status quo, by normalization, the adviser is assumed to receive a zero payoff: $U^A(X = 0) = 0$; and when the policy maker implements the project, the payoff to the adviser is given by

$$U^A(X = 1) = a + \mu. \tag{2.2}$$

To examine the effects of the penalty for lying, we assume that $a \neq p$, implying that an adviser has an incentive to manipulate information when he gives a recommendation about the desirability of the project to the policy maker.

The description of the game is presented in Table 2.1.

[2]Whatever the adviser would like to say to the policy maker, he could say; but at end of the day, he has to give a final verdict about the desirability of the project to the policy maker by either recommending $X = 1$ or $X = 0$. We thus assume a natural language in that the adviser's recommendation always reflects his preferred action.

Table 2.1: The Description of the Game

Players: The policy maker P and the adviser A

Timing:

- Nature reveals $\mu \in [-h, h]$ to A.
- A sends a message $m \in \{Y,\ N\}$.
- P receives m and chooses $X \in \{X = 0,\ X = 1\}$.
- Both player's payoffs are realized.
- The game ends.

Payoffs:

$U^P(X = 1) = p + \mu$ and $U^P(X = 0) = 0$.

$U^A(X = 1) = a + \mu$ and $U^A(X = 0) = 0$.

Assumptions:

$h > |p|$ and $a \neq p$.

2.2.1 Communication Equilibria

The game between the policy maker and the adviser described above is a game of incomplete information. The adviser knows something the policy maker does not know but, more importantly, desires to know. Thus information possessed by the adviser is not only private but also valuable to him and the policy maker. The fact that the adviser, as an informed player, moves before the policy maker, as uninformed player, gives the adviser a strategic opportunity of exploiting his privately valuable information so as to influence both players' payoffs. To make an optimal decision on the project, the policy maker

has to make an inference about the state of the world through a received message from the adviser. Accordingly, the equilibrium concept employed here is of a perfect Bayesian equilibrium (PBE). Necessary conditions for the existence of a PBE are that the players' actions must be best responses to each other given the equilibrium beliefs and that the policy maker's equilibrium beliefs about μ are determined by Bayes' rule and the players' equilibrium strategies. In this game, there are two types of equilibria: pooling equilibrium and partially pooling equilibrium. In a pooling equilibrium, the adviser sends a message and the policy maker ignores it. In other words, communication between the adviser and the policy maker does not occur. In a partially pooling equilibrium, the adviser's message contains valuable information about the realization of μ and affects the decision on the project: a message Y leads to implementation and a message N leads to the status quo. Thus communication between these two players occurs.

First consider adviser A's message strategy.[3] If message Y may induce the policy maker to implement the project, the adviser sends Y when $\mu \geq -a$ and sends N when $\mu < -a$.[4] When the policy maker receives a message from the adviser, she makes an inference about the realization of μ conditional upon the message received:

$$E(\mu|m = Y) = \frac{1}{2}(h - a) \tag{2.3}$$

and

$$E(\mu|m = N) = -\frac{1}{2}(h + a). \tag{2.4}$$

[3]Clearly, all advisers with $a > h$ want the policy maker to believe that the project is good irrespective of the realization of μ. Any messages conveyed by those advisers provide no information about μ and are not credible. Consequently, communication cannot occur when $a > h$. The analogous reasoning also applies for $a < -h$. For this reason, we restrict our attention to those cases where a is an element of the interval $[-h, h]$.

[4]Throughout we assume that if the adviser is indifferent when choosing between implementation and the status quo, he recommends the status quo.

It is optimal for the policy maker to follow her adviser's recommendation if following the advice yields higher payoff than ignoring the advice. This requires

$$U^P(X = 1|m = Y) = p + \frac{1}{2}(h - a) > 0 \Longrightarrow a < 2p + h \tag{2.5}$$

and

$$U^P(X = 1|m = N) = p - \frac{1}{2}(h + a) < 0 \Longrightarrow a > 2p - h. \tag{2.6}$$

When the policy maker observes a message, her decision on the project depends on the adviser's predisposition towards the project a. If message Y is sent by an adviser who is sufficiently biased in favor of implementing the project ($a > 2p+h$), then $U^P(X = 1|m = Y) < 0$. It implies that the policy maker attains a higher payoff from maintaining the status quo than from choosing implementation. Hence, her optimal response to message Y is to ignore it, and to base her decision about the project on p. Taking the policy maker's optimal response into account, the adviser with $a > 2p + h$ may thus send any message. If $a < 2p + h$, expected payoff from implementation conditional upon Y yields positive benefits to the policy maker. As a consequence, observing message Y, the policy maker's optimal response is to choose implementation.

By the same token, if message N is sent by an adviser who is sufficiently biased against the project ($a < 2p - h$), then $U^P(X = 1|m = N) > 0$. It implies that implementation can yield a higher benefit than status quo. Moreover, negative advice from this adviser has no value. As a consequence, the policy maker's optimal response to message N is to ignore it. If $a > 2p - h$, the status quo yields a higher benefit than implementation, i.e. $U^P(X = 1|m = N) < 0$. Accordingly, if the policy maker receives message N, her optimal response is to choose status quo.

Taking into account both situations of receiving message Y and N, it is evident that a communicative equilibrium (partially pooling) may exist when a is an element of $(2p - h, 2p+h)$. This restriction ensures that information about the realization of μ is beneficial

to the policy maker. Accordingly, the adviser can influence the policy maker's decisions. The following lemma summarizes the condition for informative communication.

Lemma 2.2.1. *Message Y leads to implementation ($X = 1$) iff $a < 2p + h$ and message N leads to the status quo ($X = 0$) iff $a > 2p - h$.*

As well-known in cheap-talk games, a non-communicative equilibrium–where the adviser randomly sends any message and the policy maker ignores it–always exists. Nonetheless, this equilibrium is unlikely if $a \in (2p-h, 2p+h)$. If the adviser believes that there is an infinitesimal likelihood that the policy maker follows his advice, the optimal response for the adviser is to send message Y if $\mu > -a$ and N if $\mu < -a$. Given this strategy, the policy maker's optimal response is to follow her adviser's advice. Accordingly, both the policy maker and the adviser act as in the communicative equilibrium. Hence, if we restrict our attention to stable equilibria, a non-communicative (pooling) equilibrium holds if $a < 2p - h$ and $a > 2p + h$ and a communicative (partially pooling) equilibrium holds if $2p - h < a < 2p + h$.

Proposition 2.2.1. *(Letterie and Swank 1997) In summary, the following equilibrium strategies and beliefs constitute a stable Bayesian equilibrium:*

$$\textit{Adviser } A\textit{:} \begin{cases} \textit{sends } Y \textit{ if } \mu \geq -a \\ \textit{sends } N \textit{ if } \mu < -a \end{cases} \tag{2.7}$$

$$\textit{Beliefs:} \begin{cases} E(\mu|m = Y) = \frac{1}{2}(h - a) \\ E(\mu|m = N) = -\frac{1}{2}(h + a) \end{cases} \tag{2.8}$$

$$\textit{Policy maker } P\textit{:} \begin{cases} X = 1 \textit{ if } m = Y \textit{ and } a < 2p + h \\ X = 0 \textit{ if } m = N \textit{ and } a > 2p - h. \end{cases} \tag{2.9}$$

2.3 Penalty for Lying

In the previous section, we have shown that the policy maker bases her policy decision on the adviser's recommendations when both the policy maker's and adviser's preferences are not too divergent. However, in equilibrium, following the adviser's recommendation may lead to deception and thus a wrong decision. If (2.9) is satisfied and μ lies in the interval $(-a, -p)$, then the policy maker would choose $X = 1$, though she should choose $X = 0$. On the contrary, if (2.9) is satisfied and μ lies in the interval $(-p, -a)$, then the policy maker would choose $X = 0$, while she should choose $X = 1$. The wrong decisions occur because the adviser has lied to the policy maker. Clearly, the more conflicting the preference between the policy maker and the adviser is, the higher is the probability of deception. Only when the policy maker's and the adviser's preferences are perfectly consonant (i.e. $a = p$), deception does not occur.

In this section, we examine if the policy maker could reduce the probability of deception by penalizing advisers who have lied. An example of a penalty for lying could be that the policy maker punishes the adviser by withholding promotion once she discovers that the adviser has lied to her. Of course, the penalty for lying would work only if the policy maker is self-committed to follow through when she discovers that the adviser has lied. Otherwise, the penalty for lying would be an empty threat. To make a first step in analyzing the effect of penalty for lying in information transmission, we assume that the policy maker can commit herself to punish an adviser when lying has discovered and the commitment is common knowledge.

A natural question arises: How can the policy maker discover whether or not her adviser is lying? To answer this question, we first give a definition of lying and identify under which conditions the policy maker can discover that an adviser has misled her. Recall that the policy maker asks the adviser whether she should implement the project or maintain the status quo. In the language of our model, this inquiry is equivalent to the

following question: 'Is $\mu > -p$ or $\mu < -p$?' As the adviser observes μ, his delegated task is to recommend implementation if $\mu > -p$ and recommend the status quo otherwise. Thus, lying could be defined as follows:

Definition 2.3.1. *Lying is defined if the adviser sends either message Y when $\mu < -p$ or message N when $\mu > -p$.*

To discover a lie, the policy maker has to implement the project so that the consequences of the project are realized as is her payoff. If the policy maker chooses implementation, her realized payoff is evidence of determining whether the adviser has lied or not. However, if the policy maker chooses the status quo, she has no evidence to assert that the adviser is lying. To identify under which conditions the policy maker can discover that the adviser has lied, we distinguish two cases: (i) $a < p$; and (ii) $a > p$.

2.3.1 Case: a < p

When the adviser is more biased towards the status quo than the policy maker (i.e. $a < p$), the adviser prefers the status quo for a wider range of μ. When $-p < \mu < -a$, he has an incentive to lie–send N when $\mu > -p$–because implementing the project yields him a negative payoff. To discover the lie, it requires the project to be undertaken; lying, however, leads to the status quo ($X = 0$).[5] The following lemma summarizes the result.[6]

Lemma 2.3.1. *The policy maker cannot discover that an adviser lies when the adviser is more biased towards the status quo than herself; as a result, the penalty for lying has no affect.*

[5] Although the policy maker has a reason to believe that the adviser has an interest to lie, it is optimal for her to follow his recommendation provided that the adviser is not too biased towards the status quo.

[6] Of course we are aware that this result directly follows from our assumption that discovering a lie requires the project to be implemented.

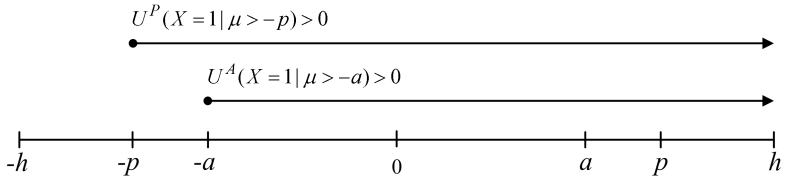

Figure 2.1: Case: $a < p$

2.3.2 Case: a > p

With $a > p$, it is clear that if the policy maker observes a message N, her optimal response is to choose the status quo ($X = 0$). The reason is clear: the message N infers that $\mu < -a$ and thus $\mu < -p$. If the policy maker observes a message Y, she can infer that $\mu > -a$ but cannot distinguish between whether μ lies in the interval $(-a, -p]$ or $(-p, h]$. If the adviser lies–send Y when $\mu < -p$–and the policy maker implements the project, lying would be discovered. The following lemma summarizes the result.

Lemma 2.3.2. *When an adviser is more biased towards implementation than the policy maker, lying could be discovered if the policy maker follows Yes recommendation by choosing implementation.*

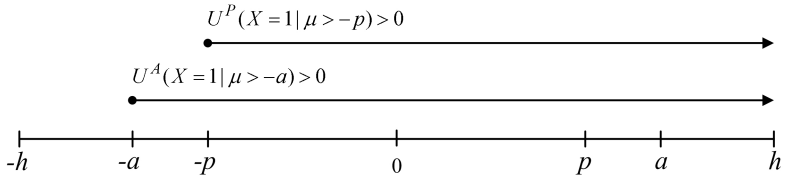

Figure 2.2: Case: $a > p$

An interesting question is: Could a penalty for lying reduce the probability that the adviser lies to the policy maker? To answer the question, suppose that at the beginning of the game the adviser chooses to participate. In addition, suppose that the policy maker follows her adviser's recommendation. Later we will identify the conditions under

which following the adviser's recommendation is optimal for the policy maker. With the presence of the penalty for lying, the adviser's payoff function becomes

$$U^A(X = 1|\mu > -p) = a + \mu, \tag{2.10}$$

$$U^A(X = 1| - a < \mu < -p) = a + \mu - f, \tag{2.11}$$

$$U^A(X = 0) = 0, \tag{2.12}$$

where $f \geq 0$ denotes the penalty for lying. What are the adviser's optimal responses to the observed μ? Equation (2.10)-(2.12) suggest that (i) independent of the magnitude of f, it is optimal for the adviser to send Y if $\mu > -p$; and (ii) if $f < a - p$, it is optimal for the adviser to send Y if $\mu > f - a$.

When the adviser has to choose between lying or not lying, the size of f matters. The higher is f, the higher is the cost of lying, and the higher is the probability that the adviser chooses not to lie. If the penalty for lying is large enough (i.e. $f \geq a - p$), then the adviser never lies and the policy maker can follow her adviser's recommendation. This is because with $f \geq a - p$, it is optimal for the adviser to send N when $\mu < -p$.

Participation Constraint

With the presence of the penalty for lying, let us now identify the conditions under which an adviser is willing to participate. Suppose that the condition for communication is satisfied. Suppose also that if the adviser is not willing to participate, the policy maker bases her decision about the project on her default preference towards the project, p. The adviser chooses between participating or not participating prior to examining the value of μ. When the adviser chooses to participate, his expected payoff equals

$$\begin{aligned} U^A(X = 1|\mu > f - a) &= \frac{1}{2h}(a - p - f)\left[a + \frac{1}{2}(f - a - p) - f\right] \\ &\quad + \frac{1}{2h}(h + p)\left[a + \frac{1}{2}(h - p)\right] \\ &= \frac{1}{4h}(a - p - f)^2 + \frac{1}{4h}(h + p)(2a + h - p). \end{aligned} \tag{2.13}$$

The first term in (2.13) represents the expected payoff to the adviser when he lies and has to pay a penalty. The second term represents the expected payoff to the adviser when the adviser does not lie. Notice that if $f \geq a - p$, the adviser has no incentive to lie; thus the first term in (2.13) equals zero. The participating decision follows from a comparison between the expected payoff from participation versus non-participation. When the adviser chooses not to participate, his expected payoff from non-participation depends on the policy maker's decision on the project.

If $p < 0$ and the adviser does not participate, the policy maker chooses to maintain the status quo. As a result, the expected payoff to the adviser would be equal to zero. Because $U^A(X = 1|\mu > f - a) > 0$, it ensures that the adviser chooses to participate if $p < 0$.

If $p > 0$ and the adviser does not participate, the policy maker chooses to implement the project. As a result, the expected payoff to the adviser would be equal to a. The adviser chooses to participate if $U^A(X = 1|\mu > f - a) \geq a$; and this requires

$$f \leq f^* = a - p - \sqrt{(h - p)(2a - h - p)}. \tag{2.14}$$

Clearly, it follows from (2.14) that a sufficiently high penalty for lying would dissuade the adviser, who is strongly biased in favor of the implementation, from providing information about the consequences of the project. This result conflicts with Lupia and McCubbins' conclusion that the extent to which the policy maker can benefit from the adviser's information is nondecreasing in the magnitude of penalty for lying. The reason behind this result is that, relative to the policy maker, as $a > p > 0$, the adviser wants the project to be undertaken for a wider range of μ. If participating, the penalty for lying makes lying more costly and thus the adviser has to behave as if his preference is more coincide with the policy maker's. The higher the penalty for lying, the higher the probability is that the status quo will be preserved. Accordingly, with a sufficiently high penalty for

lying, an adviser who is strongly biased in favor of implementation would choose not to participate.

Does the Policy Maker Benefit from the Adviser's Participation?

As penalty for lying may affect the adviser' incentives to participate in providing information, First, consider the case where $a > p$ and $p < 0$. It immediately follows from (2.13) that the adviser always chooses to participate regardless of the size of a penalty for lying. However, with no penalty for lying, the adviser would have an incentive to lie when $-a < \mu < -p$. Clearly, with $f = a - p$, lying never pays to the adviser; as a result the policy maker benefits from the adviser's participation and from truthful reporting.

Now consider the case where $a > p$ and $p > 0$. If the participation constraint of (2.14) is not satisfied, the adviser chooses not to participate; as a result the policy maker's optimal response is to choose implementation and receive the expected payoff of p. If $f = f^* = a - p - \sqrt{(h-p)(2a-p-h)}$, the adviser chooses to participate and thus the expected payoff to the policy maker is

$$\begin{aligned} U^P(X &= 1|\mu > f^* - a) = \frac{1}{2h}\left[-p - (f^* - a)\right]\left[p + \frac{1}{2}(-p + f^* - a)\right] \\ &\quad + \frac{1}{2h}(h+p)\left[p + \frac{1}{2}(h-p)\right] \\ &= -\frac{1}{4h}(p + f^* - a)^2 + \frac{1}{4h}(h+p)(2p+h-p) \\ &= -\frac{1}{4h}(h-p)(2a-p-h) + \frac{1}{4h}(h+p)(2p+h-p) \\ &= \frac{1}{2h}\left(ap - ah + hp + h^2\right). \end{aligned} \tag{2.15}$$

Straightforward algebra reveals that $U^P(X = 1|\mu > f^* - a) > p$, implying that the policy maker's payoff when the adviser chooses to participate is higher than the case when the adviser chooses not to participate. It is optimal for the policy maker to set a sufficiently low penalty for lying to induce the adviser to participate and gain valuable information about the consequences of the project. This result shows that with the penalty

for lying, the policy maker may face a trade-off between the need to mitigate information manipulation and the need to receive information about the consequences of the project.

Communication Condition

Thus far we have assumed that the policy maker follows her adviser's recommendations. Here we identify the condition under which the policy maker follows messages sent by her adviser. Clearly, as $a > p$, it is optimal for the policy maker to maintain the status quo if she receives $m = N$. By receiving $m = Y$, it is optimal for the policy maker to follow the recommendation by implementing the project if

$$p + \frac{1}{2}(h + f - a) > 0 \Rightarrow a < 2p + h + f. \tag{2.16}$$

When comparing (2.16) with (2.9), it is easy to see that with the presence of a penalty for lying the condition for communication of following $m = Y$ becomes less restrictive. This is because, when an adviser participates, the penalty for lying coerces the adviser to behave as if he was an expert whose preferences are closer to the policy maker's preferences. To this view, a penalty for lying serves as a communicating device when the preferences of the policy maker and the adviser do not coincide; and so makes more informative content conveyed in a communicative equilibrium. For instance, when $f = a - p$, all messages sent by an adviser contain fully informative content about the effects of the project ('Yes' implies $\mu > -p$ and 'No' implies $\mu < -p$).

To summarize the results derived from the two cases, the following proposition identifies the conditions under which a penalty for lying is beneficial to the policy maker.

Proposition 2.3.1. *Merits of a penalty for lying are determined by the nature of the conflict between the policy maker and the adviser, and the size of a penalty for lying, i.e.*

1) When $a < p$, the penalty for lying has no effect regardless of the size of the penalty.

2) When $a > p$ and $p > 0$, the policy maker faces a trade-off between the need to reduce information manipulation and the need to receive the information. It is optimal for the policy maker to determine a sufficiently low penalty for lying according to (2.14).

3) When $a > p$ and $p < 0$, the penalty for lying can reduce information manipulation and an adviser participates regardless of the size of the penalty. It is optimal for the policy maker to determine a penalty for lying f equal to $a - p$.

2.4 Concluding Remarks

The main objective of this chapter has been to examine a penalty for lying as a means to reduce information manipulation in a situation where the conflict of interest between a policy maker and an adviser is present. First, the penalties for lying do not always induce the adviser to reveal truthful information. This occurs when the adviser is more biased towards the status quo relative to the policy maker. Second, it is shown that the extent to which a policy maker can benefit from the adviser's valuable information is not always increasing in the magnitude of penalty for lying. A high penalty for lying may induce an adviser to choose not to participate in providing information, resulting that the policy maker may make poorer decisions. The penalty for lying can help the policy maker to make better informed decisions only when it is endogenously determined–i.e. ensuring that the adviser is willing to participate in supplying information.

Several assumptions are responsible for our results. First, we have assumed that the consequences of the project become publicly known if the policy maker chooses implementation. As consequences of projects sometimes require a certain period of time before their full realization, this is a restrictive assumption. However, as long as the adviser is penalized once the consequences of the project have been realized, the results remain hold.

Second, we have assumed that the adviser is fully informed about the realization of the project. Of course, this assumption enables the policy maker to identify whether the adviser intends to report the truth or to lie. Relaxing this assumption would qualitatively affect our result. We conjecture that a penalty for lying would not have its function any

longer; by observing the realizations of the project the policy maker may not be able to distinguish between the event that an adviser receives a wrong signal and the event that the adviser is lying (or both).

Chapter 3

Policy Makers, Advisers, and Reputation

Co-author: Otto H. Swank[1]

3.1 Introduction

The consequences of many policies are complicated and difficult to foresee. To reduce the chances of making wrong decisions, policy makers need information. Often lacking time and expertise to collect information themselves, policy makers have to rely on others. A serious problem is that agents who have information about policy consequences usually have a vested interest in the outcome (Milgrom and Roberts 1986). For example, it is very likely that army officers are much better informed about the pros and cons of alternative weapon systems than policy makers, but this does not always mean that officers' recommendations concerning weapon systems are in policy makers' interests.

Asymmetric information sometimes implies that those who have the formal authority to make decisions do not always actually make decisions (see Aghion and Tirole 1997, on

[1]This chapter is a version of a paper forthcoming in the *Journal of Economic Behavior & Organization*.

the distinction between formal and real authority). In the public choice literature, it is often argued that informed players such as government bureaucracies and interest groups have too much influence on policy. An early contribution to this literature is Niskanen (1971), who argues that bureaucracies are too large because bureaucrats are better informed than those who are supposed to oversee them (for a survey of this literature, see Mueller 2003).

More recently, scholars have argued that the power of informed parties should not be exaggerated. One argument in this debate revolves around reputation. In general, policy makers and information providers do not meet only once, but several times. An important implication is that the policy maker can punish information providers who have manipulated information. One obvious punishment is firing the adviser. Bendor et al. (2001, p. 256), for example, argues that "if the subordinate cheats (say by exploiting the discretion given to him), then the boss might retaliate by seizing control in the next period." Wittman (1995, p. 104-105) also emphasizes that the relationship between a policy maker (in his terminology, Congress) and the information provider (the bureaucracy) should not be modeled as a one shot game. He argues that the power of the bureaucracy is limited because their ongoing relationship allows the principal to act conditionally on past outcomes. Lupia and McCubbins (1994, p. 105) also mention damage to reputation as a reason why an informed party may refrain from manipulating information. It is striking that Bendor et al. (2001), Lupia and McCubbins (1994), and Wittman (1995) all mention reputational concerns as a reason why information providers may act in line with the principal's interests, but that none of them actually shows that this is actually the case. As Bendor et al. (p. 256) put it, "The preceding was a 'free' application of the theory of repeated games to delegation issues."

This chapter analyzes a simple two-period model of a policy maker (she) and an adviser (he) to identify the conditions under which the policy maker's power to replace her adviser induces the adviser to act (more) in line with her interests. In each period, the policy

maker makes a decision on a project after an adviser gives a recommendation about the project. The policy maker has incomplete information about the adviser's preferences. There are good and bad advisers, in the sense that the preferences of good advisers are closer to the preferences of the policy maker than the preferences of bad advisers.[2] At the end of period 1, the policy maker can replace her adviser, a power that creates reputational concerns.[3] To put a stamp on future policy, an adviser wants to be re-appointed. We show that reputational concerns often induce bad advisers to act more in line with the policy maker's interests showing benefit of reputational concerns. However, reputational concerns may induce good advisers to act less in line with the policy maker's interests, a cost of reputational concerns. We show that the cost may exceed the benefit. It is even possible that reputational concerns hamper communication. Overall, our analysis shows that the policy maker's power to replace her adviser does not always help her control her adviser.

Our study is related to the game-theoretical literature on building and maintaining a reputation. An early contribution to this literature is Kreps and Wilson (1982), who show that a long-run incumbent firm can build a reputation for playing tough against potential entrants. A key feature of their study is that the long-run firm can be tough or weak. In the same spirit, Persson and Tabellini (1990) describe how a central banker can build a reputation for always fighting inflation. They assume that agents have incomplete information about the weight that the central banker gives to fighting inflation relative to boosting economic growth. We follow this literature in that incomplete information about an agent's preferences is an essential feature of our model.

[2]Dur and Swank (2005) show that the effort an adviser puts in collecting information depends on his preferences. This chapter does not deal with information collection; throughout we assume that advisers possess information.

[3]Suurmond et al. (2004) analyze a model in which advisers differ in ability rather than preferences. In their model, an adviser's reputation refers to the probability that the adviser is able.

In many studies on reputation effects, reputation is good for the long-run player. However, recently, Ely and Välimäki (2003) show that reputation can be bad. Important for this result is that reputational concerns may lead the good type long-run player to take an action that is harmful for both himself and the short-run player due to a fear of being perceived as a bad type. Reputation is bad if, in response to this action, the short-run player decides not to participate. In our model, the behavior of the good type adviser also plays an essential role. His desire to put a stamp on future policy may induce him to act against the policy maker's interest. The policy maker, in turn, may respond by ignoring her adviser's recommendation.

We depart from most literature on reputation effects in that we study a principal-agent model. In Ely and Välimäki, for example, the agents are a seller and buyers who lack a hierarchical relationship. An important feature of our model is that the principal can replace the agent. In this respect, our model builds on studies that analyze how well elections help voters to control office holders (see e.g. Barro 1973, Ferejohn 1986, and Persson et al. 1997), but deviates from Morris (2001). The basic insight these studies offer is that the possibility to send office holders home helps voters to control them. We show that this result does not carry over to a policy maker-adviser setting. More generally, we identify the conditions under which the policy maker benefits from having the power to replace her adviser.

The rest of this chapter is organized as follows. Section 3.2 presents the model. Section 3.3 contains an analysis of a simple example. In Section 3.4, we analyze the more general model. Section 3.5 concludes.

3.2 The Model

We consider a two-period model, $t = \{1, 2\}$. In each period, a policy maker has to make a decision on a public project, X_t. There are two alternatives: the project is implemented,

$X_t = 1$, or the status quo is maintained, $X_t = 0$. An implemented project yields a payoff to the policy maker equal to

$$U_t^P(X_t = 1) = p + \mu_t.$$

The parameter p denotes the policy maker's predisposition towards the project. Throughout we assume that $p > 0$.[4] The term μ_t reflects that the consequences of the project are uncertain. We assume that μ_t is drawn from a uniform distribution function with $\mu_t \in [-h, h]$. Moreover, we assume that μ_1 and μ_2 are independent of each other. We normalize by zero the payoff to the policy maker when she preserves the status quo ($U_t^P(X_t = 0) = 0$). Clearly, if the policy maker could observe μ_t, she would prefer $X_t = 1$ to $X_t = 0$ if $\mu_t > -p$. However, we assume that the policy maker does not observe μ_t. Since $p > 0$, without further information about μ_t, the policy maker chooses $X_t = 1$. To ensure that our model describes an interesting situation, we assume that $p - h < 0$. The implication is that without further information about μ_t the policy maker runs the risk of making a wrong decision on the project.

In each period the policy maker can hire one adviser. The hired adviser observes μ_t. On the basis of the adviser's preferences, a, two types of advisers can be distinguished. The first type is relatively biased towards preserving the status quo. The preferences of advisers of this type are represented by

$$U_t^{\underline{a}}(X_t = 1) = \underline{a} + \mu_t.$$

Advisers of the second type are relatively biased towards implementation:

$$U_t^{\overline{a}}(X_t = 1) = \overline{a} + \mu_t$$

with $\overline{a} \geq \underline{a}$. By normalization, the payoff to any adviser equals zero when the policy maker preserves the status quo. An essential feature of our model is that the policy maker does not know the adviser's type. The prior probability that $a = \underline{a}$ equals $\frac{1}{2}$. This

[4] The analysis of the case that $p < 0$ is analogous.

prior is common knowledge. An adviser knows his own type. Throughout we assume that the adviser who is relatively biased against implementation is the good adviser from the policy maker's point of view. That is, if the policy maker were able to observe a, she would choose an adviser with $a = \underline{a}$. This requires that $p < \frac{\underline{a}+\overline{a}}{2}$.

The hired adviser sends a message, m_t, about the project to the policy maker; this message is a recommendation. Two recommendations are possible: $m_t \in \{Y, N\}$, with $m_t = Y$ denoting that the adviser recommends $X_t = 1$, and $m_t = N$ denoting that the adviser recommends $X_t = 0$. After the policy maker has received her adviser's message, she makes a decision on the project. An important feature of our model is that at the end of period 1, after the policy maker has received the adviser's message, the policy maker can replace her adviser. As in period 1, the probability that a new adviser's preferences are represented by $a = \underline{a}$ equals $\frac{1}{2}$. We assume that the replacement decision is made before outcomes are observed, in particular μ_1. The description of the game is presented below.

Table 3.1: The Description of the Game

Players: The policy maker P and an adviser A

Period 1

- Nature chooses $\mu_1 \in [-h, h]$ and $a \in \{\underline{a}, \overline{a}\}$.
- A observes μ_1 and sends a message $m_1 \in \{Y,\ N\}$.
- P observes m_1 and chooses between $X_1 = 0$ and $X_1 = 1$.
- P chooses whether to keep her current adviser or to replace him.

Period 2

- Nature chooses $\mu_2 \in [-h, h]$ and if the adviser of period 1 is replaced, $a \in \{\underline{a}, \overline{a}\}$.

Table 3.1 (continued)

- A observes μ_2 and sends a message $m_2 \in \{Y,\ N\}$.
- P observes m_2 and chooses between $X_2 = 0$ and $X_2 = 1$.
- Payoffs are realized.

Payoffs:

$U_t^P(X_t = 1|\mu_t) = p + \mu_t$ and $U_t^P(X_t = 0) = 0$ where $t = 1, 2$.

$U_t^A(X_t = 1|\mu_t) = a + \mu_t$ and $U_t^A(X_t = 0) = 0$; $a \in \{\underline{a}, \overline{a}\}$.

A perfect Bayes equilibrium of our game is a set of strategies and posterior beliefs that satisfy the following conditions:[5] (i) in each period t, after observing m_t, the policy maker has a belief about the type of adviser who could have sent m_t; (ii) in each period, the decision made by the policy maker is optimal given her beliefs and given the strategies of the two types of advisers; (iii) in each period, the message sent by the adviser is optimal, given his type and given the policy maker's strategy; and (iv) beliefs are updated according to Bayes' rule.

3.3 A Simple Case

To illustrate why reputational concerns may hurt the policy maker, we start with analyzing a simple example. We assume that $\underline{a} = 0$ and $\overline{a} > h$. Our assumption that $p < \frac{1}{2}(\underline{a} + \overline{a})$ then reduces to $p < \frac{1}{2}h$.

[5]Our model is a simple cheap-talk game in the spirit of Crawford and Sobel (1982). It is well-known that this type of model always has pooling equilibria. In Section 3.4, our focus is on the identification of a separating equilibrium if such an equilibrium exists. Furthermore, we will argue that pooling equilibria are implausible if a separating equilibrium exists.

Advice and Policy in Period 2

Consider period 2. In period 2, the adviser has no incentive to build a reputation. Consequently, a bad adviser always recommends implementation, irrespective of μ_2, and a good adviser recommends implementation if and only if $\mu_2 > 0$. Does the policy maker has an incentive to follow the adviser's recommendation? Suppose that $m_2 = Y$. Clearly, if the policy maker were to know that a good adviser had sent this message, it would be optimal for her to follow the adviser's recommendation: $p + E(\mu_2|\mu_2 > 0) = p + \frac{1}{2}h > 0$, since $p > 0$. If the policy maker were to know that the bad adviser had sent $m_2 = Y$, implementation would yield a payoff equal to $p > 0$. Hence, if $m_2 = Y$, it is a best response for the policy maker to choose $X_2 = 1$. Now suppose that $m_2 = N$. The policy maker infers from $m_2 = N$ that the adviser is the good one, as a bad one would never send $m_2 = N$. Ignoring the recommendation, that is choosing $X_1 = 1$, yields a payoff of $p + E(\mu_2|\mu_2 < 0) = p - \frac{1}{2}h$. Accordingly, if $p < \frac{1}{2}h$, it is optimal for the policy maker to follow the advice. Our assumption that $p < \frac{1}{2}(\underline{a} + \overline{a})$ implies that the condition for communication is always satisfied.

The Replacement Decision

At the end of period 1, the policy maker can replace her adviser. Below we will show that if $m_1 = N$ in a communicative equilibrium, then the probability that the adviser is good is higher than the probability that the adviser is bad. In contrast, if $m_1 = Y$, then the probability that the adviser is bad is higher than the probability that he is good. A direct implication is that in a communicative equilibrium, the policy maker keeps her adviser if and only if $m_1 = N$.

Advice and Policy in Period 1

Let us now analyze policy advice in period 1. Suppose that the policy maker follows the adviser's recommendation. Later we will check whether it is optimal for the policy maker to do so. Consider a bad adviser. The bad adviser anticipates that if he sends $m_1 = N$, he

will be maintained as an adviser, while if he sends $m_1 = Y$, he will be replaced. Sending $m_1 = N$, thus guarantees that the project will be implemented in period 2, so $m_1 = N$ yields a payoff $\overline{a}$. Sending $m_1 = Y$ implies that the adviser will be replaced. His payoff then equals $\overline{a} + \mu_1 + \frac{1}{2}\overline{a} + \frac{1}{4}(\overline{a} + \frac{1}{2}h)$. It is easy to check that $m_1 = Y$ yields a higher payoff than $m_1 = N$ if

$$\mu_1 > -\frac{1}{8}h - \frac{3}{4}\overline{a}. \tag{3.1}$$

Equation (3.1) implies that if $\overline{a} < \frac{7}{6}h$, then for some values of μ_1 the bad adviser recommends against implementation. This is the benefit of reputational concerns. The desire to determine future policy induces a bad adviser to behave more in accordance with the policy maker's interest. If $\overline{a} \geq \frac{7}{6}h$, then reputational concerns never lead a bad adviser to recommend $X_1 = 0$. As in period 2, a bad adviser then always recommends implementation.

Now consider a good adviser. Recommending implementation yields a payoff to a good adviser equal to $\mu_1 + \frac{1}{8}h$; recommending status quo instead yields $\frac{1}{4}h$. Therefore, a good adviser recommends implementation if and only if $\mu_1 > \frac{1}{8}h$. Hence, reputational concerns induce a good adviser to recommend against implementation for a wider range of parameters. Since we assume that $p > 0$, this is a cost of reputational concerns.

The Communication Condition

Thus far we have assumed that the policy maker follows the adviser's recommendation. Let us now determine under which conditions this assumption is warranted. Consider first the case that the bad adviser never recommends status quo, $\overline{a} > \frac{7}{6}h$; then conditional on $m_1 = N$, the policy maker's payoff equals $p + \frac{1}{2}\left(\frac{1}{8}h - h\right) = p - \frac{7}{16}h$. The condition for communication requires that this expression is negative, implying $p < \frac{7}{16}h$. Recall that without reputational concerns the condition for communication is $p < \frac{1}{2}h$. Hence, in the case that $\overline{a} > \frac{7}{6}h$ the condition for communication is more restrictive with reputational concerns than without. The reason for this result is clear. Communication requires

that $p + E(\mu_1|m_1 = N) < 0$. Reputational concerns have no effect on the behavior of a bad adviser and lead a good adviser to recommend status quo more frequently, so $E(\mu_1 \mid m_1 = N)$ is higher with reputational concerns than without. Hence, the condition for communication becomes more restrictive. Now suppose that $\overline{a} < \frac{7}{6}h$. For example, suppose that $\overline{a} = h$. From (3.1) we know that the bad adviser recommends against implementation if $\mu_1 < -\frac{7}{8}h$. The expected value of μ_1, conditional on $m_1 = N$, equals

$$E(\mu_1 \mid m_1 = N) = -\Pr(a = \overline{a} \mid m_1 = N)\frac{15}{16}h - \Pr(a = \underline{a} \mid m_1 = N)\frac{7}{16}h = -\frac{39}{80}h.$$

The implication is that the communication condition is satisfied if $p < \frac{39}{80}h$. Thus, also in this case, the communication constraint is more restrictive with reputational concerns than without.

Does the Policy Maker Benefit?

Does the policy maker benefit from her power to replace her adviser in our current example? Above we have shown that in our example reputational concerns may jeopardize communication. It is evident that when communication is hampered because of reputational concerns, they make the policy maker worse off. Suppose that reputational concerns do not make communication impossible. In a static model (or in period 2), *ex ante* the policy maker's payoff would be

$$\frac{1}{2}p + \frac{1}{2}\frac{1}{2}(p + \frac{1}{2}h) = \frac{3}{4}p + \frac{1}{8}h. \tag{3.2}$$

If $\overline{a} > \frac{7}{6}h$, then the policy maker's payoff in period 1 equals

$$\frac{1}{2}p + \frac{1}{2}\frac{7}{16}\left(p + \frac{1}{2}\frac{9}{8}h\right) = \frac{23}{32}p + \frac{63}{512}h. \tag{3.3}$$

It is easy to verify that the expression in (3.2) exceeds the expression in (3.3). To understand why, recall that in case $\overline{a} > \frac{7}{6}h$, reputational concerns do not affect the behavior of the bad adviser and induce the good adviser to recommend status quo more often. Since $p > \underline{a} = 0$, the good adviser recommends the status quo too frequently from the

policy maker's point of view, even in the absence of reputational concerns. Reputational concerns thus make things worse. Thus, if $\overline{a} > \frac{7}{6}h$, then the power of the policy maker to replace her adviser does not discipline him. On the contrary, in expectations, recommendations are less in line with the policy maker's interest. Of course, the power to replace the adviser increases the probability that the adviser is good in period 2.

Now suppose that $\underline{a} < \frac{7}{6}h$. Then, in period 1, the policy maker's payoff equals

$$\frac{1}{2}\left(\frac{15}{16}(p+\frac{1}{2}(h-\frac{7}{8}h))\right)+\frac{1}{2}\left(\frac{7}{16}\left(p+\frac{1}{2}\left(h+\frac{1}{8}h\right)\right)\right)=\frac{11}{16}p+\frac{39}{256}h. \tag{3.4}$$

A comparison between (3.2) and (3.4) shows that if $p > \frac{7}{16}h$, reputational concerns make the policy maker better off in period 1. Now reputational concerns lead the bad adviser to behave more in line with the policy maker's interest.

3.4 The More General Model

We now turn to the more general case that $p > 0$, $p < \overline{a} < h$, and $\underline{a} < \overline{a}$.

3.4.1 Equilibrium in the Second-Period Game

At the beginning of the second period, the adviser has a commonly known reputation. Let θ denote the probability that $a = \underline{a}$. Notice that if at the end of period 1 a new adviser is hired, then $\theta = \frac{1}{2}$.

The second period game is a cheap talk game, so there always exist pooling equilibria. For example, if the adviser always sends $m_2 = N$, the best response for the policy maker is to ignore the adviser's message. Given this response, the adviser has no incentive to deviate from the strategy 'always send $m_2 = N$'. Below we will argue that if apart from pooling equilibria, a separating equilibrium exists, the pooling equilibria are implausible. However, we first identify the conditions under which a separating equilibrium exists.

Suppose that the policy maker follows her adviser's message. In period 2 an adviser has no incentive to protect his reputation. As a consequence, he only considers the project payoff. Accordingly, a good adviser sends $m_2 = Y$ if and only if $\mu_2 > -\underline{a}$, and a bad adviser sends $m_2 = Y$ if and only if $\mu_2 > -\overline{a}$. The expected values of μ_2, conditional on the advisers' recommendations, directly follow from the advisers' strategies. It is easy to check that the expected value of μ_2, conditional on $m_2 = N$, equals

$$\begin{aligned} E(\mu_2 \mid m_2 = N) &= -\frac{(1-\theta)(h-\overline{a})}{h-\theta\underline{a}-(1-\theta)\overline{a}}\frac{1}{2}(h+\overline{a}) - \frac{\theta(h-\underline{a})}{h-\theta\underline{a}-(1-\theta)\overline{a}}\frac{1}{2}(h+\underline{a}) \\ &= -\frac{h^2-\theta(\underline{a}^2-\overline{a}^2)-\overline{a}^2}{2(h-\theta\underline{a}-(1-\theta)\overline{a})}. \end{aligned} \tag{3.5}$$

The expected value of μ_2, conditional on $m_2 = Y$, equals

$$\begin{aligned} E(\mu_2 \mid m_2 = Y) &= \frac{(1-\theta)(h+\overline{a})}{h+\theta\underline{a}+(1-\theta)\overline{a}}\frac{1}{2}(h-\overline{a}) + \frac{\theta(h+\underline{a})}{h+\theta\underline{a}+(1-\theta)\overline{a}}\frac{1}{2}(h-\underline{a}) \\ &= \frac{h^2-\theta(\underline{a}^2-\overline{a}^2)-\overline{a}^2}{2(h+\theta\underline{a}+(1-\theta)\overline{a})}. \end{aligned} \tag{3.6}$$

Now consider the policy maker. Would it be a best reply for the policy maker to follow the adviser's recommendation? First note that since $p > 0$ and $E(\mu_2 \mid m_2 = Y) > 0$, it is always optimal for the policy maker to follow advice if $m_2 = Y$, so suppose $m_2 = N$. Communication requires that $p + E(\mu_2 \mid m_2 = N) < 0$. A sufficient condition for this inequality is that $p - \frac{1}{2}(h+\underline{a}) < 0$. Hence, if it is optimal for the policy maker to follow a good adviser's recommendation, then it is also optimal for her to follow advice if she does not know the type of adviser. The reason for this result is that relative to a good adviser, a bad adviser is less likely to recommend $X_2 = 0$.

If the condition for communication is satisfied, then the players' strategies described above and the beliefs (3.5) and (3.6) form a separating equilibrium of the second period game. Apart from this one, there exists a separating equilibrium in which $m_2 = N$ serves as a recommendation for $X_2 = 1$ and $m_2 = Y$ serves as a recommendation for $X_2 = 0$. However, if we assume a natural language, then the separating equilibrium derived above is the unique separating one. Given that the policy maker does not ignore the adviser's

message with a positive probability, it is a best response for the adviser to recommend the project if and only if he prefers $X_2 = 1$ to $X_2 = 0$. If the condition for communication is satisfied, then following advice is the best response for the policy maker.

Is there any reason to believe that a separating equilibrium is more likely to occur than a pooling equilibrium, provided that both equilibria exist? To answer this question, note that in a pooling equilibrium, the adviser is indifferent between sending an informative message and sending an uninformative message. Furthermore, note that the adviser and the policy maker both prefer a separating equilibrium to a pooling one. This means that if a separating equilibrium exists, the adviser can ensure it by sending an informative message and telling the policy maker that he has sent an informative message, then the best response for the policy maker is to follow the adviser's recommendation. Thus, if in our game the condition for communication is satisfied, then the pooling equilibrium is not renegotiation-proof.

3.4.2 Equilibrium in the First-Period Game

Throughout this subsection, we assume that in the second period game the policy maker follows her adviser's recommendation and that the adviser recommends the project if and only if the project payoff to him exceeds zero.

The first-period game is identical to the second-period game except that the adviser has a reputation to protect. Again, pooling equilibria exist. However, as before, it can be argued that if apart from the pooling equilibria a separating equilibrium exists, then the pooling equilibria are not renegotiation-proof. For this reason, we focus on the conditions for the existence of a separating equilibrium.

At the end of the first period, the policy maker can replace her adviser. Below we will show that in a separating equilibrium a bad adviser is more likely to send $m_1 = Y$ than

a good adviser. A direct implication is that the policy maker replaces her adviser if and only if $m_1 = Y$.

Suppose that in period 1 the policy maker chooses to follow advice. Consider a bad adviser who observes μ_1. Then, sending $m_1 = Y$ yields an expected payoff to the bad adviser equal to

$$\overline{a} + \mu_1 + \frac{1}{2}\left[\frac{1}{4h}\left(h + \overline{a}\right)^2 + \frac{1}{2h}\left(h + \underline{a}\right)\left(\overline{a} + \frac{1}{2}\left(h - \underline{a}\right)\right)\right]. \tag{3.7}$$

The last term in (3.7) shows that by sending $m_1 = Y$, the bad adviser anticipates that in period 2 policy will be based with probability $\frac{1}{2}$ on a good adviser's recommendation and with probability $\frac{1}{2}$ on a bad adviser's recommendation. Sending $m_1 = N$ yields an expected payoff to the bad adviser equal to

$$\frac{1}{4h}\left(h + \overline{a}\right)^2. \tag{3.8}$$

Straightforward algebra shows that (3.7) is greater than (3.8) if

$$\mu_1 > \overline{u} = -\overline{a} + \frac{1}{8h}\left(\overline{a} - \underline{a}\right)^2. \tag{3.9}$$

Equation (3.9) gives the cutoff value of μ for a bad adviser. A bad adviser sends $m_1 = Y$ if and only if $\mu_1 > \overline{\mu}$. The last term of (3.9) reflects the benefits of reputational concerns. The adviser's desire to maintain his position induces him to recommend against the project for a wider range of μ. The extent to which reputational concerns matter depends on the deviation of $\overline{a}$ from $\underline{a}$. The larger the deviation of $\overline{a}$ from $\underline{a}$, the higher the cost of the appointment of $\underline{a}$ from $\overline{a}$'s point of view.

Now consider a good adviser. Like the bad adviser, a good adviser anticipates that if he sends $m_1 = Y$, he will be replaced. Analogous to the determination of $\overline{\mu}$, one can show that the good adviser sends $m_1 = Y$ if and only if

$$\mu_1 > \underline{\mu} = -\underline{a} + \frac{1}{8h}\left(\overline{a} - \underline{a}\right)^2. \tag{3.10}$$

Equation (3.10) implies that the desire to determine future policy also induces the good adviser to send $m_2 = N$ for a wider range of parameters. Figure 3.1 below graphically describes our situation.

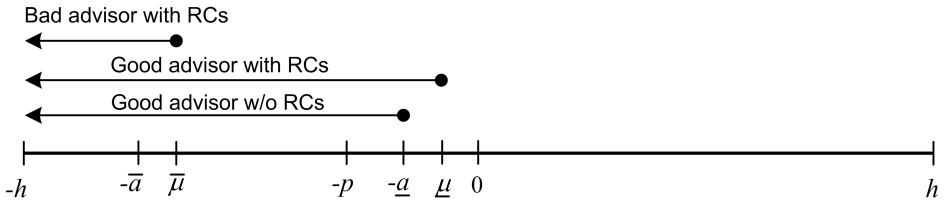

Figure 3.1: When Does an Adviser Recommend against Implementation in Period 1?

Note that if the policy maker follows advice and replaces her adviser if and only if $m_1 = Y$, then recommendations based on (3.9) and (3.10) are unique best responses for a bad adviser and a good adviser, respectively.

So far, we have made two assumptions about the behavior of the policy maker. First, we have assumed that the policy maker follows the adviser's recommendation. Second, we have assumed that the policy maker keeps her adviser if and only if $m_1 = N$. Consider the re-appointment decision. The strategies of the two types of advisers imply the following posterior probabilities that the adviser is of the good type:

$$\begin{aligned} \theta(m_1 = Y) &= \Pr(a = \underline{a} \mid m_1 = Y) = \frac{h + \underline{a}}{2h + \underline{a} + \overline{a}} < \frac{1}{2}, \\ \theta(m_1 = N) &= \Pr(a = \underline{a} \mid m_1 = N) = \frac{h - \underline{a}}{2h - \underline{a} - \overline{a}} > \frac{1}{2}. \end{aligned} \tag{3.11}$$

Since the policy maker prefers a good adviser to a bad one, she strictly prefers to keep her adviser if $m_1 = N$. Moreover, she prefers to replace her adviser if $m_1 = Y$. Hence, given the strategies of the two types of advisers discussed above and (3.11), it is a best response for the policy maker to keep her adviser if and only if $m_1 = N$.[6]

[6]It is easy to verify that if the policy maker follows advice, then replacing the adviser if and only if $m_1 = Y$ cannot be part of an equilibrium. The reason is that independent of the policy maker's appointment decision, the good adviser is more likely to send $m_1 = Y$ than the bad adviser.

Let us now examine whether or not it is a best response for the policy maker to follow an adviser's recommendation in period 1. Recall that because $p > 0$, the policy maker always chooses $X_1 = 1$ if $m_1 = Y$. If $m_1 = N$, then the policy maker follows advice if $p + E(\mu_1 \mid m_1 = N) < 0$. Using (3.9) and (3.10), one can verify that

$$\begin{aligned} E(\mu_1 \mid m_1 = N) &= \frac{h + \underline{\mu}}{h + \underline{\mu} + \overline{\mu}} \frac{1}{2} \left(\underline{\mu} - h\right) + \frac{h + \overline{\mu}}{h + \underline{\mu} + \overline{\mu}} \frac{1}{2} (\overline{\mu} - h) \\ &= -\frac{h^2 - \frac{1}{2}\overline{\mu}^2 - \frac{1}{2}\underline{\mu}^2}{h + \underline{\mu} + \overline{\mu}} \\ &= -\frac{h^2 - \frac{1}{2}(z - \overline{a})^2 - \frac{1}{2}(z - \underline{a})^2}{h - \underline{a} - \overline{a} + 2z} \quad \text{with } z = \frac{1}{8h}(\overline{a} - \underline{a})^2. \quad (3.12) \end{aligned}$$

Differentiating (3.12) with respect to z shows that $E(\mu_1 \mid m_1 = N)$ increases with z. The implication is that reputational concerns may hamper communication. The intuition behind this result is as follows. Reputational concerns induce both the good and the bad adviser to recommend against implementation for a wider range of μ_1. A direct consequence is that the expected value of μ_1, conditional on $m_1 = N$, increases. Hence, if in the static model (or in the period 2 game), the condition for communication is satisfied, reputational concerns may hamper communication. Note that $E(\mu_1 \mid m_1 = N)$ is independent of p. Hence, the higher p (for $p > 0$) is, the more restrictive the condition for communication and the more likely it is that reputational concerns obstruct communication.

The upshot of the above discussion is that if $p + E(\mu_1 \mid m_1 = N) < 0$, a separating equilibrium exists in which the policy maker follows advice and replaces her adviser if and only if $m_1 = N$. Reputational concerns give an incentive to the adviser in period 1 to send $m_1 = N$. The condition for communication is more restrictive with than without reputational concerns.

3.4.3 Are Reputational Concerns Always Good?

Thus far, our analysis has illuminated three effects of allowing the policy maker to replace her adviser. First, it induces a bad adviser to send $m_1 = N$ more frequently. Because a bad adviser sends $m_1 = Y$ too frequently from the policy maker's point of view, this effect is good for the policy maker. Second, reputational concerns also lead a good adviser to send $m_1 = Y$ for a wider range of μ_1. If $\underline{a} < p$, this is bad for the policy maker. Finally, the policy maker's ability to replace her adviser may increase the probability that in period 2 the adviser is good. This selection effect is also good for the policy maker.

We now arrive at the main result of the chapter: the policy maker may suffer from her power to replace her adviser. To make this point, we compare the policy maker's utility in case she can replace her adviser with her utility when she plays the second-period game (with $\theta = \frac{1}{2}$) twice. There are two situations in which the policy maker suffers from her power to replace her adviser. First, below (3.12) we have argued that reputational concerns may hamper communication. Clearly, in that case the policy maker's power to replace her adviser makes her worse off by preventing an informed decision in the first period. Second, the policy maker may suffer from reputational concerns in period 1. Using the optimal strategies of the two types of advisers, we can write the payoff to the policy maker in period 1 as

$$\begin{aligned} & \Pr(m_1 = Y)\left[p + \Pr(\overline{a} \mid m_1 = Y)\,\frac{1}{2}(h - \overline{a} + z) + \Pr(\underline{a} \mid m_1 = Y)\,\frac{1}{2}(h - \underline{a} + z)\right] \\ = \;& \frac{1}{4h}(2h + \overline{a} + \underline{a} - 2z)p + \frac{1}{4h}\left[2h^2 - 2z^2 - \overline{a}^2 - \underline{a}^2 + 2z\,(\overline{a} + \underline{a})\right] \end{aligned} \tag{3.13}$$

with $z = \frac{1}{8h}\,(\overline{a} - \underline{a})^2$. Without reputational concerns, the policy maker's payoff would be equal to (3.13) with $z = 0$. Hence, in period 1 the policy maker benefits from reputational concerns if

$$z < \overline{a} + \underline{a} - p. \tag{3.14}$$

If $p > \underline{a} + \overline{a}$, then the right-hand side of (3.14) is negative. Since, $z \geq 0$, the implication is that in this situation the policy maker suffers from reputational concerns in period 1. The

reason is that if $p > \underline{a}+\overline{a}$, then without reputational concerns $X_1 = 0$ is recommended too frequently. Consequently, reputational concerns are bad because they induce advisers to recommend $X_1 = 0$ even more frequently. If the adverse effects of reputational concerns dominate the positive selection effect, then the policy maker suffers from reputational concerns. The following proposition presents our main result.

Proposition 3.4.1. *The policy maker may suffer from her power to replace her adviser.*

An implication of the above proposition is that the policy maker would like to commit herself either (i) to keeping her adviser or (ii) always to replace her adviser.

3.5 Conclusions

We have analyzed a simple two-period model of a policy maker and an adviser to show that the policy maker's power to replace her adviser may harm the policy maker. On the one hand, the fear of being replaced induces a bad adviser to act more in line with the policy maker's interests. On the other hand, the policy maker's power to replace her adviser may lead a good adviser to act less in line with the policy maker's interests. We show that the latter effect may dominate the former. Moreover, the latter effect may induce the policy maker to ignore policy advice. When reputational concerns are bad, the policy maker benefits from committing herself to always keeping her adviser.

Our results are derived from a model that is based on several restrictive assumptions. Let us briefly discuss two of them. One important assumption is that the policy maker could only consult one adviser. If the policy maker were able to consult more advisers, a comparison of the various recommendations could reveal information about the advisers' types. This may have important qualitative implications for our results. Second, in our model information collection is exogenous. Dur and Swank show that advisers who are biased neither towards status quo nor towards implementation put most effort in collecting

information. We conjecture that reputation effects weaken an adviser's incentive to collect information due to the desire to put a stamp on future policy that induces an adviser to make less use of information. This reduces the benefits of information and in turn leads an adviser to put less effort in collecting information.

Chapter 4

Deliberation, Information Aggregation, and Collective Decision Making

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4.1 Introduction

Almost all economic models describe a silent world. In the real world people talk. McCloskey and Klamer (1995) have assessed that in 1993 in the United States about a quarter of working time was spent on talk. Talk, or more specifically, arguing or debate, takes place especially when collective choices are made. Often collective decision procedures leave plenty of room for debate. A rationale for debate is learning. Different individuals often have different pieces of information about the consequences of alternative choices. Debate is a means of revealing private information (Fearon 1998). In addition, debate may reveal the strength of arguments. Sometimes arguments are decisive. Sometimes

they are weak or even plainly wrong. Debate may contribute to distinguishing wrong from strong arguments.

Not everybody holds an optimistic view of debate. In ancient Greece, people already worried about the possibility that eloquent speakers could convince individuals of false opinions. Moreover, debate takes time, while in practice decisions often have to be reached sooner rather than later. An obvious cost of debate is therefore postponement of reaching decisions.

This chapter is concerned with the consequences of engaging in debate for agents' incentives to collect information. We analyze a model in which two agents with the same preferences have to make a binary decision about a public project under uncertainty. The agents follow a decision procedure which consists of three stages. In the first stage, each agent acquires information about the consequences of the project. The quality of the collected information depends on the effort an agent has put in acquiring information. Thus, information is endogenous in our model. In the second stage of the decision process the agents communicate. We do not model how agents communicate. Instead, we model one possible consequence of communication: communication may change an agent's opinion about which policy alternative is optimal. We model two views of communication, an optimistic and a pessimistic view. In the optimistic view, an agent who has incorrect information may learn from the other agent who has correct information. The idea behind this view is that people make mistakes, and that debate sometimes reveals mistakes. We refer to this case as the 'optimistic' view of communication: given the quality of information, communication can only help to identify the truth. In the pessimistic view, communication may also lead to deception: an agent with incorrect information may mislead an informed agent. The idea behind this view is that arguments are sometimes won by eloquence rather than logic. After the two agents have communicated they vote on the project in the third stage of the decision process.

The punchline of this chapter is that the possibility of communication affects the effort an agent puts into acquiring information. When information is cheap or easy to obtain, the possibility of communication reduces effort. When information is expensive or difficult to obtain, communication increases effort. To see why, suppose that information is almost free. Then agent 1 considers it very likely that agent 2 has received correct information. This reduces agent 1's incentives to collect information. When information is expensive, it is far less likely that agent 2 has received correct information. Since communication makes it possible to inform agent 2, this increases agent 1's incentive to collect information. We show that even if we take the optimistic view of communication and abstract from direct costs of debate, increasing the scope of communication may be sub-optimal from a welfare point of view.

Our study is related to the literature on strategic information transmission. There the emphasis has been on the conditions under which messages can be trusted. The basic insight is that communication between individuals requires a certain amount of common interest (Crawford and Sobel 1982, Farrell and Rabin 1996, and Banerjee and Somanathan 2001). Schultz (1996), Letterie and Swank (1997), Martinelli (2001), and Heidhues and Lagerlöf (2003) study information transmission in a political setting. Our analysis deviates from this literature in two ways. First, we do not assume a given distribution of information. Agents must be motivated to collect information. Second, we assume a common interest. We emphasize the consequences of communication rather than the possibility of communication.

Our study is also related to the literature on jury and committee decision making (Nitzan and Paroush 1982, 1985, Sah and Stiglitz 1988, Austen-Smith and Banks 1996, and Persico 2004). This literature analyzes the informational efficiency of alternative voting rules. As in this literature, in our analysis agents sometimes make mistakes. These mistakes form the rationale for collective decision making. However, in the literature on jury and committee decision making agents are usually explicitly assumed not to

communicate. We examine the conditions under which communication among agents increases the mean quality of accepted projects.

Finally, this study is inspired by the recent literature on deliberative democracy (see Elster (1998) for a recent survey of interesting articles). This literature reminds us what ordinary people already know: people talk for various reasons. We have modeled one of these reasons: communication as a means of correcting mistakes.

The chapter is organized as follows. The next section presents the model. Section 4.3 analyzes the model when agents cannot communicate. The outcomes serve as a benchmark for analyzing the consequences of communication. Section 4.4 allows for an optimistic view of communication. In Section 4.5, we add a pessimistic view. Section 4.6 concludes.

4.2 The Model

Two agents, $i \in \{1, 2\}$ have to decide whether to implement a project, $X = 1$, or to reject it, $X = 0$. There are two states of the world, $S \in \{-h, h\}$. The expected benefit of the project is denoted by p. We assume that $p < 0$.[1] The two agents have identical preferences over decisions and states. They are represented by

$$\begin{aligned} u_i(X &= 1 \mid S = h) = p + h, \\ u_i(X &= 1 \mid S = -h) = p - h, \\ u_i(X &= 0 \mid S = h) = u_i(X = 0 \mid S = -h) = 0. \end{aligned} \tag{4.1}$$

We assume that $p + h > 0$. Equation (4.1) thus implies that both agents prefer implementation to rejection if $S = h$ and rejection to implementation if $S = -h$.

Agents do not know the state of the world, however. Both states have equal prior probability. Each agent receives a private signal, $s_i \in \{-h, h\}$, about the true state. A

[1] The analysis of the case where $p > 0$ is analogous.

signal is fully informative, that is a signal reveals the state of the world, with probability $\pi(e_i)$, where e_i denotes the effort agent i has put in collecting information. If s_i is informative, then $\Pr(S = h \mid s_i = h) = 1$ and $\Pr(S = -h \mid s_i = -h) = 1$. If both s_1 and s_2 are informative, then $s_1 = s_2$. A signal is uninformative with probability $1 - \pi(e_i)$. An uninformative signal does not contain information about the state of the world. Thus, if a signal is uninformative, then s_i is randomly drawn from $\{-h, h\}$ with $\Pr(-h) = \frac{1}{2}$. The function $\pi(e_i)$ shows the relationship between effort and the quality of a signal. We assume that $\pi(0) = 0$, $\pi'(e_i) > 0$, and $\pi''(e_i) < 0$. Effort is costly. Agent i's payoff is given by $u_i(\cdot) - c(e_i)$, where $c(e_i)$ denotes the costs of effort. We assume that $c(0) = 0$, $c'(e_i) > 0$, and $c''(e_i) > 0$. When an agent has received a signal, he does not know whether the signal is informative or uninformative. He knows, however, the relationship between effort and the probability of receiving an informative signal.

After the agents have received their signal, they can deliberate which decision should be made. We do not model how agents deliberate. Instead, we model possible consequences of deliberation. We assume that deliberation may affect an agent's perception of the state of the world. We first take an optimistic view of deliberation. In this view, an agent who has received an informative signal may affect the beliefs of an agent who has received a wrong signal. Next, we add a pessimistic view. An agent who has received a wrong signal may affect the beliefs of the other agent who has received an informative signal.

At the end of the game, each agent votes on the project, $v_i \in \{N, Y\}$. With two individuals there are two sensible voting rules: implementation requires that both individuals vote for implementation, $(v_1, v_2) = (Y, Y)$, and status quo requires that both agents vote for status quo, $(v_1, v_2) = (N, N)$. In the main text we restrict attention to the first voting rule. The Appendix deals with the second voting rule. Table 4.1 gives a formal description of the game without deliberation.

Table 4.1: The Description of the Model

Players: $i \in \{1, 2\}$

Timing:

- Nature randomly chooses $S \in \{-h, h\}$, with $\Pr(S = h) = \frac{1}{2}$.
- Each player i chooses $e_i > 0$.
- Each player i observes $s_i \in \{-h, h\}$: $\Pr(s_i = S) = \frac{1}{2}[1 + \pi(e_i)]$

  and $\Pr(s_i \neq S) = \frac{1}{2}[1 - \pi(e_i)]$.
- Each player i chooses $v_i \in \{N, Y\}$.

Payoffs:

If $(v_1, v_2) = (Y, Y)$, then $U_i(S = h) = p + h - c(e_i)$ and

$U_i(S = -h) = p - h - c(e_i)$.

If $(v_1, v_2) \neq (Y, Y)$, then $U_i = -c(e_i)$.

Assumptions:

$p < 0; \pi_i(0) = 0, \pi'(e_i) > 0, \pi''(e_i) \leq 0; c(0) = 0, c'(e_i) > 0, c''(e_i) > 0.$

As usual in voting games, our game has many equilibria. We restrict attention to symmetric Nash equilibria in which players follow pure strategies. We are aware that 'nonsymmetric Nash equilibria' exist. Specifically, agent 1 may always vote 'yes', thereby delegating the decision to agent 2. Models of delegation abound. We instead focus our attention on communication rather than on delegation.

4.3 A Benchmark: No Deliberation

In this section, we assume that no deliberation takes place. Agents vote on the project immediately after they have received their signal. The model of Section 4.2 then reduces to a conventional two-person model without communication. Each agent makes two decisions. First, each agent chooses how much effort to put in collecting information. Second, each agent chooses how to vote.

First consider agents' vote decisions. Lemma 4.3.1 presents the condition under which it is optimal for agent 1 (2) to vote in line with his signal, given that the other agent also votes in line with his signal.

Lemma 4.3.1. *Suppose a level of effort $e = e_1 = e_2$ so that $\frac{1}{2}\left[1 + (\pi(e))^2\right] p + \pi(e)\, h > 0$. Then, it is optimal for agent 1 to vote in line with his signal, given that the other agent votes in line with his signal.*

Proof. Suppose $e_1 = e_2$, and that agent 2 follows his signal. It is easy to see that if agent 1 has received $s_1 = -h$, $v_1 = Y$ weakly dominates $v_1 = N$. If agent 1 has received $s_1 = h$, $v_1 = Y$ yields an expected payoff equal to $\frac{1}{2}\left[1 + (\pi(e_1))^2\right] p + \pi(e_1)\, h - c(e_1)$. Voting $v_1 = N$ yields a payoff equal to $-c(e_1)$. Hence, given $s_1 = h$, agent 1 votes $v_1 = Y$ if $\frac{1}{2}\left[1 + (\pi(e))^2\right] p + \pi(e)\, h > 0$. The analogous argument applies to agent 2. □

Now consider agents' decisions how much effort to put in collecting information. When the agents vote in line with their signal, the project will be rejected unless both agent receive a positive signal. Consequently, when choosing effort agent 1's expected payoff equals

$$\frac{1}{2}\{\pi(e_1)\pi(e_2) + \frac{1}{2}\pi(e_1)\left[1 - \pi(e_2)\right] + \frac{1}{2}\pi(e_2)\left[1 - \pi(e_1)\right] + \frac{1}{4}\left[1 - \pi(e_1)\right]$$
$$\left[1 - \pi(e_2)\right]\}(p + h) + \frac{1}{2}\{\frac{1}{4}\left[1 - \pi(e_1)\right]\left[1 - \pi(e_2)\right]\}(p - h) - c(e_1). \qquad (4.2)$$

We can write an analogous expression for agent 2. Differentiating (4.2) with respect to e_1 yields the first-order condition:

$$\frac{1}{4}\frac{\partial \pi\left(e_1\right)}{\partial e_1}[h+\pi\left(e_2\right)p]-\frac{\partial c\left(e_1\right)}{\partial e_1}=0. \tag{4.3}$$

Equation (4.3) implicitly defines agent 1's effort as a function of h, p, and e_2. Application of the implicit function theorem yields the intuitive result that effort e_1 is increasing in h and p and decreasing in e_2.

We can now characterize an equilibrium of the game. Let e_1^* solve (4.3). Furthermore, suppose that for $e_1^* = e_2^*$, the condition in Lemma 4.3.1 holds. Then, the equilibrium exists, in which (i) each agent chooses effort $e_{ND}^* = e_1^*(h,p) = e_2^*(h,p)$ and (ii) each agent votes informative.

Apart from this equilibrium, there exists an uninformative equilibrium. In the uninformative equilibrium, each agent does not exert effort and always votes for rejection. If the condition in Lemma 4.3.1 is violated, an equilibrium may exist in which the decision about the project is delegated to an agent, say agent 1. Clearly, without communication, delegation raises a coordination problem.

Using the equilibrium strategies of the two players it is easy to calculate the expected total surplus, that is the sum of the expected payoff to the two agents:

$$S_{ND}=\frac{1}{2}p\{1+[\pi(e_{ND}^*)]^2\}+\pi(e_{ND}^*)h-2c\left(e_{ND}^*\right). \tag{4.4}$$

It is worth noting that from a social point of view, the agents exert too little effort. Thus, e_{ND}^* does not maximize (4.4). The reason is a positive externality. When agent 1 increases his effort to receive an informative signal, agent 2 also benefits. The social benefits of collecting information thus exceed the private benefits.

4.4 Taking an 'Optimistic' View of Deliberation

In this section, we take an optimistic view of deliberation. We assume that if an agent has received an informative signal, say agent i, and the other agent has received a wrong signal, say agent j, then with probability α agent j learns that his signal is wrong. The idea is that through communication a wrongly informed agent may learn from an informed agent the true state of the world. Formally, we add a stage to the basic model presented in Table 4.1. After the agents have received their signal, but before they vote, the agents communicate. If the agents have received conflicting signals, they may learn the true state through communication. Specifically, suppose that the agents have received conflicting signals and that an agent has received an informative signal and the other agent has received an uninformative signal, then with probability α both agents learn the true state.[2]

As the model of Section 4.3, the present model has two symmetric Nash equilibria: an informative and uninformative one. As before and for the same reason, we ignore the uninformative equilibrium.

A direct consequence of deliberation is that agents do not always vote in line with their signal. An agent may vote against his signal when he has learned that his signal is wrong. Agent 1 votes as follows:[3,4]

[2]A similar assumption could be made for the case where the agents receive the same signal. However, we assume that if $\{s_1, s_2\} = \{h, h\}$, then the agents choose implementation anyway.

[3]Through deliberation, information can be shared. Since there is no conflict of interest, agents may always prearrange to vote in the same way. One may even expect that the agents will vote in the same way. In case of conflicting signals (ex post), each agent prefers rejection of the project to implementation. It is important to note that allowing for agreements on voting behavior does not affect our results. The reason is that implementation requires two agents to vote for implementation. Furthermore, note that if an agent has learned from the other agent, agents know the state of the world.

[4]Throughout this section we assume that $\pi(e_i)h > |p|$.

(a) he votes for implementation with probability one if he has received signal $s_1 = h$ and the state of the world is $S = h$;

(b) he votes for rejection with probability one if he has received signal $s_1 = -h$ and the state of the world is $S = -h$;

(c) he votes with probability α for implementation if he has received the wrong signal $s_1 = -h$ and agent 2 has received an informative signal;

(d) he votes with probability α for rejection, if he has received the wrong signal $s_1 = h$ and agent 2 has received an informative signal.

Because of symmetry, agent 2 votes in a similar way as agent 1. How much effort do the agents put into collecting information, given that they will vote as described above? When agent 1 chooses effort, his expected payoff is

$$\begin{aligned}&\frac{1}{2}\{\pi(e_1)\pi(e_2) + \frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right](1+\alpha) + \frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right]\\&(1+\alpha) + \frac{1}{4}\left[1-\pi(e_1)\right]\left[1-\pi(e_2)\right]\}(p+h) + \frac{1}{2}\{\frac{1}{4}\left[1-\pi(e_1)\right]\\&\left[1-\pi(e_2)\right]\}(p-h) - c\left(e_1\right). \qquad (4.5)\end{aligned}$$

Differentiating (4.5) with respect to e_1 yields the first-order condition:

$$\frac{1}{4}\frac{\partial\pi\left(e_1\right)}{\partial e_1}\left\{h + \pi\left(e_2\right)p + 2\alpha\left[\frac{1}{2} - \pi\left(e_2\right)\right](p+h)\right\} - \frac{\partial c\left(e_1\right)}{\partial e_1} = 0. \qquad (4.6)$$

An analogous condition can be derived for e_2. Equation (4.6) implicitly defines e_1 as a function of h, α, p, and e_2.

Proposition 4.4.1. *Suppose that the level of effort is sufficiently high to induce sincere voting. Then, effort is a decreasing function of α if and only if $\frac{1}{2} < \pi(e_2^*) < 1$.*

Proof. Immediate from application of the implicit function theorem to (4.6). □

Proposition 4.4.1 implies that the opportunity of deliberation may reduce agents' effort to collect information. The intuition behind this result is straightforward. When choosing effort, an agent compares the costs and benefits of effort. In our model, there are two

types of benefits. First, by exerting more effort, the agent reduces the probability that he receives a wrong signal. Second, through the opportunity of deliberation, exerting more effort reduces the probability that the other agent bases his vote on a wrong signal. However, deliberation also reduces the cost of receiving a wrong signal. The reason is that deliberation makes it possible that a wrong signal will be corrected.

Using (4.5), it is easy to calculate the total expected surplus in the present model:

$$S_{OV} = \frac{1}{2}p\left\{1 + [\pi(e^*_{OV})]^2\right\} + \pi(e^*_{OV})h + \pi\left(e^*_{OV}\right)\left[1 - \pi\left(e^*_{OV}\right)\right]\alpha\left(p + h\right) - 2c\left(e^*_{OV}\right). \quad (4.7)$$

where e^*_{OV} denotes the equilibrium effort level in the game with an optimistic view of deliberation. Does deliberation always improve social welfare? To answer this question, compare (4.4) with (4.7). Allowing for deliberation has two effects. First, given effort, deliberation increases the probability that the correct decision will be made (if $e^*_{ND} = e^*_{OV}$, then the third term of the right-hand side of (4.7) implies that $S_{OV} > S_{ND}$). Second, as discussed above the opportunity of deliberation affects effort. If effort increases, the opportunity of deliberation unambiguously enhances expected social welfare. If effort decreases, the welfare effect of deliberation is ambiguous. A higher value of α, which can be interpreted as giving more room for communication, may decrease expected social welfare.

We illustrate the effect of deliberation on total expected social surplus with a numerical example. Let $\pi(e_i) = 0.8e_i$, $c(e_i) = \frac{1}{2}\lambda e_i^2$ with $\lambda > 0$, $h = 2$, and $p = -1$. Figure 4.1 and 4.2, illustrate the effect of α on the total expected social surplus in the case of $\gamma = 0.5$ and 0.17, respectively. In Figure 4.1, an increase in α leads to an increase in the total expected social surplus. The reason is that $0 < \pi(e^*) < \frac{1}{2}$ holds for all values of α. Figure 4.2 shows that an increase in α may lead to a decrease in the total expected social surplus. The parameter values now ensure that $\frac{1}{2} < \pi(e^*) < 1$.

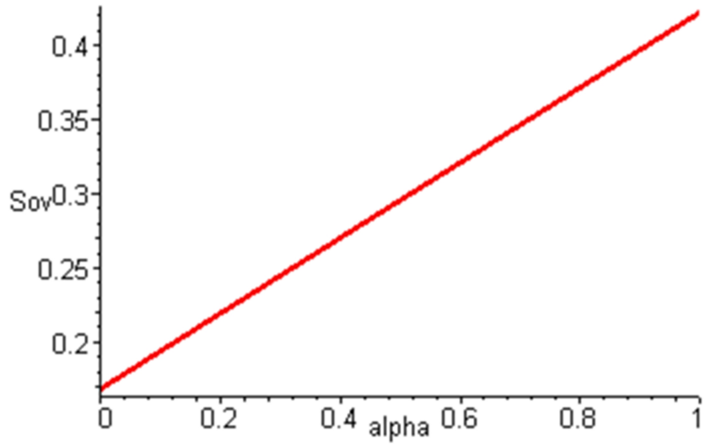

Figure 4.1: $0 < \pi(e^*) < \frac{1}{2}$; $\gamma = 0.8$, $\lambda = 0.5$, $p = -1$, $h = 2$.

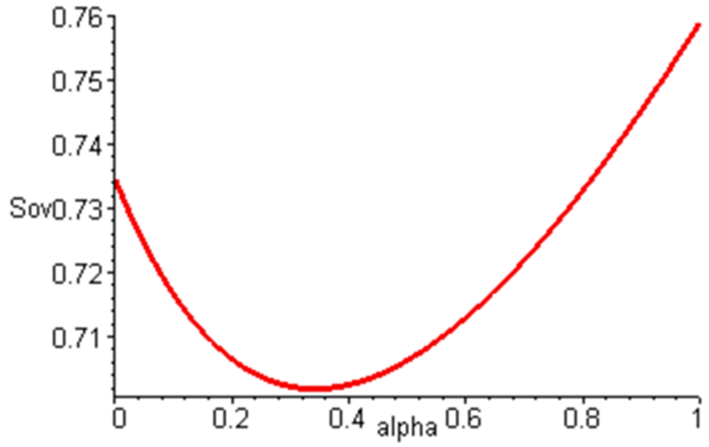

Figure 4.2: $\frac{1}{2} < \pi(e^*) < 1$; $\gamma = 0.8$, $\lambda = 0.17$, $p = -1$, $h = 2$.

4.5 Adding a 'Pessimistic' View of Deliberation to the Model

We now add a more sceptical view of deliberation to our model. We assume that with probability β an agent, say agent i, who has received a wrong signal, convinces an agent,

say agent j, who has received a different, possibly informative, signal that j's signal is wrong. We maintain α in the model. We exclude the possibility that i convinces j and j convinces i simultaneously.[5]

Throughout the remaining part of this section we assume that it is optimal for each agent to vote in line with his (posterior) perception of the true state of the world. Agent 1 thus votes as follows:

(a) when he receives the same signal as agent 2 he always votes in line with his signal;

(b) when he receives a correct signal and agent 2 receives a wrong signal, he votes in line with his own signal with probability $1-\beta$;

(c) when he receives a wrong signal and agent 2 receives an informative signal, he votes with probability $1-\alpha$ in line with his own signal.

The expected payoff to agent 1 when he chooses effort equals

$$\begin{aligned}&\frac{1}{2}\{\pi(e_1)\pi(e_2)+\frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right](1+\alpha)+\frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right]\\&(1+\alpha)+\frac{1}{4}\left[1-\pi(e_1)\right]\left[1-\pi(e_2)\right](1+2\beta)\}(p+h)+\\&\frac{1}{2}\{\frac{1}{2}\pi\left(e_1\right)\left[1-\pi\left(e_2\right)\right]\beta+\frac{1}{2}\pi\left(e_2\right)\left[1-\pi\left(e_1\right)\right]\beta+\frac{1}{4}\left[1-\pi(e_1)\right]\\&\left[1-\pi(e_2)\right](1+2\beta)\}(p-h)-c\left(e_1\right). \qquad (4.8)\end{aligned}$$

Differentiating (4.8) with respect to e_1 yields the first-order condition:

$$\frac{1}{4}\frac{\partial\pi(e_1)}{\partial e_1}\{h+\pi(e_2)p+(p+h)(\alpha-\beta)+2\pi(e_2)[h\beta-\alpha(p+h)]\}-\frac{\partial c(e_1)}{\partial e_1}=0. \qquad (4.9)$$

Equation (4.9) implicitly defines e_1 as a function of h, p, α, β, and e_2. By application of the implicit function theorem, it is easy to show that e_1 is a decreasing function of β if and only if $\pi\left(e_2^*\right)<\frac{h+p}{2h}$. The total expected social surplus is

$$\begin{aligned}S_{PV} \;=\;& \frac{1}{2}p+\left[\pi\left(e_{PV}^*\right)\right]^2[\frac{1}{2}p+\alpha(-p-h)+h\beta]+\\&\pi\left(e_{PV}^*\right)\left[(\alpha-\beta)(p+h)+h\right]+p\beta-2c\left(e_{PV}^*\right). \qquad (4.10)\end{aligned}$$

[5]Excluding this possibility does not affect our main results.

where e^*_{PV} denotes the equilibrium level of effort in the present game. Analogous to the results of the previous section we can show that for small values of $\pi\left(e^*_{PV}\right)$, the welfare effect of an increase in β is ambiguous. Hence, if more communication implies a higher probability that a person who has wrong information convinces a person who has good information, then more communication does not always increase the probability of good public decisions. The main reason for this result is that agents may respond to the adverse consequences of communication by putting more effort in collecting information.

4.6 Conclusions

Correcting mistakes and sharing information are two well-known rationales for deliberation. In this chapter, we have examined the conditions under which deliberation improves collective decision making. Our most surprising result is that when there are no direct cost of communication and communication can only convince uninformed or wrongly informed agents of the truth, more communication may reduce the probability that a correct decision is made. The reason for this result is that communication may aggravate the free-rider problem associated with collecting information. Especially, when information is cheap, or good information is easy to acquire, more communication reduces agents' incentives to collect information. When collecting information is expensive, more communication usually increases the probability of good collective decisions.

We are aware that our results are derived from a highly stylized model based on many restrictive assumptions. Some assumptions were made for simplicity and are innocuous. Relaxing them does not affect the main results qualitatively. For instance, the assumption that there are only two states and that they occur with the same prior probability is not important. Adding individuals to the group is not likely to affect our main results either. Of course, the free-rider problem aggravates. This reduces the probability that an individual receives an informative signal. On the other hand, the probability that some

individual receives an informative signal may rise. A complication is that the probability of learning may depend on the number of individuals in the group. A less innocuous assumption is that individuals have the same preferences. We conjecture that introducing conflict of interest into our model may jeopardize communication among agents.

4.7 Appendix

This Appendix analyzes deliberation under the alternative voting rule: implementation requires one vote. Again we focus on symmetric equilibria in pure strategies. We focus on agent 1. As the results are qualitatively the same as in the main text, we hardly comment on our results.

Case A.1: A Benchmark: No Deliberation

As implementation requires one vote, the expected payoff to agent 1 is given by

$$\frac{1}{2}\left\{1-\frac{1}{4}[1-\pi(e_1)][1-\pi(e_2)]\right\}(p+h)+\frac{1}{2}\{\frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right] \\ +\frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right]+\frac{3}{4}\left[1-\pi(e_1)\right]\left[1-\pi(e_2)\right]\}(p-h)-c\left(e_1\right). \tag{4.11}$$

Differentiating (4.11) with respect to e_1 yields the first-order condition:

$$\frac{1}{4}\frac{\partial\pi\left(e_1\right)}{\partial e_1}[h-\pi\left(e_2\right)p]-\frac{\partial c\left(e_1\right)}{\partial e_1}=0. \tag{4.12}$$

Equation (4.12) implicitly defines e_1 as a function of h, p, and e_2,. As in the main text, effort is increasing in h and decreasing in p and in e_2.

The total expected social surplus is

$$S_{ND'}=\frac{1}{2}p\left\{3-\left[\pi\left(e_{ND'}^{*}\right)\right]^2\right\}+h\pi\left(e_{ND'}^{*}\right)-2c\left(e_{ND'}^{*}\right). \tag{4.13}$$

where $e_{ND'}^{*}$ denotes the equilibrium effort level with no deliberation.

Case A.2: Taking an Optimistic View of Deliberation

The expected payoff to agent 1 when he chooses effort equals

$$\frac{1}{2}\left\{1-\frac{1}{4}[1-\pi(e_1)][1-\pi(e_2)]\right\}(p+h)+\frac{1}{2}\{\frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right](1-\alpha)$$
$$\frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right](1-\alpha)+\frac{3}{4}\left[1-\pi(e_1)\right]\left[1-\pi(e_2)\right]\}(p-h)-c(e_1). \quad (4.14)$$

Differentiating (4.14) with respect to e_1 yields the first-order condition:

$$\frac{1}{4}\frac{\partial\pi\left(e_1\right)}{\partial e_1}\left\{h-p\pi\left(e_2\right)+\alpha(p-h)[2\pi\left(e_2\right)-1]\right\}-\frac{\partial c\left(e_1\right)}{\partial e_1}=0. \quad (4.15)$$

An analogous condition can be derived for e_2. Equation (4.15) implicitly defines e_1 as a function of e_2, p, h, and α. Application of the implicit function theorem shows that e_1 is a decreasing function of α if and only if $\frac{1}{2}<\pi\left(e_2^*\right)<1$. The result is analogous to that of Section 4.4.

By using (4.15), the total expected social surplus is

$$S_{OV'}=\frac{1}{2}p\left\{3-\left[\pi\left(e_{OV'}^*\right)\right]^2\right\}+h\pi\left(e_{OV'}^*\right)+\pi\left(e_{OV'}^*\right)\left[1-\pi\left(e_{OV'}^*\right)\right]\alpha(h-p)-2c\left(e_{OV'}^*\right), \quad (4.16)$$

where $e_{OV'}^*$ denotes the equilibrium effort level in the game with an optimistic view. As in Section 4.4, the total expected social surplus may decrease in α.

Case A.3: Adding a Pessimistic View of Deliberation to the Model

The expected payoff to agent 1 when he chooses effort is given by

$$\frac{1}{2}\{1-\frac{1}{4}[1-\pi(e_1)][1-\pi(e_2)](1+2\beta)-\frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right]\beta$$
$$-\frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right]\beta\}(p+h)+\frac{1}{2}\{\frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right]+\frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right]$$
$$+\frac{3}{4}\left[1-\pi(e_1)\right]\left[1-\pi(e_2)\right]-\frac{1}{2}\pi(e_1)\left[1-\pi(e_2)\right]\alpha-\frac{1}{2}\pi(e_2)\left[1-\pi(e_1)\right]\alpha$$
$$-\frac{1}{2}\left[1-\pi(e_1)\right]\left[1-\pi(e_2)\right]\beta\}(p-h)-c(e_1). \quad (4.17)$$

Differentiating (4.17) with respect to e_1 yields the first-order condition:

$$\frac{1}{4}\frac{\partial\pi(e_1)}{\partial e_1}\left\{h-p\pi(e_2)-(p-h)(\alpha-\beta)+2\pi(e_2)\left[h\beta+\alpha(p-h)\right]\right\}-\frac{\partial c(e_1)}{\partial e_1}=0. \quad (4.18)$$

Equation (4.18) implicitly defines e_1 as a function of e_2, p, h, α, and β. Application of the implicit function theorem shows that e_1 is an decreasing function of β if and only if $\pi(e_2^*) < \frac{h-p}{2h}$.

Chapter 5

Politicians' Motivation, Role of Elections, and Policy Choices

5.1 Introduction

Disciplining and selecting politicians is a main concern in representative democracies. This concern stems from two core problems. First, motives of holding office differ among politicians. Some politicians are motivated by a public spirit while others are more opportunistically motivated. Second, it is well known that citizens have weak incentives to acquire information. In addition, government decision making process endows politicians with bureaucrats acting as their information providers. Accordingly, politicians may exploit informational superiority to further their own interest, which may not coincide with the public interest.

To alleviate agency problems, elections are used as an incentive mechanism, aimed at holding politicians accountable for their behavior and selecting good ones to run for political office. Concerning the literature on electoral accountability[1], how elections function and how reelection incentives shape politicians' behavior and policy choices, critically

[1]See Berganza (2000b) for a comprehensive survey.

hinge on the nature of informational asymmetries between politicians and voters, and on the characteristics of the politicians assumed in these studies. While most of the literature has paid attention to differences in the competence between politicians when studying electoral control and policy processes, little has been focused on the motivational differences of politicians in explaining those issues.

The aim of this chapter is to examine the role of elections and the implications of reelection concerns on policy choices when the politicians' motivation matters. In our analysis, politicians differ in their motives for holding office. Good politicians care about implemented policies whereas bad ones care not only about the policies but also want to extract rents. When policies are stochastic in nature, there are two implications. First, they create an incentive for politicians to use policy implementation as '*a rent extraction device*' to appropriate resources at the expense of voters. Second, by observing the implementation of policies, the voters are unable to tell whether the incumbent is acting in their interest or simply extracting rent through policy implementation. To illustrate these repercussions, we employ a simple two-period model. There are two players: an incumbent politician and a representative voter. The motivation of the incumbent politician is private information. In the first period, the incumbent politician must make a decision as to whether or not to implement a particular policy. The representative voter observes the policy decision but not its real consequences. Elections are held. The voter decides whether or not to reelect the incumbent. In the second period, the winning politician takes office and chooses the second-period policy.

Our analysis leads to the following results. First, reelection concerns may distort policy choices made by a good politician. In particular, we show that a good politician may choose not to implement a socially desirable policy if he sufficiently fears rent extraction in the future. The intuition behind the result is straightforward. Suppose voters dismiss the incumbent politician when implementation is observed. If a good politician chooses to implement a good policy, he knows that he will be dismissed and with some positive

probability a bad politician will be in office in the future. On the other hand, preserving the status quo implies that the good policy will not be implemented. However, the benefits of doing so are that the good politician prevents a bad politician from holding office in the future period. Accordingly not implementing a good policy today is the price to be paid for preventing a bad politician from holding office tomorrow. The inclination of a good politician not to implement a good policy depends on the scope of concerns over future rent appropriation, the likelihood that a bad politician will be in office, and the discrepancy between good and bad policy.

Second, reelection concerns may deter a bad politician from implementing a socially undesirable policy. This finding exhibits the disciplining effect of elections: elections reduce opportunistic behavior by bad politicians. The benefits to the voter are 1) a socially undesirable policy does not get implemented; and 2) rents are not appropriated in the current period. The result above is driven by a bad politician's re-election incentives. Also, elections give an incentive for a bad politician to postpone rent extraction. This accentuates the importance of tying politicians' performances in their final term with their future prospect of well-being.

Third, three types of equilibria exist: a disciplining equilibrium, a cynical equilibrium, and a timid equilibrium[2]. Which of these equilibria arises, depends on the extent to which the incumbent politician cares about the following: future prospects of rent extraction, likelihood that a bad politician enters office, and the significance of policy decisions in that good policy should be undertaken and bad policy should be maintained the status quo.

One equilibrium is particular striking. In the '*cynical*' equilibrium, an attempt of a good politician to avoid future rent extraction by a bad politician may induce him not to implement a good policy. On the contrary, a bad politician does implement good policies.

[2]We have borrowed this term from Smart and Strum (2004).

When voters do not suffer much from rent extraction, a policy implemented by a bad politician may be beneficial to them. By ignoring the consequences of the future term, a bad politician appears to act more in line with the public interest than a good politician in the present term. As a good politician does not always implement a good policy while a bad politician does and sometimes brings benefit to the voters, the voters are not able to infer a politician's motivation from observing politicians' behavior. Moreover, it is worth mentioning that even in this cynical world, we show that elections improve the likelihood that a good politician enters office in the future.

This chapter is closely related to the literature on electoral accountability, pioneered by Barro (1973) and Ferejohn (1986), and further developed by Austen-Smith and Banks (1989) and Banks and Sundaram (1993). In this literature, the desire for reelection is at the heart of politicians. However, reelection incentives differ among models. For instance, politicians may desire to be in office because of ego rent as discussed in Rogoff (1990). The desire for reelection may also come from the expectation that holding office gives an opportunity to extract rents and/or to implement strongly preferred policies in the future. As we show in the chapter, under the nature of asymmetric information where politicians with different motivations operate in our setting, differences in reelection incentives by good and bad politicians have important implication in politicians' behavior, voters' re-electing strategies, and the roles of elections.

Our study also builds on Coate and Morris (1995). There, voters have asymmetric information both about the effects of policies and about politicians' predispositions. They show that an inefficiently devious method to transfer resources through policy implementation rather than an efficient and simple method like a cash transfer may be employed. The similarity between their work and ours is the importance of imperfect information on the part of voters. While their study focuses on the forms of making transfers by politicians, we focus on the functions of elections and policy choices under the asymmetric information above.

The remainder of the chapter is structured as follows. The next section presents the model. Section 5.3 characterizes the equilibria and articulates the results. Section 5.4 concludes.

5.2 The Model

Consider a simple two-period game of incomplete information. In each period, there are two active players: an incumbent politician and a representative voter.

5.2.1 Policies

In each period $t = 1, 2$, a policy X_t has to be implemented, $X_t = 1$ or preserved the status quo, $X_t = 0$. The consequences of the policy are surrounded by uncertainty – i.e. they produce either bad or good consequences, $\mu_t \in \{-h, h\}$ with equal probability. An implemented policy with socially desirable consequences yields the positive benefit of h while a policy with socially undesirable consequences yields the negative benefit of $-h$.

5.2.2 Incumbent Politician

The incumbent politician observes μ_t. There are two types of politicians, $\theta_t \in \{G, B\}$. Incumbent politician's type is his private information. With probability ω, the politician is good ($\theta = G$); with probability $1 - \omega$, he is bad ($\theta = B$). A bad politician wants to appropriate rent. Specifically we assume that if a policy is implemented by a good politician, the payoff to the representative voter (henceforth the voter) equals μ. When a bad politician implements a policy, the payoff to the voter is $\mu_t - \gamma R$, where R denotes the extracted rent and γ measures how much the voter suffers from the extraction of the rent. When the status quo is maintained, the payoff to the voter and the incumbent politician, irrespective of his type, equals zero. A good politician cares about the public interest.

When $X_t = 1$, his payoff equals μ_t. When a bad politician implements a policy, his payoff equals $\mu_t + R$. Notice that the appropriation of rent requires $X_t = 1$. We assume that $-h + R > 0$, implying that a bad politician has an incentive to implement a socially undesirable policy ($\mu_t = -h$) to extract the rent. The incumbent politician's preferences are summarized by

$$\begin{aligned} U_G(X_t &= 1) = \mu_t, \\ U_B(X_t &= 1) = \mu_t + R, \\ U_G(X_t &= 0) = U_B(X_t = 0) = 0. \end{aligned} \tag{5.1}$$

5.2.3 Representative Voter

The representative voter is concerned about implementation outcomes which are composed of two parts: policy outcome itself and rent appropriation if a bad politician is in office. The voter's preferences are thus given by

$$\begin{aligned} U_V(X_t &= 1) = \mu_t - \gamma R, \\ U_V(X_t &= 0) = 0, \end{aligned} \tag{5.2}$$

where γ captures the extent to which the voter suffers from the extraction of the rent. The payoff to the voter is normalized to zero if the status quo is retained. At the end of period 1, elections are held. The voter can keep the incumbent ($\upsilon = 0$) or dismiss him ($\upsilon = 1$). If the incumbent is dismissed, then in period 2 the politician will be good with probability ω and bad with probability $1 - \omega$. When voting, the voter observes the decision on X_1 but does not observe outcomes (μ_t and R). As we will show below, the reason for holding elections in our model is twofold. First, it increases the probability that in period 2 a good incumbent holds office. Second, elections may keep a bad politician from appropriating a rent in period 1.

5.2.4 Timing

Nature first determines $\mu_1 \in \{-h, h\}$ and the incumbent politician discovers his type from $\theta \in \{G, B\}$. The incumbent observes μ_1 and decides whether to implement the policy ($X_1 = 1$) or to preserve the status quo ($X_1 = 0$). The voter observes the policy decision made by the incumbent. Subsequently the voter decides whether to re-elect the incumbent ($\upsilon = 0$) or to dismiss him ($\upsilon = 1$). The second period is identical to the first period, with a new policy, X_2, a new state of the world, $\mu_2 \in \{-h, h\}$, and, if $\upsilon = 1$, a new incumbent. To simplify notation, we abstract from discounting the future.[3]

Table 5.1: The Description of the Model

Players: The incumbent politician and the representative voter

Timing:

Period 1

- Nature determines $\mu_1 \in \{-h, h\}$ and $\theta_1 \in \{G, B\}$.
- The incumbent observes μ_1 and chooses $X_1 \in \{X_1 = 0, X_1 = 1\}$.
- The voter observes X_1 and then chooses $\upsilon \in \{\upsilon = 0, \upsilon = 1\}$.

Period 2

- Nature determines $\mu_2 \in \{-h, h\}$; and if $\upsilon = 1$, $\theta_2 \in \{G, B\}$.
- The winning incumbent observes μ_2 and chooses $X_2 \in \{X_2 = 0, X_2 = 1\}$.
- The game ends.

[3]We are aware that with some discounting, a bad politician may have an incentive to take all rents in period 1.

Table 5.1: (continued)

Payoffs:

$U_G(X_t = 1) = \mu_t$; $U_G(X_t = 0) = 0$ where $t = 1, 2$.

$U_B(X_t = 1) = \mu_t + R$; $U_B(X_t = 0) = 0$.

$U_V(X_t = 1) = \mu_t - \gamma R$; $U_V(X_t = 0) = 0$.

Assumptions:

$-h + R > 0$; $\Pr(\theta = G) = \omega$ and $\Pr(\theta = B) = 1 - \omega$

where $0 < \omega < 1$.

5.3 Analysis

5.3.1 Equilibrium in the Second-Period Game

The strategies of the two types of politicians in the second period directly follow from the assumptions made above. The assumption that $-h + R > 0$ implies that in period 2 a bad politician chooses $X_2 = 1$, irrespective of the state of the world. By assumption, a good politician opts for $X_2 = 1$ if and only if $\mu_2 = h$. Clearly, it is in the voter's interest to have a good politician in office in period 2.

5.3.2 Equilibrium in the First-Period Game

An important feature of our model is that relative to a good politician, a bad politician is biased towards implementation. We therefore suppose that the voter dismisses the incumbent, $v = 1$, if and only if $X_1 = 1$. Later we will verify whether this strategy is an optimal response for the voter.

Consider a good politician in period 1. Suppose $\mu_1 = -h$. Then, clearly the good politician has no incentive to choose $X_1 = 1$ as a bad policy would be implemented and with probability $1 - \omega$ the good politician would be replaced by a bad politician. Thus, if $\mu_1 = -h$, then it is an optimal response for the good politician to choose $X_1 = 0$. Now suppose $\mu_1 = h$. The good politician faces a trade-off. On the one hand, choosing $X_1 = 1$ implies that he will be dismissed. Then, with probability $1 - \omega$ a bad politician will be in office in period 2. On the other hand, $X_1 = 0$ implies that a good policy will not be implemented. Realizing his behavior in period 2, $X_1 = 0$ yields an expected payoff to the good politician (and to the voter) equal to

$$U_G\left(X_1 = 0 \mid \mu_1 = h\right) = \frac{1}{2}h. \tag{5.3}$$

Choosing $X_1 = 1$ yields an expected utility:

$$U_G\left(X_1 = 1 \mid \mu_1 = h\right) = h + \omega\frac{1}{2}h - (1 - \omega)\,\gamma R. \tag{5.4}$$

A comparison between (5.3) and (5.4) shows that $X_1 = 1$ increases period 1 utility (h), but reduces period 2 utility. Clearly, $X_1 = 1$ yields a higher payoff than $X_1 = 0$ if

$$\gamma R < \frac{1}{2}\frac{1+\omega}{1-\omega}h. \tag{5.5}$$

The intuition behind (5.5) is as follows. The benefits of choosing $X_1 = 0$ is that the good politician prevents a bad politician from entering office in period 2. The higher γR is, the higher the costs of a bad politician are. Moreover, the lower ω is, the higher the probability is of a bad politician entering office in period 2 when choosing $X_1 = 1$. Finally, the higher h is, the more important it is that a policy is implemented when $\mu_1 = h$ and not implemented when $\mu_1 = -h$. Thus, a lower γR, a higher ω, and a higher h widen the range of parameters for which a good politician chooses $X_1 = 1$. If (5.5) is violated, then a good politician always chooses $X_1 = 0$. Choosing $X_1 = 0$ when $\mu_1 = h$ (not implementing a good policy) is the price to be paid for preventing a bad politician to take office in period 2. The following lemma summarizes this result.

Lemma 5.3.1. *Suppose that the voter dismisses the incumbent, $v = 1$, if $X_1 = 1$. Then, a good politician may opt for not implementing a good policy to avoid future rent extraction.*

Now consider a bad politician. Suppose $\mu_1 = -h$. Then, $X_1 = 1$ yields a payoff equal to

$$U_B\left(X_1 = 1 \mid \mu_1 = -h\right) = -h + R + \omega\frac{1}{2}h - (1-\omega)\gamma R \tag{5.6}$$

and $X_1 = 0$ yields an expected payoff equal to

$$U_B\left(X_1 = 0 \mid \mu_1 = -h\right) = R. \tag{5.7}$$

Consequently, $X_1 = 1$ delivers a higher payoff than $X_1 = 0$ if

$$\gamma R < \frac{\frac{1}{2}\omega - 1}{1-\omega}h. \tag{5.8}$$

Since $\omega < 1$, condition (5.8) is always violated. Hence, when $\mu_1 = -h$, it is an optimal response for a bad politician to choose $X_1 = 0$. This finding illustrates the potential disciplining function of elections. Elections lead a bad politician to abstain from implementing a socially undesirable policy. The benefit for the voter is twofold. First, a bad policy is not implemented. Second, in period 1 rents are not appropriated. The reason why R *discourages* a bad politician from implementing an undesirable policy is that a bad politician also does not want to be reigned by a bad politician. As a result, elections give an incentive to a bad politician to postpone rent appropriation. Now suppose $\mu_1 = h$. $X_1 = 1$ yields a payoff:

$$U_B\left(X_1 = 1 \mid \mu_1 = h\right) = h + R + \omega\frac{1}{2}h - (1-\omega)\gamma R. \tag{5.9}$$

Again, $X_1 = 0$ yields R. Consequently, a bad politician chooses $X_1 = 1$ if

$$\gamma R < \frac{2+\omega}{2(1-\omega)}h. \tag{5.10}$$

Equation (5.10) shows that a high rent (γR), a low value of h, and a low value of ω may keep a bad politician from choosing $X_1 = 1$ and appropriating a rent in period 1.

Lemma 5.3.2. *Suppose that the voter dismisses the incumbent, $v = 1$, if $X_1 = 1$. Then, a bad politician never implements a policy when $\mu_1 = -h$, and may abstain from implementing a policy when $\mu_1 = h$.*

On the basis of (5.5) and (5.10), three situations can be distinguished.

A cynical equilibrium (occurs when (5.5) is violated and (5.10) is satisfied)

If (5.5) is violated and (5.10) is satisfied, then in period 1 a good politician retains the status quo, irrespective of the state of the world, and a bad politician implements the policy only if $\mu_1 = h$. Notice that given these strategies, the assumed voting rule is an optimal response. Voting for the incumbent ($v = 0$) if and only if $X_1 = 0$ maximizes the probability that in period 2 a good politician holds office. If γ is sufficiently small, then the voter benefits from a policy that is implemented by a bad politician ($h - \gamma R > 0$). Accordingly, when we ignore the consequences for period 2, in period 1 a bad politician acts more in line with the voter's interest than a good politician (hence a *cynical* equilibrium). The reason for this is that a good politician does not implement a socially desirable policy. The cost of giving up a desirable policy is smaller than the benefit of having a good politician in office in period 2. The following proposition summarizes this phenomenon.

Proposition 5.3.1. *Suppose $\gamma R > \frac{1}{2}\frac{1+\omega}{1-\omega}h$ and $\gamma R < \frac{2+\omega}{2(1-\omega)}h$. Then an equilibrium exists in which $v = 0$ if and only if $X_1 = 0$; a good politician chooses $X_1 = 0$, irrespective of μ_1; and a bad politician chooses $X_1 = 1$ if and only if $\mu_1 = h$.*

It is worth emphasizing that in the cynical equilibrium elections have two constructive functions. First, elections discipline bad politicians. In period 1, policies that are socially undesirable are not implemented. Without elections, a bad politician would always choose $X_1 = 1$. Second, elections improve the probability that in period 2 a good politician holds office. Without elections, this probability would be ω; with elections, it is $\omega + \frac{1}{2}(1 - \omega)$.

A timid equilibrium (arises when both (5.5) and (5.10) are violated)

If (5.5) and (5.10) are both violated, then in period 1 both types of politicians retain the status quo, irrespective of the state of the world. Is the voting rule 're-elects the incumbent if and only if $X_1 = 0$' an optimal response to the politicians' strategies? The answer to this question depends on the out of equilibrium belief when $X_1 = 1$. As bad politicians are relatively biased towards $X_1 = 1$, a natural out of equilibrium belief is $\Pr(\theta_1 = B \mid X_1 = 1) = 1$. With this belief, the strategies of the two types of politicians mentioned above in conjunction with the assumed voting rule form an equilibrium of the period 1 game. A timid equilibrium describes a situation in which politicians remain passive. From the conditions (5.5) and (5.10), it directly follows that a timid equilibrium exists if the voter suffers much from rent appropriation (high γR), the chances of having a bad politician are high (low ω), and the value of good and bad policies do not differ much (low h).

Proposition 5.3.2. *Suppose* $\gamma R > \frac{1}{2}\frac{1+\omega}{1-\omega}h$ *and* $\gamma R > \frac{2+\omega}{2(1-\omega)}h$. *Then an equilibrium exists in which* $v = 0$ *if and only if* $X_1 = 0$*; a good politician as well as a bad politician choose* $X_1 = 0$*, irrespective of* μ_1.

In a timid equilibrium, elections only have one function: disciplining bad politicians. Since bad and good politicians act in the same way in period 1, elections do not help to increase the probability that a good politician holds office in period 2.

A disciplining equilibrium (occurs when both (5.5) and (5.10) are satisfied)

If (5.5) and (5.10) are both satisfied, then in period 1 both types of politicians retain the status quo, if and only if $\mu_1 = h$. When $h - \gamma R > 0$, these strategies imply that good policies are implemented and bad policies are not implemented. Is $v = 0$ if and only if $X_1 = 0$ a best response to these strategies? The answer is affirmative, as the policy

implementation decision does not contain information about the politician's type. In fact, at elections the voter is indifferent between re-electing and dismissing the incumbent.

Proposition 5.3.3. *Suppose* $\gamma R < \frac{1}{2}\frac{1+\omega}{1-\omega}h$ *and* $\gamma R < \frac{2+\omega}{2(1-\omega)}h$. *Then an equilibrium exists in which* $v = 0$ *if and only if* $X_1 = 0$*; a good politician as well as a bad politician choose* $X_1 = 1$ *if and only if* $\mu_1 = h$.

As in the timid equilibrium, in the disciplining equilibrium elections only serve the purpose of disciplining bad politicians in period 1.

All three equilibria are illustrated in Figure 5.1.

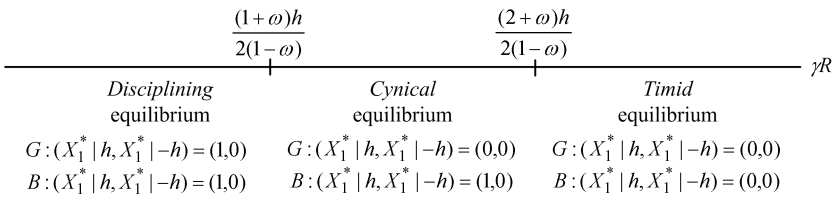

Figure 5.1: Characterization of the Three Equilibria

5.4 Concluding Remarks

In this chapter, we have developed a simple two-period model to gain insights into the importance of differences in motivation among politicians and its implications for understanding the role of elections and explaining policy choices. We derive the following results. First, our analysis suggests that the disciplining function of elections plays its role in all political equilibria. Elections discipline opportunistic politicians to abstain from implementing a socially undesirable policy. Without elections, they would always implement any policy irrespective of the state of the world. Second, as shown in the cynical equilibrium, elections perform another function. They improve the likelihood that a good politician enters office tomorrow. A striking result in this equilibrium is that a

bad politician, by implementing a socially desirable policy, may instead act more in tune with the public interest as a good politician chooses not to implement a socially desirable policy. Accordingly, when voters care sufficiently less about rent extraction, the policy implemented by a rent-seeking politician may benefit to the voters.

Additionally, elections may also create an incentive for an opportunistic politician to postpone an extraction of the rents. This reminds us that elections alone do not guarantee proper functioning of modern democracies. Other complementary institutional arrangements are necessary. Persson et al. (1997) show that joint efforts between elections and separation of powers between legislative and executive bodies help prevent an abuse of power by opportunistic politicians. Finally, to overcome the lame duck problem, it might be worth paying attention to an institutional arrangement inducing last-period government to condition a future prospect of its well-being on its last term performance.

Chapter 6

Summary and Further Research

This thesis has examined the roles and the limitations of some institutional arrangements aimed at alleviating some agency problems in political decision making process. In this chapter we summarize the main findings and discuss some of the topics for further research.

6.1 A Summary of Main Findings

In Chapter 2, we examined a penalty for lying as a means to reduce information manipulation by an adviser. Our theoretical contribution shows that the extent to which the policy maker can benefit from an adviser's valuable information is not always increasing in the magnitude of the penalty. An adviser may choose not to participate in providing information due to a high penalty for lying; as a result the policy maker may make poorer decisions compared to when the adviser chooses to participate. Only when the penalty of lying is endogenous (i.e. ensuring that the adviser chooses to participate), can it help the policy makers to make better informed decisions. Moreover, the result shows that the policy may face a trade off between the need to mitigate information manipulation and the need to obtain information.

In Chapter 3, we identified under which conditions reputational concerns by an adviser benefit a policy maker. It is shown that the policy maker's authority to dismiss and replace an adviser in the middle of a sequence of policy decisions can impair the quality of the first period advice given by a good adviser. A good adviser recommends the status quo too often so as to avoid being confused with a bad adviser, and is therefore dismissed after the first period.

In Chapter 4, we examined a possible consequence of deliberation on the agent's incentives to collect information. We considered two views of communication: an optimistic view and a pessimistic view. In an optimistic view, communication is viewed as a means of correcting mistakes while in a pessimistic view, communication may lead to deception. We show that increasing the scope of communication may be sub-optimal even when we take the optimistic view of communication and abstract from direct costs of debate. This is because a free-rider problem may become more severe.

In Chapter 5, we studied the prospective roles of elections in terms of disciplining and selecting politicians. In our model, politicians differ in their motivation of running public office. Good politicians care about the policies they undertake while bad ones care about an appropriation of the rents. Citizens want to control political misbehavior and select good politicians to be in office. We show that when citizens are ill-informed about politicians' motivation and about effects of the policies, elections always perform their disciplining role, i.e. reelection concerns prevent a bad politician from implementing a socially undesirable policy. Additionally, we demonstrate a striking result in that, in a cynical equilibrium, bad politicians may act more in line with the interest of public compared to good politicians.

6.2 Topics for Further Research

At the beginning of the political process, a host of policies is announced during the electoral campaigns. In a political culture in which breaking electoral promises leads to a higher chance of losing future elections, elected policy makers may have an incentive to implement announced policies even if they discover later in office that those policies are inefficient. In particular, this might be the case when public realization of real policy consequences requires a great deal of time. To reduce a chance of policy failure due to the agency problem above, it is important to study a prospective policy maker' incentives to design policies based on sufficient information and careful analysis. Related to this, political parties play a vital role as they are political organizations where proper policy formulation should begin.

Another topic for further research is related to agency problems among governmental agencies. Government is not a single coherent entity; in fact it is composed of many layers of its autonomy. In practice, a success or a failure of implementing policies is often determined by more than one governmental division. For instance, a policy to promote trade calls for cooperation between the Ministry of Commerce and the Ministry of Foreign Affairs; or a policy aimed at reducing poverty requires a join effort of both the Ministry of Interior Affairs and the Ministry of Finance. When each ministry's contribution to the policy outcomes is hard to verify, agency problems arise. Each may have an incentive to expend less effort in making policy progress, especially when a ministry perceives that it is likely that another would receive much of the credit if the policy outcomes are achieved. As a consequence, policy delay or policy failure may occur due to a stochastic mapping between efforts and policy outcomes. It is thus important to study how division of tasks and/or reciprocal arrangement may help resolving the problem.

This thesis focuses on situations under which a policy maker faces a single dimension of uncertainty about the policy's consequences. However, in many situations policy decisions

have uncertain consequences in several aspects. For instance, in the planning stages, it is uncertain exactly how infrastructure projects may affect the environmental system. It is also indeterminate what the total costs of construction and maintenance will be. Policy makers may set up committees which are composed of members with different fortes. Each member has his or her own specialization in gathering and analyzing a certain aspect of policy consequences. In addition, it is often the case that the committee members differ in their prior attitude towards policies. In this circumstance, it is interesting to examine effects of committee architectural design, such as the composition of committee members and decision rules, the committee members' incentives to gather their specialized information, and their incentives to communicate their information truthfully to other members.

Related to electoral accountability and politicians' motivations, as studied in Chapter 5, it is clear that incomplete information on the part of voters is important to our understanding of how elections play their two prospective roles as well as how policy decisions are made. Elections provide an opportunity for voters to evaluate the incumbent government's performance and select politicians deemed best. Obviously, making decisions on rewarding, punishing, and selecting politicians requires information. The underlying question is: Where do voters obtain information from? An immediate answer is mass media–televisions, newspapers, and radio. The media plays an important role in the political process for several reasons. First, it provides information voters can use on the basis of which they evaluate and select politicians; therefore it potentially enhances real accountability. Not surprisingly, one could expect that an incumbent politician with reelection concerns would have an incentive to influence media or restrict its freedom of press, in both a direct and an indirect way (this is often the case in less matured democratic societies). Second, the media acts as an information intermediary between voters and politicians. The voters may convey their demands, opinions, and policy responses to the politicians through the media coverage and opinion polls. Likewise, the politicians

communicate their information, views and opinions to the voters through the media. Finally, the media is capable of influencing policies through new coverage, in particular when the policies in concern have received a great deal of attention from the public and can affect an incumbent's reputation if no actions are taken. Understanding how government influences media and vice versa is a key to our better understanding about both political accountability and policy formation. Some recent works on this line include Strömberg (2004), and Besley and Prat (2004).

Another interesting topic concerns the process of acquiring politicians. In this thesis, we depart from the traditional public choice's notion that political entrepreneurs have only narrow self-interest. In fact, politicians can and do differ in their motivation–good politicians are motivated by public spirit and bad ones by rent appropriation. Politicians' motivation determines their behavior while in office. Selecting good candidates for public office is therefore essential. An interesting research agenda is the study of the interaction between political institutions and citizens' calculus of making decisions to enter political careers. This research agenda would enrich our view of political institutions that induce good-quality citizens to choose to run for political office and demotivate low-quality citizens from entering a political race.[1]

Even if we have in mind an optimal political institution, an open question is: Would it be attainable? To answer the question, it is important to analyze the political actors' incentives to reform the architectural structure of political institutions. This requires an ample understanding of how politicians behave in response to the existing rules of the game, i.e. constitutions, allocation of political power, and check and balance system.

[1]Recent works on this line of research include Osborne and Slivinsky (1996), Besley and Coate (1997), Caselli and Morelli (2004), and Beniers (2005).

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Nederlandse Samenvatting (Summary in Dutch)

Dit proefschrift draait om belangentegenstellingen in politieke besluitvormingsprocessen. We bestuderen verschillende institutionele regels die de principaal-agent problemen in het politieke proces verlichten. De volgende regels en richtlijnen worden onderzocht: de combinatie van de rol van reputatieoverwegingen en het invoeren van een boete voor liegen om manipulatie te voorkomen, de functie van het debat binnen collectieve besluitvormingsprocessen als een middel om informatie te delen en fouten te voorkomen, en de rol van verkiezingen bij het selecteren en motiveren van politici.

In hoofdstuk 2 hebben we gekeken naar het effect van een boete voor liegen op manipulatie van informatie. We laten zien dat de baten van een advies voor een beleidsmaker niet altijd stijgen als de boete verhoogd wordt. Een hoge boete kan er immers voor zorgen dat een adviseur niet meer bereid is om advies te geven. Als gevolg hiervan kan de kans op verkeerde besluitvorming groter zijn dan als de adviseur wel een advies uitbrengt. Alleen als de beleidsmaker ervoor zorgt dat de adviseur bereid is om advies te geven, zal een hogere boete een positief effect op de kwaliteit van besluitvorming hebben. Dit hoofdstuk laat dus zien dat de beleidsmaker een afweging moet maken tussen de kosten van manipulatie en de kosten van te weinig informatie.

In hoofdstuk 3 leiden we af onder welke voorwaarden beleidsmakers er baat bij hebben dat adviseurs om hun reputatie geven. We laten zien dat de mogelijkheid voor een belei-

dsmaker om tussen verschillende beslissingen de adviseur te ontslaan de kwaliteit van het advies voor het eventuele ontslag kan verkleinen. We maken onderscheid tussen verschillende type adviseurs, op basis van hun voorkeuren. Een gematigde adviseur, wiens voorkeuren dicht bij die van de beleidsmaker liggen, wil niet gezien worden als een adviseur met sterk afwijkende voorkeuren. Dit heeft als gevolg dat een gematigde adviseur te vaak adviseert om het voorstel niet in te voeren.

In hoofdstuk 4 onderzoeken we welke invloed de mogelijkheid om te overleggen heeft op de prikkels voor spelers om te zoeken naar informatie. Als uitgangspunt nemen we twee verschillende benaderingen van communicatie: een positieve kijk en een negatieve kijk. Bij een positieve kijk helpt communicatie om fouten te voorkomen, terwijl bij een negatieve kijk communicatie kan leiden tot manipulatie. We laten zien dat, zelfs als we de positieve kijk op communicatie hanteren en de kosten van overleg buiten beschouwing laten, meer overleg niet optimaal hoeft te zijn. De reden is dat overleg ervoor zorgt dat spelers minder moeite doen om de juiste informatie te vinden.

In hoofdstuk 5 kijken we naar de mogelijke functie van verkiezingen bij het selecteren en disciplineren van politici. In het model verschillen politici in hun motivatie om in de politiek actief te zijn. Goede politici geven om de gevolgen van beleid voor de samenleving, terwijl slechte politici alleen uit zijn op de privé baten die verbonden zijn aan het implementeren van beleid. Als burgers onvolledig geïnformeerd zijn over de motivatie van politici, dan zorgen verkiezingen ervoor dat politici zich meer in het belang van de samenleving gaan gedragen. Verkiezingen weerhouden slechte politici ervan om inefficiënt beleid in te voeren. Een opvallend resultaat is dat slechte politici soms beter de belangen van de samenleving behartigen dan de goede politici. De reden is dat een goede politicus graag herkozen wil worden om de belangen van de samenleving in de toekomst te behartigen. Om die reden zal een goede politicus soms goed beleid niet invoeren om zo de verdenking dat hij corrupt is weg te nemen.

The Tinbergen Institute is the Institute for Economic Research, which was founded in 1987 by the Faculties of Economics and Econometrics of the Erasmus Universiteit Rotterdam, Universiteit van Amsterdam and Vrije Universiteit Amsterdam. The Institute is named after the late Professor Jan Tinbergen, Dutch Nobel Prize laureate in economics in 1969. The Tinbergen Institute is located in Rotterdam and Amsterdam. The following books recently appeared in the Tinbergen Institute Research Series:

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