

The Quality of Political Decision Making:
Information and Motivation

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The Quality of Political Decision Making: Information and Motivation

De kwaliteit van politieke besluitvorming:

Informatie en motivatie

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Voor Annelies

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Chapter 1

Introduction

1.1 Motivation and Relevance

In representative democracies, citizens give politicians the authority to decide on the implementation of a variety of policies, ranging from the decision to install a traffic light in a small village to reforming the social security system. The rationale behind delegating decision making power to politicians is well-known. Political decision making is a complex process which requires specialized knowledge about the availability and desirability of alternative policies. Ordinary citizens have weak incentives to find out how to design the social security system or whether a new airport should be built. In many policy areas, a large incidence of policy failures may therefore occur if decisions are made collectively by all citizens. Therefore, citizens delegate the power to design, implement, and evaluate policies in many areas to politicians.

Delegation has clear advantages in terms of benefits of specialization. However, delegation may create agency problems between citizens and their politicians. Politicians do not always act in the interest of the society. For example, several countries are faced with problems of corruption in politics (Aidt, 2003). Moreover, the quality of political decision making is a genuine concern in many countries. The World Bank combines a number of data bases to identify six aggregate dimensions of governance. They show that there is a strong variation in countries' performance

on each dimension (Kaufmann, Kraay, and Mastruzzi, 2003). One dimension of governance is "the capacity of the government to effectively formulate and implement sound policies". Good governance is shown to enhance the economic development of a country. The principal-agent problem between citizens and politicians is also illustrated by citizens' scepticism about the effectiveness and efficiency of their government. The recent worldwide survey 'Voice of the People' shows that many citizens put little trust in politicians' honesty and ability.¹ As a case in point, there are doubts about the quality of decision making concerning large infrastructural projects. Virtually all projects initiated by governments demonstrate huge cost overruns and lower demand than predicted (Flyvbjerg, Bruzelius, and Rothengarter, 2003). Overall, it is clear that the quality of political decision making should not be taken for granted.

In this thesis, principal-agent problems between citizens and politicians are central to the analysis. The main objective is to explain several institutional arrangements, observed in governments, in the light of the agency problems. The agency problems between voters and politicians are characterized by two essential ingredients. First, politicians are often better informed about the effects of public policies than the electorate. Second, the preferences of politicians are not necessarily aligned with the preferences of the electorate. As a result, politicians may have an incentive to exploit the information advantage. Let us now discuss more precisely the role of information and motivation in the political decision making process.

Information

Proper information provision is a major concern in politics as the consequences of public policies are surrounded by uncertainty. Resolving this uncertainty may enhance the probability that

¹More than one-third of the 50.000 respondents perceive politicians as not capable or competent while almost two-third believe that politicians are dishonest. See for more detailed information <http://www.weforum.org/site/homepublic.nsf/Content/Surveys>.

decisions are made in the public interest. However, policy makers may not have sufficient incentive to search for information about the effects of policies. One reason is that the acquisition of information is costly, raising a free-rider problem. Political decision making may therefore suffer from a lack of information. Moreover, decisions may be based on wrong information if policy makers conceal or manipulate pieces of information. In many cases, policy makers are able to manipulate or conceal information to their own advantage. Information is often difficult to understand, let alone to verify. For instance, when thick reports promoting the desirability of an infrastructural project are presented, understanding the information already requires sufficient amounts of knowledge and time. Finding out whether the information is correct seems even harder, and may sometimes be impossible. Concluding, it is not obvious that information providers acquire information and that they present information honestly.

The Dutch Audit Council (de Algemene Rekenkamer) concluded in a report in 2002 that for most large projects in the Netherlands the parliament receives either too little information or information of too low quality to make a well-informed decision. As a case in point, the decision making process concerning the so-called Betuwelijn serves as an excellent example that political decision making may fail due to a lack of reliable information. This railroad connection between Rotterdam and Germany initiated in 1990 will approximately cost 4.5 billion euro while the initial prediction was about half a billion. The Dutch parliament therefore installed a committee of parliamentarians to investigate the decision making process. One striking conclusion is that, at several stages of the process, information has been manipulated or concealed.² Policy makers, private contractors, and advisors presented too rosy a picture of the advantages of implementing

²The final report of the committee, in Dutch, called 'Grote projecten uitvergroot' can be found at <http://www.parlement.com/9291000/modulesf/glnjwpcg>. Furthermore, see for a discussion of the decision making process concerning the Betuwelijn the Dutch newspaper *de Volkskrant* at <http://www.volkskrant.nl/denhaag/1094188640206.html>.

the project. Information arguing against implementation supplied by scientists, bureaucrats and citizens was systematically ignored. Moreover, members of parliament did not actively evaluated the project either because of strong party discipline or due to the overload of information about the project. One recommendation of the committee is that a new audit council should assist the parliament in providing information.

Obviously, besides office holders several other players are involved in the process of providing information. Office holders lack the time and ability to acquire information at every stage of the policy making process. Therefore, public servants, external advisors, audit agencies, and members of parliament assist office holders with collecting information about the consequences of alternative policies before and after implementation. Besides the principal-agent relation between voters and office holders, there are thus principal-agent relations between office holders and the various public and private information providers. In each relationship, three agency problems concerning the proper provision of information may be present. First, information providers may lack the incentives to search for information. Second, manipulation of information may take place. Finally, information providers may conceal particular pieces of evidence.

Institutional arrangements help to alleviate the agency problems mentioned above. An important feature of the government is that it is not a unitary actor but is rather composed of several entities with different objectives and tasks. For instance, the parliament is organized into different legislative committees and the government consists of several ministers each being responsible for their own department. The incentives to search for information may increase when legislative committees or departments are made responsible for the provision of information in a particular area, especially when they have decision-making authority (Gilligan, 1993, Tirole, 1994, Dewatripont and Tirole, 1999). Furthermore, the selection of information providers may facilitate the trans-

mission of information. Several papers have emphasized the importance of preference congruence between an information provider and the decision maker to prevent manipulation (Crawford and Sobel, 1982, Gilligan and Krehbiel, 1989). Moreover, to extract more information it may be optimal to consult several experts (Milgrom and Roberts, 1986, Krishna and Morgan, 2001b) or to change the sequence in which advice is given (Ottaviani and Sorensen, 2001). Hence, the institutional arrangements of the government may help to reach informed decision making. The provision of information does not only affect decision making directly but also indirectly by improving the accountability of politicians. Voters are better able to select and discipline politicians through elections when, for instance, the media provides reliable facts about the results of government spending (Adsera, Boix, and Payne, 2003).

Motivation

The intentions of policy makers guide their actions and determine the way they respond to incentives and constraints. Analyzing the behavior of politicians therefore starts with an adequate understanding of their motives. In most of the Public Choice literature, politicians are considered to be narrowly self-interested, analogous to the treatment of players in private markets (Brennan and Buchanan, 1980). Self-interest in politics may refer to monetary benefits such as the wage or bribes but also to non-pecuniary gains like fame and attention. As a result, office holders may aim at winning the next elections to ensure the spoils of office (Downs, 1957). Policy makers may also care about the kind of policies that are implemented (Wittman, 1977, Alesina, 1988). In his forthcoming book, Besley (2002) studies the functioning of elections in selecting and motivating politicians given that some politicians act in the voters' interest while others act in their own interest. Just like actions in private markets may be driven by altruism, politicians may enjoy acting in the societies' interest, or at least prefer to defend the interests of a particular group of

citizens. As a result, some politicians may undertake socially desirable actions even if this results in losing the elections.

Office holders are not necessarily identical in their motives. Some politicians may join politics to change society while others are mainly interested in the monetary benefits from being in office. Martin and Stevenson (2001) and Diermeier, Keane and Merlo (2002) provide evidence that politicians care about the private benefits from office as well as about policy outcomes. Moreover, countries vary in their citizens' beliefs about the trustworthiness of their politicians and in the level of corruption. This kind of evidence suggests a diversity of goals among politicians.

Given that politicians differ in their objectives, selection is an important instrument to alleviate the agency problems. Since politicians' motivation drive their behavior, the type of politician selected matters for the agency problems. For instance, the incentives to manipulate or conceal information become stronger when the preferences of the information provider and the decision maker diverge. Moreover, politicians who care about their reputation for being competent may have an incentive to conceal failures. Finally, the decision to devote time and energy in reaching informed decisions depends on how strong policy makers are concerned with the well-being of citizens.

Selection not only refers to the motivation of politicians but also to their ability. Clearly, competent office holders are better able to design good projects than incompetent ones. Moreover, parliamentarians may differ in their ability to screen government policies. However, selection is complicated by the fact that politicians' characteristics are often unknown. Moreover, it may be difficult for politicians to credibly reveal their ability or motivation. In addition to the selection of politicians, the allocation of tasks may also help to solve the agency problems. Political decision making processes consist of many rules regulating the actions of policy makers. For instance, office

holders require the support of the (majority of the) parliament to implement a policy.

1.2 Scope and Overview

In this thesis, we show how the selection of politicians as well as some regulations governing their actions help to reduce the incidence of policy failures. Each chapter of this thesis focuses on a different component of the political decision making process. Chapter 2 and 3 revolve around the selection of competent politicians. Whereas the second chapter focuses on the selection of office holders by voters, the third chapter looks at how parliamentarians are recruited by political parties. In the fourth chapter, we examine which members of parliament are assigned to collect and transmit information given that members differ in their policy preferences. Finally, Chapter 5 studies the optimal sequence of searching for the advantages and disadvantages of a project. In the remainder of this introduction, we discuss the results of each chapter in more detail.

In Chapter 2 of this thesis, we study the interaction between politicians, who differ in ability and motivation, in electoral competition. Although the benefits of elections are widely acknowledged, electoral competition may also have some perverse effects. For instance, elections may induce politicians to make inefficient transfers to special interest groups (Coate and Morris, 1995), to shy away from policy examination (Swank and Visser, 2003), or to pander towards the public opinion (Maskin and Tirole, 2004).³ In Chapter 2, we build on Dur (2001) who shows that electoral concerns may induce office holders to conceal a failure by continuing an inefficient policy. Chapter 2 considers a coalition government in which two politicians in office decide on continuing their policy. Repealing a bad policy is in the public interest but damages the reputation of the

³Recently, some papers have studied the optimal allocation of tasks between elected officials and nonelected public servants. See Alesina and Tabellini (2003), Besley and Coate (2003) and Maskin and Tirole (2004).

politician for being competent. As elections serve to select competent politicians, admitting a policy failure thus deteriorates a politicians' electoral chances. We show that the incentive of a politician to conceal a failure depends on how strong he cares about the public interest compared to the private benefits from office. A strong degree of polarization or a high reward from office lowers the incentive to admit a mistake since reelection becomes more rewarding. Moreover, the decision to continue a bad policy depends on the belief about other politicians' motivation. The reason is that relative performance matters for electoral success. As a result, a policy maker has little incentive to behave honestly in an environment in which other policy makers practically never admit a failure. Hence, we show that a political culture may be self-reinforcing.

Furthermore, we examine in Chapter 2 the consequences of allowing coalition leaders to evaluate each other's policy. Without information, coalition leaders support each other's policy. Clearly, evaluation improves the quality of public policies in case it prevents the continuation of an inefficient project. However, evaluation may also enable a politician to damage the reputation of an other politician. As idealistic politicians vote only against bad policies, voting against a policy harms the reputation of the leader who designed the policy. As politicians compete for the same political positions, career concerns may therefore induce opportunistic politicians to engage in reputation bashing activities. As a result, efficient policies may be repealed.

In Chapter 3, we also study a situation in which the leader in office may conceal a policy failure. However, in that setting the implementation of a policy requires the support of the members of parliament who screen policies. We examine how political parties select members of parliament given that parliamentarians differ in their ability. In most parts of the economic literature, a party is considered as a unitary actor representing the interest of a particular group of citizens. Recently, some papers studied the internal competition between party members with different, and

sometimes conflicting, objectives. In Caillaud and Tirole (1999, 2002), the governance structure of the party works as a device to select and motivate the leader of the party. Chapter 3 of this thesis shows that the conditions under which a parliamentarian is replaced depends on party governance. The internal organization of a party specifies which player is entitled to compose the party list.

Chapter 3 considers a setting with a leader in office designing policies and a member of parliament deciding on the implementation of these policies. The office holder benefits from the implementation of the policies. An idealistic office holder prefers implementation since he proposes good policies. An opportunistic office holder may propose a bad policy but benefits from implementation since this improves his reputation for being competent. The desire to implement policies induces each type of office holder to replace a member who votes against the leader's policy. When the office holder designs good policies, a critical parliamentarian is replaced since he is unable to screen policies. By contrast, when the office holder designs bad policies a critical parliamentarian is replaced exactly because he discovered the failure. Removing a competent parliamentarian reduces the probability that a future policy failure is discovered. Likewise, an incompetent office holder maintains an incompetent member who supported an inefficient policy. Hence, if the leader in office exerts influence on the party list this may result in selecting incompetent members of parliament. As a result, the rank-and-file of a party may call for a decentralized candidate selection process.

In Chapter 4 of this thesis, members of parliament have a major impact on decision making by providing valuable information. The parliament is divided into several committees each being responsible for a particular policy area. Committees are involved in various decision making processes, preparing, for instance, policy proposals in U.S. Congress. The internal organization of a committee allocates tasks among the committee members. As a result, the internal organization affects the incentives for the members to acquire, aggregate and communicate information necessary

for decision making. Many papers have studied how the size of a committee (Mukhopadhyaya, 2003), its composition (Li, Rosen and Suen, 2001), the decision making power granted to a committee (Gilligan and Krehbiel, 1987), the voting rule (Fedderson and Pesendorfer, 1998, Persico, 2004) and the various interactions between these institutional details affect members' behavior and thereby outcomes.⁴

Chapter 4 of this thesis derives the optimal composition of a committee given that members differ in their policy preferences. Committee members must exert costly effort to collect several pieces of information. Some pieces of information can be manipulated while other pieces are fully verifiable. We show that committees are composed of members alike the decision maker when information is easy to manipulate and not so costly to acquire. Preference alignment prevents manipulation and improves on the coordination of information collection. However, selecting biased members may be optimal when information acquisition is sufficiently costly. The reason is that preference outliers have strong incentives to search for information supporting their cause. Outliers only search for verifiable information as communicating non-verifiable pieces suffers from a credibility problem. These results may help to explain the observed variation in the composition of committees in U.S. Congress.

Besides politicians, public servants also put a stamp on government policies by collecting evidence in favor of or against alternative ideas and by implementing projects. The interaction in the executive branch between public servants and the office holder, who may differ in their objectives, has been a research topic for a long time (e.g. Niskanen, 1971; see Mueller 2003 for an overview). A striking feature of the executive branch is that it does not behave as a coherent entity but rather is divided into several departments. Each department defends his own policy area instead of pro-

⁴An extensive overview of the literature on committees is given by Gerling, Grüner, Kiel, and Schulte (2004).

moting the public interest. Dewatripont and Tirole (1999) provide a rationale for this system of advocacy. They show that two competing agents, each searching for partial information, produce more information at lower costs than a single agent. In Chapter 5 of this thesis, we extend the framework of Dewatripont and Tirole by endogenizing the timing of the search efforts. Although rewards are based on the final decision, information about the pros and cons of a project may show up at different moments in time. Finding evidence in favor of a project by an agent impairs on the other agent's incentive to search for evidence against the project. As a result, full information collection requires that rents are left to the agents. We show that inducing agents to search sequentially rather than simultaneously may lower the cost of information acquisition. This may explain the sequential nature observed in budgetary cycles.

Chapter 2

Politicians' Motivation, Political Culture, and Electoral Competition

co-author: Robert Dur

2.1 Introduction

When politicians talk about their motives for pursuing a political career, they rarely mention their narrow private interests such as desire for power, prestige, and remuneration. Instead, they refer to their devotion to the people, their commitment to the nation's interests, and a strong sense of mission and responsibility. History has learned that we should not always take these words for granted. Indeed, sceptics claim that politicians care about nothing but their narrow self-interest.

The importance of politicians' motivation for the quality of government decision making is self-evident. Since moral hazard and adverse selection problems in political decision making abound, politicians' motivation matters for policy choices. This is also clear from the literature on electoral competition: in many settings, policy choices depend on whether politicians care about the private rents from office (opportunism) or represent the interest of a particular group of voters (partisanship), see Persson and Tabellini (2000). Wittman (1983), Rogoff (1990), and Harrington (1993), among others, develop models where politicians care about both policy outcomes and holding office. Then, policy choices depend on how much politicians value policy relative to office. Empirical studies indicate that politicians are neither purely policy-oriented nor purely office-motivated,

see Martin and Stevenson (2001)'s findings for European countries and Canada and those by Diermeier, Keane, and Merlo (2002) for the US. Also, voters' trust in politicians differs markedly across countries, suggesting heterogeneity in politicians' motivation.¹

The objective of this chapter is to examine how politicians with *heterogeneous* motivations interact in electoral competition. We examine how beliefs about other politicians' motivation and behavior affect the incentive to behave opportunistically of a politician with a given motivation. We show that opportunistic behavior may breed opportunistic behavior. A political culture may therefore be self-reinforcing and multiple equilibria may arise. We also examine whether politicians who care a lot about the public interest may undo opportunistic actions by politicians who care little about the public interest. While this may be the case, the reverse may also be true: opportunistic politicians may oppose efficient policies so as to damage the reputation of their competitors in the elections.

Compared to the existing literature, our model has two important distinguishing features. First, we allow for heterogeneity in politicians' motivation as well as in politicians' competence. We define a politician's motivation as the extent to which he cares about (what he perceives as) the public interest relative to the private rents from being in office. We assume that a politician's motivation, as well as his competence, are not observable. Voters and other politicians are informed, though, about the distribution of types from which politicians are drawn. Second, we consider a setting where, in each period, multiple politicians are involved in policy making and, hence, may face a trade-off between the public interest and their electoral prospects. More specifically, we develop a model with three political parties of which two form a coalition government. In each period, there are two politicians in office, each being responsible for a particular policy area. Together, these two

¹See e.g. the European Social Survey Data, <http://ess.nsd.uib.no/> and the recent survey 'Voice of the People'.

features of the model (heterogeneity in motivation and multiple politicians with decision-making power) imply that a politician's behavior is not only dependent on his own motivation, but also on 'political culture,' that is, his beliefs about other politicians' motivation and behavior.

We consider a two-period model with elections at the end of the first period. We assume that each incumbent leader, before the elections, acquires an informational advantage over voters concerning the quality of the policies he has implemented. When a policy turned out to be a failure, reversing the policy before the next elections is in the best interest of voters. However, reversing a policy entails a reputational loss for the incumbent as voters update their belief about the incumbent's competence in designing good policies. Therefore, politicians who care little about the public interest have an incentive to stick to their policies so as to avoid erosion of their electoral prospects. Only those politicians who care sufficiently about the public interest are willing to admit a policy failure at the risk of losing the next election.²

Our analysis yields three main results. First, we show that politicians are less inclined to admit that a policy has failed when politicians' pay is higher. As holding office becomes more rewarding, a larger range of politicians are willing to compromise on voters' welfare so as to increase their chance of reelection. Likewise, politicians' incentive to behave opportunistically is stronger in more polarized political environments, that is, in environments where politicians differ more in their perception of the public interest. The reason is that in more polarized political environments, staying in office is more rewarding as it keeps politicians with sharply different policy preferences out of power.

Second, we show that politicians have stronger incentives to behave opportunistically if they

²By our two-period structure, voters optimally base their vote only on their beliefs about the politicians' competence, not about politicians' motivation. If politicians can stay in office for more than two periods, this need not hold. Then, opportunistic politicians may have an incentive to pretend a policy failure, so as to improve upon their reputation as a motivated politician.

believe other politicians are more likely to behave opportunistically. The reason is that a given reputational loss has less of an effect on a politician's electoral prospects in an environment where other politicians are more likely to put at risk their reputation as well, than in an environment where politicians hardly ever admit policy failures. Consequently, a political culture may be self-reinforcing and multiple equilibria may arise. Moreover, the effects of higher politicians' pay and polarization on politicians' behavior are magnified by the strategic complementarity in politicians' opportunism.

Third, we show that opportunistic politicians may engage in reputation-bashing activities, implying that efficient policies may be reversed. When politicians have the opportunity to collect information about the effects of policies, politicians who care sufficiently about the public interest collect information about all policies that have been implemented, including those by other politicians, and make sure that inefficient policies are reversed. Politicians who care little about the public interest do not search for information. However, the fact that highly motivated politicians do, lends some credibility to a politician's claim that his competitor's policy is a failure. As a result, efficient policies may be reversed.

The chapter is organized as follows. The next section gives a brief overview of earlier work and discusses how this chapter relates to it. Section 2.3 presents the model. In Section 2.4, we solve the model and provide the comparative static results. Section 2.5 extends the model to allow for information collection by politicians. Section 2.6 concludes.

2.2 Related Literature

Building on the seminal works by Barro (1973) and Ferejohn (1986) on moral hazard in politics and by Rogoff and Sibert (1988) and Rogoff (1990) on adverse selection in politics, several recent papers

have studied electoral competition when politicians are heterogeneous in motivation. In contrast to the present study, almost all of the existing papers consider heterogeneity in politicians' willingness to accept bribes or to steal tax revenues.³ Early papers include Besley and Case (1995), who study the role of yardstick competition in disciplining 'bad' policy makers, and Coate and Morris (1995), who show that 'bad' politicians may use inefficient 'sneaky' methods of redistribution towards special interests rather than cash payments, so as to avoid reputational damage. Recently, several papers have built on these contributions to examine the role of politicians' pay, term limits, and other features of the political process in disciplining and selecting politicians. An important element in these models is the assumption that is made about the information that voters have when they cast their ballot.

When voters can observe or infer bribe-taking by office-holders, they will punish politicians who have accepted bribes by voting them out of office. Paying politicians generously may then reduce politicians' incentive to take bribes as losing office becomes more costly (Besley, 2004).⁴ Paying high wages, however, may impair the selection of politicians since bad politicians, by their good behavior, are reelected more often. This is important if politicians face no reelection constraint in a future period, for instance because of a term limit (Besley and Smart, 2003). High politicians' pay also adversely affects selection in our model, but the effect arises from politicians behaving worse rather than better in their first period when pay is higher. In our model, higher politicians' pay weakens politicians' incentive to admit a policy failure, which impairs voters' selection of competent

³An exception is a recent paper by Callander (2004) who shows that politicians may be unwilling to commit to the median voter's position in the campaign stage, as this may be a bad signal about their motivation to perform well in office. Roemer (1999) studies electoral competition between political parties in proposing progressive income tax policies, assuming that each party consists of factions with different motivations which must reach agreement on the proposal.

⁴Relatedly, Dal Bó and Di Tella (2003) consider a model where honest politicians are threatened by 'nasty' interest groups. Increasing the rents from office may increase politicians' resistance against those pressures. These results relate to Becker and Stigler (1974) who argue that paying high wages to bureaucrats may help to fight corruption if the probability that corruption is discovered is strictly positive but smaller than one.

politicians.

When voters can not infer whether an incumbent has accepted bribes, but they can observe the incumbent's policy choices, high politicians' pay may distort policy choices by 'good' politicians (that is, those who do not accept bribes). This may happen when some policy choices may be in the voters' interest but at the same time raise suspicion about the incumbent's integrity (Smart and Sturm, 2003). Our result on politicians' pay depends on a similar information asymmetry between incumbents and voters about the efficacy of policies, but relies on politicians' concern about their reputation as a competent policy maker. Whereas in Smart and Sturm (2003) 'good' politicians compromise on voters' welfare so as to avoid being considered corrupt, in this chapter politicians refuse to admit a policy failure so as to preserve their reputation as a competent policy maker.

Other papers have focused on citizen's incentives to run for office, building on the citizen-candidate model developed by Osborne and Slivinsky (1996) and Besley and Coate (1997). Caselli and Morelli (2004) show that incompetent and dishonest citizens have strongest incentive to pursue elective office. Incompetent citizens gain more from holding office as their market wage is lower (see also Messner and Polborn, 2004). Dishonest citizens gain more as office-holding enables them to collect bribes (see also Besley, 2004). Competent and honest citizens will only run for office when the reward is sufficiently high compared to their outside option.⁵ Le Borgne and Lockwood (2002) endogenize candidate entry decisions in a Rogoff (1990)-style model and examine the implications for political budget cycles. In this chapter, we abstract from the entry decision and, instead, focus on how heterogeneity in politicians' motivation among an existing pool of politicians affects

⁵Poutvaara and Takalo (2002) show that if campaigning produces a noisy signal of the ability of candidates, then increasing the compensation of elected officials may either increase or decrease the average candidate quality, depending on campaigning costs.

politicians' incentives and their response to changes in politicians' pay and other features of the political process.

An important feature of our model is that we have more than one politician in each period who may face a trade-off between the public interest and electoral prospects. This feature is responsible for two of our three main results, namely that there is a strategic complementarity in politicians' opportunism, and that opportunistic politicians may oppose efficient policies so as to damage the reputation of competing politicians. Our result on strategic complementarity in politicians' opportunistic actions relates to (but is different from) studies showing strategic complementarity in accepting bribes and in rent-seeking, see e.g. Andvig and Moene (1990), Murphy et al. (1991), and Tirole (1996). Aaidt (2003, Section 4) provides a survey of studies in this area. As Hillman and Swank (2000) note, political culture has not been a focus of attention for economists so far. Our result on reputation bashing by opportunistic politicians is related to models of promotion tournaments where contestants can engage in sabotage activities, see in particular Lazear (1989), and to papers on negative campaigning, see Skaperdas and Grofman (1995) and Konrad (2004).

Caillaud and Tirole (2002) study intra- and interparty competition between candidates who have the option to invest in designing a good policy platform. They show that *interparty* competition may give rise to strategic substitutability in platform investment, whereas *intraparty* competition may give rise to strategic complementarity. An opportunity to let party's candidates share the rents from office may help to induce a candidate who designed a low-quality platform to stand down and to refrain from challenging the party's other candidate's good platform. We abstract from intraparty competition and exclusively focus on interparty competition. As in Caillaud and Tirole (2002), we do not allow for rent-sharing between candidates from different parties. An important difference between their paper and this chapter is that politicians are purely office-

motivated and homogeneous in their paper, whereas in this chapter politicians care about both the public interest and office-holding, and are heterogeneous in competence and motivation. The heterogeneity of politicians gives rise to an adverse selection problem in addition to a moral hazard problem.

Our model builds on Dur (2001) who shows that policy makers may stick to inefficient policies for reputational reasons.⁶ Compared to that paper, there are two main innovations. First, in this chapter politicians differ not only in competence but also in their motivation and in their policy preferences. Second, we consider a multi-party system with coalition governments instead of a two-party system. Our model of coalition governments is deliberately kept simple so as to focus on the effects of heterogeneity in politicians' motivation. Richer models of coalition governments and elections include Austen-Smith and Banks (1988), Laver and Shepsle (1990), and Baron and Diermeier (2001).

2.3 The Model

Consider a three party system. Each party I consists of a single leader i , where $i \in \{l, m, r\}$. There are two periods. In each period none of the parties constitutes a majority. We assume that in period 1 party L and M form a coalition government. Each leader i in office designs and implements one policy y_i .⁷ Hence, policies y_l and y_m are implemented in period 1.⁸ To save space,

⁶Relatedly, in Canes-Wrone, Herron, and Shotts (2001), Chiu (2002), and Maskin and Tirole (2004), politicians who care a lot about reelection may have a reputational incentive to implement inefficient policies which are popular among the electorate and reject efficient policies which are unpopular. Majumdar and Mukand (2004) and Slantchev (2003) consider a similar agency problem as we do and extend it in other directions.

⁷We abstract from leader's option not to implement a policy in period 1. Majumdar and Mukand (2004) have recently shown that reputational concerns may induce incumbents to be too conservative or too radical in policy implementation. See also Biglaiser and Mezzetti (1997), Gersbach (1999), Glazer (2002), and Suurmond, Swank, and Visser (2004).

⁸Allowing for a vote on each policy by the three leaders does not affect the results. When a policy has political support after implementation, it also has political support before implementation. See the discussion below Lemma 2.1.

we assume that policies last for only one period. Assuming that policies designed in period 1 may yield benefits or costs in period 2 as well does not affect our results qualitatively.

A policy is either good or bad, which is unknown before implementation. The expected quality of a policy depends on the competence of the leader who designed it. A leader is either competent or incompetent. A competent (incompetent) leader designs a good policy with probability p (q), where $1 \geq p > q \geq 0$. Neither voters nor the leader himself know whether he is competent.⁹ The prior belief that a leader is competent is denoted by α , which is equal for all three leaders. To facilitate the presentation, denote by x the prior probability that a leader designs a good policy, where $x = [\alpha p + (1 - \alpha)q]$.

Leaders have different perceptions of the public interest (ideologies), and design their policy accordingly. Therefore, they value good policies designed by themselves more than good policies designed by others. More specifically, according to leader i , a good policy y_i raises social welfare with b_i^i , whereas a good policy y_j raises social welfare with b_i^j , where $j \neq i \in \{l, m, r\}$ and $b_i^i > b_i^j > 0$. Note that a leader cares equally about good policies designed by the two other leaders (e.g., $b_r^l = b_r^m$). This implies that a leader's policy preferences do not affect his chances to be part of a coalition government in period 2.¹⁰ A bad policy decreases social welfare with cost c , irrespective of which leader designed the bad policy. This cost c can be avoided by reversing the bad policy which, however, comes at a cost d . We assume that $c > d > 0$ such that reversing a bad policy is in the public interest.

Besides ideological differences, politicians also differ in their motivation. The utility function

⁹Assuming that each leader knows his own ability does not affect the results qualitatively. A leader who knows that he is competent has a weaker incentive to reverse a bad policy than an incompetent leader since a competent leader faces a higher probability to design a good policy in period 2, making reelection more valuable.

¹⁰Relaxing this assumption may imply that a centrist party's leader has less of an incentive to behave opportunistically as, because of her policy preferences, she is much more certain to be in office again next period. A centrist party's internal control mechanism may be weaker, however, see Caillaud and Tirole (1999).

of leader i is:

$$U_i = \beta_i (V_{1i} + V_{2i}) + (e_1 + e_2)X,$$

where V_{ti} are the consequences of government policies for social welfare in period t as perceived by leader i , e_t is one if leader i is in office in period t and zero otherwise, X is the private rents from being in office in a period (which includes politicians' pay, perks, fame, and so on), and β_i measures how much leader i cares about (what he perceives as) the public interest relative to the private rents from office-holding.¹¹ We assume that a politician's motivation β_i is private knowledge. However, leaders as well as voters know that β_i is drawn from a uniform distribution on the interval $[0, \bar{\beta}]$. We study the implications of non-uniform distributions in Section 2.4.3.

After implementing y_i , leader i receives a signal which reveals the quality of y_i . Voters do not observe the content of the signal.¹² Furthermore, a leader can not credibly transmit the content of his signal to other leaders or to voters. In Section 2.5, we extend the analysis by giving leaders the opportunity to evaluate each other's policy.

After the signals have been received, the three leaders decide on the continuation of each policy through majority voting. The vote on y_l and the vote on y_m take place simultaneously. Citizens observe the leaders' votes.¹³ Accordingly, voters update their beliefs about the competence of leader l and m using Bayes' rule. The voters' posterior belief about the competence of leader i is

¹¹An interesting extension is to allow for heterogeneity in X among politicians as well. This heterogeneity may stem from differences in tastes but also from differences in politicians' outside options. Professional politicians may have a particularly bad outside option compared to politicians who entered politics after a career elsewhere. Therefore, professional politicians may be most tempted to behave opportunistically and may be least trusted by voters. We leave this topic for future research.

¹²We consider an extreme case where a politician becomes completely informed whereas voters remain completely uninformed about the consequences of government policies. Results are qualitatively unaffected, though, when voters receive a noisy signal about the quality of policies, e.g. through the media. Crucial is that politicians are better informed than voters.

¹³We feel this is a plausible assumption as, usually, a Minister who admits that his policy is a failure makes headlines.

denoted by $\hat{\alpha}^v$, where superscript $v \in \{c, r\}$ refers to leader i 's vote to continue (c) or reverse (r) his policy. As leaders may act opportunistically, the posterior beliefs of voters and leaders need not coincide. We denote by $\hat{\alpha}^p$ leader i 's posterior belief about his own competence, where superscript $p \in \{g, b\}$ refers to the quality of the policy, good (g) or bad (b). For future reference, we denote by $\hat{x}^v = [\hat{\alpha}^v p + (1 - \hat{\alpha}^v)q]$ the voters' posterior belief about the probability that leader i designs a good policy if in office in period 2, given his voting decision in period 1. Similarly, we define $\hat{x}^p = [\hat{\alpha}^p p + (1 - \hat{\alpha}^p)q]$.

At the end of period 1 elections take place. We distinguish four groups of voters. Three equally-sized groups of voters are 'loyalists,' each attached to a different party. Loyalists have strong partisan preferences such that they always vote for their party's leader, irrespective of their belief about the competence of the leader.¹⁴ A fourth group of voters, the swing voters, derive benefits from a good policy irrespective of which of the three leaders designed the policy, $b^i = b^j$. As each group of loyalists is of equal size, swing voters determine the winner of the elections (that is, the leader with the highest number of votes).

After the elections, two parties form a coalition government.¹⁵ We assume that the winner of the elections has the right to form a government. As in period 1, the two coalition parties in period 2 both implement a policy. Next, signals are received and decisions are made on the continuation of the two new policies through majority voting.

Summarizing, the sequence of events is as follows:

¹⁴Formally, this requires that $\hat{x}^r b_i^i - (1 - \hat{x}^r)d > \hat{x}^c b_i^j - (1 - \hat{x}^c)d$ for a loyal voter attached to party I . For sufficiently high values of b_i^i/b_i^j (sufficient polarization) this condition is satisfied.

¹⁵A two-party coalition government requires that the group of swing voters is smaller than 25% of the whole population. If the group of swing voters is larger, then the winner of the elections constitutes a majority. Further, we assume that any two parties prefer a minimum winning coalition over a grand coalition consisting of all three parties. This requires that $xb_i^j - (1 - x)d < 0$. Otherwise, electoral competition disappears. A three-party coalition government is more likely to arise in period 1 as this may create an opportunity to learn the opposition party leader's competence. We abstract from this.

- (1) Nature chooses ability and motivation of the leaders.
- (2) In period 1, leader l (m) designs and implements policy y_l (y_m).
- (3) Leader l (m) receives a private signal revealing the quality of y_l (y_m).
- (4) The three leaders vote simultaneously on the continuation of y_l and of y_m .
- (5) Leaders and voters observe each leader's votes and update their beliefs about the competence of leader l and m .
- (6) Elections take place.
- (7) The winner of the elections chooses a coalition party.
- (8) Incumbent leaders in period 2 design and implement one new policy.
- (9) Incumbents receive a private signal about the quality of their policies.
- (10) There is a simultaneous vote on the continuation of the policies.
- (11) The world ends.

A list of notation is provided at the end of the chapter.

2.4 Equilibrium Political Culture

2.4.1 *Equilibrium*

In this section, we solve the model as presented in Section 2.3 for a Perfect Bayesian equilibrium. Hence, we identify conditions under which neither player has an incentive to deviate from his equilibrium strategy, given the equilibrium strategies and beliefs of the other players. We assume throughout that if, given the strategies of the other players, a player is indifferent, he votes as if he is pivotal. This assumption rules out equilibria where players' actions are never affected by

information.¹⁶ Players update their beliefs about leaders' competence according to Bayes' rule.

The model is solved by backward induction.

(a) Period 2

Two parties are in office in period 2, say party I and J . Leader i designs and implements y_i while leader j designs and implements y_j . After implementation, leader i (j) receives a fully informative and private signal revealing the quality of y_i (y_j). After the signals have been received, a decision is made on continuation of each policy by majority voting rule. Denote by Y_i (Y_j) a vote of a leader in favor of y_i (y_j) and by N_i (N_j) a vote against y_i (y_j). The following proposition describes a set of equilibrium voting strategies of the three leaders in period 2.

Proposition 2.1 *Consider the vote on y_i and on y_j in period 2. Suppose the opposition leader votes (N_i, N_j) . Then leader i votes (Y_i, Y_j) if y_i is good and (N_i, Y_j) if y_i is bad. Similarly, leader j votes (Y_i, Y_j) if y_j is good and (Y_i, N_j) if y_j is bad. Given this, the voting strategy of the opposition leader is optimal.*

The strategies described in Proposition 2.1 imply that good policies are continued and bad policies are reversed in period 2. The intuition is simple. First note that electoral concerns do not play a role in period 2 as the world ends afterwards. As a consequence, each leader's objective is to maximize (what he perceives as) the public interest. In spite of the ideological differences, all three leaders prefer good policies to be continued, as $b_i^i > b_i^j > -d$, and bad policies to be reversed, as $c > d$. However, only the designer of a policy receives a signal revealing the policy's quality. Therefore, it is in everybody's interest that each incumbent is pivotal in the vote on the continuation of his own policy. Given that the opposition leader votes against both policies, leader

¹⁶For instance, there exists an equilibrium in which all leaders always vote against all policies, including their own. Similarly, since in the equilibria that we study none of the swing voters is pivotal, randomizing between the three leaders may be an equilibrium strategy for each swing voter.

i then optimally votes in favor of y_j and leader j votes in favor of y_i . Leader i and j vote in favor of their own policy only when it is good.¹⁷

(b) Elections and government formation

Recall that swing voters determine the winner of the elections. Swing voters value good policies designed by the three leaders equally, $b^i = b^j$. Since politicians do not behave opportunistically in period 2, swing voters vote for the leader they believe is most likely to be competent in designing policies in period 2. As leader r did not design a policy in period 1, voters' belief that leader r is competent remains α . Voters' posterior beliefs about the competence of leader l and m depend on the decisions made in period 1. Suppose, as in period 2, that a leader is decisive in the vote on continuation of his policy. We derive the condition under which this is the case in Lemma 2.1, see below. Voters know that leader l (m) is informed about the quality of y_l (y_m). Therefore, voters' posterior belief about the competence of leader l (m) depends on his vote to continue or reverse y_l (y_m).

Given that policies are either good or bad, leader l and m can follow two possible voting strategies regarding their own policy.¹⁸ They can vote in favor of their own policy irrespective of the quality. We call this strategy the dishonest voting strategy. They can also vote in favor of their own policy if and only if it turned out to be a good policy. We call this strategy the honest voting strategy. Voters do not know which strategy the leader follows. As we will see below, whether a leader selects the dishonest or the honest strategy depends on how much he cares about the public interest relative to the private rents from office-holding, which is measured by β . Define w as the

¹⁷Note that there exist different sets of equilibrium voting strategies, all yielding the same outcome. Suppose, for instance, that leader i always votes against y_j and leader j always votes against y_i . Then, the opposition party optimally votes in favor of both policies. Throughout the chapter, we focus on equilibria where the opposition party votes against all government policies.

¹⁸Voting against a good policy designed by oneself is never optimal, as will be shown below, see condition (2.3).

probability that a leader selects the dishonest voting strategy. We derive the equilibrium value of w later on, see equation (2.8).

If leader i votes for continuation of his policy y_i , then voters update their belief about the competence of leader i to:

$$\hat{\alpha}^c = \left[\frac{\alpha p + \alpha(1-p)w}{\alpha p + \alpha(1-p)w + (1-\alpha)q + (1-\alpha)(1-q)w} \right] > \alpha \text{ for any } w < 1. \quad (2.1)$$

When y_i is continued, either leader i played the honest voting strategy and y_i is a good policy, or leader i pursued the dishonest voting strategy. Note that given that there is a probability that a leader pursues the honest strategy ($w < 1$), continuation improves the leader's reputation of being a competent policy maker. When the probability that leaders play the dishonest strategy is higher, the reputational gains from continuing a policy are lower. In the extreme case in which all leaders are expected to act dishonestly in case of a policy failure, $w = 1$, continuation does not affect a leader's reputation, $\hat{\alpha}^c = \alpha$. When y_i is good, leader i updates the belief about his own competence to:

$$\hat{\alpha}^g = \left[\frac{\alpha p}{\alpha p + (1-\alpha)q} \right] > \hat{\alpha}^c \text{ for any } w > 0.$$

Voters' and leader's posterior beliefs only coincide when all politicians are expected to play the honest voting strategy, $w = 0$.

If leader i votes for reversing his policy y_i , then voters' posterior belief about the competence of leader i is:

$$\hat{\alpha}^r = \left[\frac{\alpha(1-p)}{\alpha(1-p) + (1-\alpha)(1-q)} \right] < \alpha. \quad (2.2)$$

Voters know that a leader votes for reversing his policy if and only if the policy turned out to be

bad. Reversing a policy therefore always decreases the probability that voters assign to leader i being competent. Note that, when a policy is reversed, voters' and leader's posterior beliefs always coincide ($\hat{\alpha}^r = \hat{\alpha}^b$).

Equations (2.1) and (2.2) imply that, for any $w < 1$, voters believe that leader i designs a good policy in period 2 with higher probability if leader i voted for y_i in period 1, and with lower probability if he voted against y_i in period 1; $\hat{x}^c > x > \hat{x}^r$. Hence, if y_l (y_m) is continued and y_m (y_l) is reversed, then swing voters vote for leader l (m). If both y_l and y_m are continued, swing voters are indifferent between leader l and m , but prefer both of them to leader r . We assume that, in that case, with equal probability either leader l or leader m wins the elections.¹⁹ Leader r wins the elections if both policies implemented in period 1 are reversed, since $x > \hat{x}^r$.

After the elections, the winner forms a new coalition government. Recall that a two-party government is preferred to a three-party government by any coalition party. Since the winner does not prefer one party's policy over the other's for ideological reasons, he chooses the party with the leader he believes is most likely to be competent. This way, the winner maximizes the probability of obtaining benefit b_i^j and minimizes the probability of incurring the cost d . Hence, the coalition party that is most likely to be competent is selected. As a consequence, a leader i who continues y_i is certain to be reelected: Either he wins the elections or he is selected by leader j when leader j won the elections, since $\hat{x}^c > x$.²⁰ Note that the winner of the elections has the same beliefs about the other leaders' competence as voters. This will be different in Section 2.5 where leaders can collect information about the effects of each other's policies.

¹⁹When $w = 1$, policies are always continued in period 1 and the posterior probability equals the prior probability $\hat{\alpha}^c = \alpha$, see (2.1). Hence, voters are indifferent between the opposition leader and the incumbents. To save space, we assume that, in that case, an incumbent wins the elections, and both incumbents remain in office. A reason for this could be that leader r 's prior probability of being competent is slightly lower than α , which may also motivate why leaders l and m are in office in period 1.

²⁰Assuming that the prior belief about the competence of the opposition leader is drawn from a distribution makes the impact of policy continuation on reelection chances more smooth. Then a leader faces a higher probability of reelection if he continues his policy, as in Dur (2001).

(c) Period 1

In period 1 policies y_l and y_m are implemented. After implementation, leader l receives a signal revealing the quality of y_l whereas leader m receives a signal revealing the quality of y_m . Through majority voting, a decision is made on continuation of each policy. Since leaders are uninformed about the quality of each other's policy, leader i 's vote on leader j 's policy does not affect voters' beliefs about leader i 's or leader j 's competence. Hence, leaders base their vote on each other's policy only on the expected effects on the public interest, as in period 2. Lemma 2.1 shows under which condition coalition parties vote in favor of each other's policies in period 1.

Lemma 2.1 *Consider the vote on y_l and on y_m in period 1. Suppose that leader r votes (N_l, N_m) .*

Then, leader l votes Y_m and leader m votes Y_l if $x(b_i^j + d) - (1 - x)w(c - d) \geq 0$. Given this, the voting strategy of the opposition leader is optimal.

When a policy, although designed by the other leader, is good, supporting the policy increases leader i 's utility from policies with $b_i^j + d$. However, supporting the other's policy also gives an opportunistic leader j the opportunity to continue a bad policy, resulting in net cost $c - d$. When w increases, the condition in Lemma 2.1 becomes more restrictive. When politicians have little trust in one another (a high level of w), the expected benefits from a policy designed by an other leader may be negative, as policies are unlikely to be reversed when they turn out to be bad. Then, a complete political deadlock may result. When policies lack political support after implementation, neither leader has an incentive to design and implement a policy as it will only bring cost d . We restrict our analysis to cases where Lemma 2.1 holds.²¹ Leader l (m) then is decisive in the vote on continuation of y_l (y_m).

²¹Note that before implementation, the expected benefits of a policy designed by another leader are $xb_i^j - (1 - x)wc - (1 - x)(1 - w)d$. If the ex ante expected benefits are positive then the condition in Lemma 2.1 always hold.

Consider the voting decision of leader l on y_l . The voting decision of leader m on y_m is analogous. Suppose leader l receives a signal that y_l is a good policy. Leader l updates his belief about his competence to $\hat{\alpha}^g$, implying a probability \hat{x}^g to design a good policy in the next period. Leader l decides to vote in favor of y_l if:

$$\beta_l \left\{ \begin{array}{l} b_l^l + [x + (1-x)w] [\hat{x}^g b_l^l + \hat{x}^c b_l^m - (1 - \hat{x}^g)d - (1 - \hat{x}^c)d] \\ + (1-x)(1-w) [\hat{x}^g b_l^l + x b_l^r - (1 - \hat{x}^g)d - (1-x)d] \end{array} \right\} + X \geq \beta_l \left\{ \begin{array}{l} -d + [x + (1-x)w] [\hat{x}^c b_l^m + x b_l^r - (1 - \hat{x}^c)d - (1-x)d] \\ + (1-x)(1-w) [\frac{1}{2} \hat{x}^g b_l^l + \frac{1}{2} \hat{x}^r b_l^m + x b_l^r - (1 - x)d - (1 - \frac{1}{2} \hat{x}^g - \frac{1}{2} \hat{x}^r)d] \end{array} \right\} + \frac{1}{2}(1-x)(1-w)X,$$

which reduces to:

$$\beta_l \left\{ \begin{array}{l} b_l^l + d + [x + (1-x)w] [\hat{x}^g b_l^l - x b_l^r + (\hat{x}^g - x)d] \\ + (1-x)(1-w) \frac{1}{2} [\hat{x}^g b_l^l - \hat{x}^r b_l^m + (\hat{x}^g - \hat{x}^r)d] \end{array} \right\} + \left[1 - \frac{1}{2}(1-x)(1-w) \right] X \geq 0. \quad (2.3)$$

Condition (2.3) always holds. Voting in favor of a good policy is beneficial for three reasons. First, the utility from policies in period 1 increases as voting in favor of y_l provides the benefits b_l^l and prevents the cost of reversing d . Second, expected utility from policies in period 2 also increases. Voting in favor of y_l ensures that leader l is in office in period 2. As he is as least as likely as any other leader to design a good policy in period 2, $\hat{x}^g > x > \hat{x}^r$, and since he values his own policies more than those designed by others ($b_l^l > b_l^m = b_l^r$), voting in favor of y_l always increases his expected utility from policies in period 2. Third, continuing y_l ensures that leader l receives the private rents from office, X , in period 2.

Suppose leader l receives a signal that y_l is bad. Leader l updates his belief about his competence to $\hat{\alpha}^b$, implying a probability $\hat{x}^b = \hat{x}^r$ to design a good policy in the next period. Leader l votes against y_l if:

$$\beta_l \left\{ \begin{array}{l} -d + [x + (1 - x)w] [xb_l^r + \hat{x}^c b_l^m - (1 - x)d - (1 - \hat{x}^c)d] \\ +(1 - x)(1 - w) [xb_l^r + \frac{1}{2}\hat{x}^r b_l^m + \frac{1}{2}\hat{x}^r b_l^l - (1 - x)d - (1 - \hat{x}^r)d] \end{array} \right\} \\ + \frac{1}{2}(1 - x)(1 - w)X \geq \\ \beta_l \left\{ \begin{array}{l} -c + [x + (1 - x)w] [\hat{x}^r b_l^l + \hat{x}^c b_l^m - (1 - \hat{x}^r)d - (1 - \hat{x}^c)d] \\ +(1 - x)(1 - w) [xb_l^r + \hat{x}^r b_l^l - (1 - x)d - (1 - \hat{x}^r)d] \end{array} \right\} + X,$$

which reduces to:

$$\beta_l \left\{ (c - d) - [x + (1 - x)w] [\hat{x}^r b_l^l - xb_l^r - (x - \hat{x}^r)d] - (1 - x)(1 - w) \frac{1}{2} \hat{x}^r (b_l^l - b_l^m) \right\} \\ - \left[1 - \frac{1}{2}(1 - x)(1 - w) \right] X \geq 0. \quad (2.4)$$

In contrast to condition (2.3), condition (2.4) does not always hold. Let us discuss condition (2.4) in detail.

First, reversing y_l increases utility in period 1 as the cost of continuing a bad policy are higher than the cost of reversing the policy ($c > d$), see the first term in (2.4).

Second, reversing y_l decreases leader l 's probability of reelection and, therefore, the policies implemented in period 2. The decrease in leader l 's reelection chances depend on the vote of leader m . With probability $[x + (1 - x)w]$ leader m votes in favor of y_m . Reversing y_l then implies that party R and M are in office in period 2 rather than party L and M . This has two effects on leader l 's utility from policies in period 2. First, the probability that policies designed in period 2 are good increases as leader r is more likely to be competent than leader l ($x > \hat{x}^r$). As a

result, the probability that policies are reversed decreases, which saves cost d . Second, however, leader l cares more about a policy designed by himself than about a policy designed by leader r , $b_l^l > b_l^r$. This second effect always dominates the first. This follows from our assumption that $xb_i^j - (1-x)d < 0$, which guarantees that any coalition party prefers a two-party coalition to a grand coalition.²² Hence, reversing policy y_l in period 1 entails a cost for leader l in case leader m decides to vote in favor of his own policy. With probability $(1-x)(1-w)$, leader m reverses y_m . As a result, the opposition party is in office for sure. If leader l reverses his policy as well, leader l and m are in office again each with probability $\frac{1}{2}$, whereas leader l is certain to be in office again if he continues his policy. Reversing y_l does not affect the probability that policies are reversed in period 2, as leader l and m are equally likely to be competent. However, leader l values his own policies more than those designed by leader m . Therefore, reversing y_l reduces the expected benefits from policies in period 2. Concluding, irrespective of leader m 's vote on his own policy, leader l 's expected utility from policies implemented in period 2 decreases when he reverses his policy implemented in period 1.

Third, as reversing y_l reduces leader l 's chance of reelection, the expected private rents from office decrease.

In sum, when deciding whether to reverse or continue bad policy y_i , leader i faces a trade-off between the increase in voters' welfare in period 1 on the one hand, and decreases in expected private rents from office and in voters' welfare in period 2 on the other hand. Note that even when $X = 0$ (no private rents from office) politicians may be tempted to continue bad policies. This may happen when there is strong polarization (high b_i^l compared to b_i^r), such that the first term in (2.4)

²²Note that we have implicitly assumed that $\hat{x}^r b_l^l - (1 - \hat{x}^r)d > 0$. If this does not hold, leader l may accept office, but he will not design and implement a policy in period 2, which yields a higher utility than the expected utility from a policy designed by leader r in period 2.

is negative. Then, all politicians, regardless of their motivation β_i , behave opportunistically so as to keep out of office rival politicians with very different policy preferences. In what follows, we focus on equilibria where the private rents from office as well as policy preferences play a role. So, we assume that the first term in (2.4) is positive. Then, condition (2.4) only holds if leader i cares sufficiently about the public interest relative to the private rents from holding office, measured by β_i .

There exists a level of β_i for which condition (2.4) holds exactly. Denote this threshold level by $\hat{\beta}$. Leaders with β_i above $\hat{\beta}$ reverse a bad policy y_i , while leaders with β_i below $\hat{\beta}$ stick to inefficient policies. Thus, $\hat{\beta}$ can be described as the minimum amount of public spiritedness a politician must have so as to resist the temptation to behave opportunistically. Using (2.4), we can write $\hat{\beta}$ as:

$$\hat{\beta} = \frac{\left[1 - \frac{1}{2}(1-x)(1-w)\right]X}{(c-d) - [x + (1-x)w] \left[\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d\right] - (1-x)(1-w)\frac{1}{2}\hat{x}^r(b_i^i - b_i^j)} \quad (2.5)$$

Equation (2.5) shows how $\hat{\beta}$ depends on the exogenous variables and on w , the probability that other politicians behave opportunistically. Hence, there is strategic interdependence between politicians' actions.

Before we derive the equilibrium value of w , it is useful to first consider the partial effect of w on $\hat{\beta}$, that is, how a politician's incentive to behave opportunistically is affected by the probability that other politicians behave opportunistically. Straightforward algebra yields:²³

$$\frac{\partial \hat{\beta}}{\partial w} = \frac{\frac{1}{2}(1-x) \left[(c-d) - (x - \hat{x}^r) (b_i^j + d) \right] X}{\left\{ (c-d) - [x + (1-x)w] \left[\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d \right] - (1-x)(1-w)\frac{1}{2}\hat{x}^r(b_i^i - b_i^j) \right\}^2} \quad (2.6)$$

An increase in w affects the incentive to reverse a bad policy, and thus $\hat{\beta}$, for two reasons.

²³Recall that \hat{x}^r does not depend on w , see (2.2).

First, an increase in w makes it less likely that after admitting a policy failure incumbent i enjoys the private rents from office in period 2, see also the numerator in equation (2.5). The reason is that, after admitting a policy failure, incumbent i faces a positive probability of being in office again *only* if the other incumbent *also* admits a policy failure. This is less likely when w is higher. Hence, an increase in w strengthens incumbents' incentive to continue a bad policy, implying an increase in $\hat{\beta}$.

Second, an increase in w also affects the incumbent's incentive to reverse a bad policy through its effect on utility from policies implemented in period 2, see also the denominator in (2.5). This effect appears to be ambiguous. Clearly, a sufficient condition for $\partial\hat{\beta}/\partial w > 0$ is that the denominator of (2.5) decreases with w . This requires that:

$$[\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] > \frac{1}{2} \hat{x}^r (b_i^i - b_i^j), \quad (2.7)$$

which says that reversing a policy must have a stronger effect on incumbent i 's utility from policies in period 2 when the other incumbent continues his policy than when the other incumbent reverses his policy as well, see the discussion of condition (2.4) above. Since, after reversing his policy, incumbent i is always out of office when the other incumbent continues his policy, while he faces probability 1/2 to remain in office when the other incumbent reverses his policy, condition (2.7) seems a plausible condition. Henceforth, we focus on equilibria where this condition holds. However, when there is little polarization in policy preferences (low b_i^i relative to b_i^j), or when the cost of reversing a policy d is large, it might be that the incumbent's incentive to admit a policy failure is weaker rather than stronger when the probability that other politicians admit policy failures is higher. Then, there is strategic substitutability in politicians' opportunism.

So far, we have treated the probability that the other leader selects the dishonest voting strategy, w , as exogenous. Since β_i is drawn from a uniform distribution $[0, \bar{\beta}]$, it follows that:

$$w = \frac{\hat{\beta}}{\bar{\beta}}, \quad (2.8)$$

where $\hat{\beta}$ is defined by (2.5). Equations (2.5) and (2.8) describe the equilibrium values of w and $\hat{\beta}$ in terms of the exogenous variables. We assume that $\bar{\beta}$ is sufficiently high such that an interior solution exists, implying $0 \leq \hat{\beta} \leq \bar{\beta}$ and $0 \leq w \leq 1$. Since equation (2.5) is nonlinear, there need not be a unique equilibrium. In the Appendix, we show that if $\partial\hat{\beta}/\partial w > 0$, then a unique equilibrium is guaranteed. In Section 2.3, we discuss the possibility of multiple equilibria, which may arise when the distribution of politicians' motivation is non-uniform or when $\bar{\beta}$ is low.

Proposition 2.2 summarizes the equilibrium voting strategies of leader l and m .

Proposition 2.2 *Consider the vote on y_l and on y_m in period 1. Suppose that the condition in Lemma 2.1 holds. Then leader l votes Y_l when y_l is good and N_l when y_l is bad if $\beta_l \geq \hat{\beta}$. If $\beta_l < \hat{\beta}$, then leader l votes Y_l irrespective of the quality of y_l . Similarly, leader m votes Y_m when y_m is good and N_m when y_m is bad if $\beta_m \geq \hat{\beta}$. If $\beta_m < \hat{\beta}$ then leader m votes Y_m irrespective of the quality of y_m .*

Proposition 2.2 shows that politicians who care little about the public interest relative to the private rents from office-holding continue bad policies so as to preserve their reputation as a competent policy maker and, hence, avoid erosion of their electoral prospects. Only politicians who care sufficiently about the public interest are willing to admit a policy failure at the risk of losing the next election.

2.4.2 Comparative Statics

In this subsection, we examine how the exogenous variables affect the threshold level $\hat{\beta}$ and, hence, the proportion w of politicians who follow the dishonest strategy. As we have seen, $\hat{\beta}$ does not only depend on the exogenous variables, but also on w , which in turn is dependent on $\hat{\beta}$. Therefore, a change in any of the exogenous variables affects $\hat{\beta}$ directly and indirectly through its effect on w .

Consider the effect of an exogenous variable, say z , on w . Using (2.8), it follows that by definition:

$$\frac{dw}{dz} = (1/\bar{\beta}) \frac{d\hat{\beta}}{dz}. \quad (2.9)$$

That is, in equilibrium, it must hold that the change in w as a result of a change in exogenous variable z equals $1/\bar{\beta}$ times the change in the equilibrium value of $\hat{\beta}$. Using (2.5), the effect of a change in z on the equilibrium value of $\hat{\beta}$ is given by:

$$\frac{d\hat{\beta}}{dz} = \frac{\partial \hat{\beta}}{\partial z} + \frac{\partial \hat{\beta}}{\partial w} \frac{dw}{dz}, \quad (2.10)$$

where $\partial \hat{\beta} / \partial w$ is given by (2.6). Combining (2.9) and (2.10) yields after some rewriting:

$$\frac{d\hat{\beta}}{dz} = \frac{\partial \hat{\beta}}{\partial z} \left[\frac{1}{1 - (1/\bar{\beta}) \frac{\partial \hat{\beta}}{\partial w}} \right]. \quad (2.11)$$

The total effect of an increase in an exogenous variable on $\hat{\beta}$ is the product of a direct effect, $\partial \hat{\beta} / \partial z$, and a ‘multiplier,’ which stems from the strategic interdependence between politicians. Note that, given that we consider an interior solution (sufficiently high $\bar{\beta}$), the multiplier is always positive because $\partial \hat{\beta} / \partial w$ does not exceed $\bar{\beta}$. The multiplier magnifies the direct effect if:

$$\left[\frac{1}{1 - (1/\bar{\beta}) \frac{\partial \hat{\beta}}{\partial w}} \right] > 1 \implies \frac{\partial \hat{\beta}}{\partial w} > 0,$$

that is, if politicians' opportunistic actions are strategic complements. The reason is clear. When a change in z increases $\hat{\beta}$, a larger range of politicians act opportunistically, which induces even more politicians to act opportunistically. Hence, the effect of a change in any of the exogenous variables on politicians' incentive to behave opportunistically is magnified by strategic complementarity in politicians' opportunism.

Next consider the effects of the exogenous variables. Let us start with the effect of private rents from office. Using (2.5), it is easy to verify that $\partial\hat{\beta}/\partial X$ is positive. The intuition is simple. As holding office becomes more rewarding, a larger range of politicians are willing to compromise on voters' welfare so as to increase their chance of reelection. Likewise, politicians' incentive to behave opportunistically is stronger in more polarized political environments, that is, when b_i^i increases or b_i^j decreases. The reason is that in more polarized political environments, staying in office is more rewarding as it keeps politicians with more differing policy preferences out of power. It is also clear from (2.5) that politicians have a stronger incentive to act opportunistically when the cost of continuing a bad policy, c , are lower, and when the cost of reversing a policy, d , are higher.

Lastly, consider the effect of a change in the composition of the pool of candidates from which politicians are drawn. Recall our assumption that a politician's β_i is drawn from a uniform distribution $[0, \bar{\beta}]$. A higher value of $\bar{\beta}$ implies that candidates, on average, care more about the public interest relative to the private rents from office-holding. From (2.5) we can see that this does not directly affect the threshold level $\hat{\beta}$. However, the threshold level is indirectly affected as the probability that a given politician acts opportunistically, w , changes. Substituting (2.5) into (2.8), and totally differentiating with respect to w and $\bar{\beta}$ yields after some rewriting using (2.8):

$$\frac{dw}{d\bar{\beta}} = - \left(\frac{\hat{\beta}}{\bar{\beta}^2} \right) \left[\frac{1}{1 - (1/\bar{\beta}) \frac{\partial \hat{\beta}}{\partial w}} \right] < 0. \quad (2.12)$$

Hence, the direct effect of an increase in $\bar{\beta}$ on w , which is $-\hat{\beta}/\bar{\beta}^2$, see (2.8), is reinforced as politicians' incentive to act opportunistically decreases when other politicians are less likely to act opportunistically. From (2.5), it follows that the effect of $\bar{\beta}$ on the equilibrium value of $\hat{\beta}$ is given by:

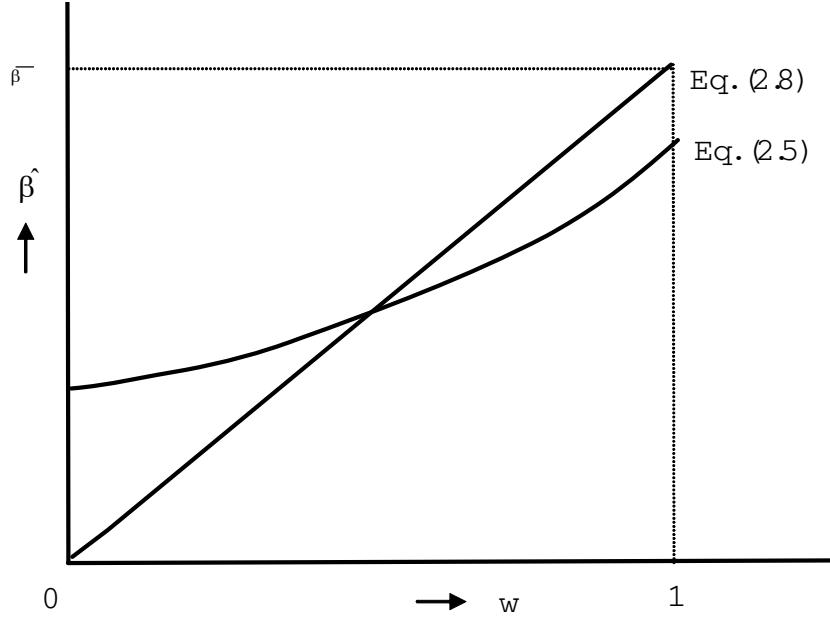
$$\frac{d\hat{\beta}}{d\bar{\beta}} = \frac{\partial\hat{\beta}}{\partial w} \frac{dw}{d\bar{\beta}} < 0 \text{ if } \frac{\partial\hat{\beta}}{\partial w} > 0. \quad (2.13)$$

Hence, when, for some exogenous reason, the composition of the pool of candidates changes such that politicians on average care more about the public interest, a politician with a given β_i has a weaker incentive to act opportunistically. The reason is that a given reputational loss has less of an effect on a politician's electoral prospects in an environment where other politicians are more likely to put at risk their reputation as well, than in an environment where politicians hardly ever admit policy failures. Similarly, entry of politicians who care little about the public interest gives current politicians with a given motivation a stronger incentive to behave opportunistically. A political culture may therefore be self-reinforcing.

2.4.3 *Multiple Equilibria*

So far, we focused on situations where a unique equilibrium arises. If $\bar{\beta}$ is not sufficiently high, or if we relax the assumption that politicians' motivations follow a uniform distribution, then multiple equilibria may arise. This is illustrated with the help of Figure 2.1.

The convex curve starting at $w = 0, \hat{\beta} > 0$, represents equation (2.5), describing the relation between the minimum amount of public spiritedness a politician must have so as to resist the temptation to behave opportunistically, $\hat{\beta}$, and the proportion of politicians expected to behave opportunistically, w . The curve is upward sloping if there is strategic complementarity in politi-



cians' opportunism. In the Appendix we have shown that if the curve is upward sloping, then it is always convex. Given that there are private rents from office, $X > 0$, the curve starts at $w = 0$, $\hat{\beta} > 0$, that is, even when the probability that other leaders behave opportunistically would be zero, some leaders have an incentive to do so, namely the leaders with very low β . The straight line represents equation (2.8), describing the uniform distribution of politicians' motivations.

Clearly, with a uniform distribution, and sufficiently high maximum motivation $\bar{\beta}$ such that when $w = 1$ equation (2.5) implies $\hat{\beta} < \bar{\beta}$, there is a unique equilibrium, as depicted in Figure 2.1 and proven in the Appendix. Reducing the value of $\bar{\beta}$ rotates the straight line clockwise around the origin. For sufficiently low values of $\bar{\beta}$, multiple equilibria arise: one unstable equilibrium, and two stable equilibria, of which one with $w < 1$, and the other with $w = 1$. When $\bar{\beta}$ becomes very low, we have a unique equilibrium again, the one where all politicians behave opportunistically, $w = 1$.

When the distribution of politicians' motivations is non-uniform, equation (2.8) becomes non-

linear and is no longer represented by a straight line in Figure 2.1. It is easy to imagine distribution functions which, together with equation (2.5), imply multiple equilibria. For instance, when relatively few politicians have ‘extreme’ motivations (β close to zero and β close to $\bar{\beta}$), equation (2.5) could be represented in Figure 2.1 by a curve which is concave for low values of w and convex for high values of w . Clearly, multiple equilibria may then arise.

2.5 Reputation Bashing

In the previous section, we have shown that politicians who do not care sufficiently about the public interest continue bad policies so as to preserve their reputation as a competent policy maker. This section extends the analysis by allowing politicians to evaluate each other’s policy. As we will see, this may avoid continuation of bad policies, since politicians who care a lot about the public interest search for information and withdraw support for a policy when they find out that it is bad. However, the opportunity to learn about effects of a competing politician’s policy may enable politicians who care little about the public interest to damage the reputation of their coalition partner. Efficient policies may therefore be reversed.

As in Section 2.4, we assume that a leader becomes fully informed about the quality of his own policy, and that he can not credibly transmit this information to other leaders or voters. At a non-verifiable private cost K , a leader also receives a fully informative, non-transmittable signal about the quality of the other leader’s policy. The opposition leader and the voters do not search for information.²⁴

²⁴Allowing the opposition party to examine the effects of the two government policies may lead to free rider problems in information collection. Since opposition parties usually have less access to the bureaucracy, it may be more difficult for them to become informed about the quality of government policies. Admittedly, however, it would be interesting to extend the model so as to give the opposition party a more active role in the game. We leave that for future research.

The timing of the events is as follows. In period 1, incumbent leader i and j receive a private signal revealing the quality of their own policy. Subsequently, each leader in office decides whether or not to evaluate the policy designed by the other leader in office at non-verifiable private cost K . Next, each leader in office decides whether to vote in favor of his own policy and whether to support the other leader's policy. Each leader thus selects one out of four possible voting pairs, taking into account the information about the quality of the two policies. The remainder of the game is the same as in the previous section, except that also in period 2, incumbent leaders choose whether or not to evaluate each other's policy.

The equilibrium voting strategy and the decision on whether or not to collect information of leader i depend again on his motivation, β_i . So far, we have assumed that β_i is distributed over the interval $[0, \bar{\beta}]$. For reasons of tractability and to facilitate the presentation of our argument, we simplify the model. In this section, we restrict the analysis to three types of politicians: pure opportunists, moderate opportunists, and pure idealists. Below we discuss the equilibrium strategies of the three types. A formal derivation is given in the Appendix. We start with a description of the three types.

First, a leader who cares very little about the public interest simply maximizes his probability of reelection. We call such a leader a 'pure opportunist.' Unsurprisingly, a pure opportunist never admits a policy failure and does not incur private cost K to become informed about the other leader's policy. However, a pure opportunist may vote against the policy of the other leader, even when the expected benefits of a policy are positive. The reason is that, in contrast to the previous section, voters take into account that a leader may be informed about the quality of the other leader's policy. Voting against a policy designed by the other leader may therefore increase one's own reelection chances. Below we show under which conditions this strategy is an equilibrium

strategy.

Second, we introduce a ‘moderate opportunist.’ Like a pure opportunist, a moderate opportunist does not admit a policy failure and does not collect information about the other leader’s policy. However, as he cares more about the public interest than a pure opportunist, he supports the coalition party’s policy, as in the previous section.

Third, a leader who cares strongly about the public interest, a ‘pure idealist,’ maximizes what he perceives as the public interest. Therefore, he always admits a policy failure. Moreover, he evaluates the other leader’s policy and makes sure that bad policies are reversed.

We assume that a leader is a pure opportunist with probability w_1 , a moderate opportunist with probability w_2 , and with the remaining probability a pure idealist. The probabilities w_1 and w_2 are exogenous. In the Appendix, we derive the range of values that β can take for each type, given the equilibrium strategies of the other types.²⁵

(d) Period 2

In period 2, the results are the same as in Section 2.4: good policies are continued, whereas bad policies are reversed. As there are no reelection concerns in period 2, any type of leader admits a policy failure. Consequently, there is no use in evaluating each other’s policy in period 2.

(e) Elections and government formation

Since there is no moral hazard problem in period 2, swing voters base their vote only on their beliefs about the competence of the leaders. The following Lemma describes the voting decision of the swing voters.

²⁵A more extensive treatment would allow for other types as well. For instance, there may exist a type who only admits a policy failure after finding out that the other leader’s policy is also a failure. We conjecture that our main result in this section is not affected by allowing for more types as long as the group of pure idealists is sufficiently large.

Lemma 2.2 *Suppose leader i and j are in office in period 1. Then:*

- a) *The opposition leader wins the elections if leader i or if leader j , or both, vote (N_i, N_j) .*
- b) *Leader i wins the elections if leader j votes (Y_i, N_j) .*
- c) *With equal probability, leader i or leader j wins the elections if both leader i and j vote (Y_i, Y_j) and if leader i votes (Y_i, N_j) and leader j votes (N_i, Y_j) .*
- d) *Lastly, when leader i votes (Y_i, N_j) and leader j votes (Y_i, Y_j) , leader i wins the elections if the following condition holds:*

$$w_2(1 - w_2)x(\hat{x}^g - \hat{x}_i + x - \hat{x}^r) \geq w_2w_1[2x(\hat{x}^g - \hat{x}_i + x - \hat{x}^r) + \hat{x}_i - x] + w_1w_1x(x - \hat{x}^r),$$

where $\hat{x}_i \in (x, \hat{x}^g)$. If this condition does not hold, an equilibrium in mixed strategies exists.

Proof. See the Appendix. □

Let us discuss the four cases described by Lemma 2.2 in detail. In case a) and in case b), at least one leader votes against his own policy. As only a pure idealist admits a policy failure, this vote reveals his type. Recall that a pure idealist is informed about the quality of both policies and votes in favor of a policy only if it is good. Hence, swing voters learn the quality of both policies and select the opposition leader in case a) and leader i in case b). In case a), the opposition leader forms a coalition government with leader i or j with equal probability, since leader i and j are equally likely to be competent. In case b), leader i forms a coalition with the opposition party, since $x > \hat{x}^r$.

Swing voters can not discriminate between the two leaders in office when both leaders vote in favor of both policies, and when both leaders vote in favor of their own policy and against the

other policy (case *c*). Selecting the opposition party is then never optimal as the opposition leader can also not discriminate between leader *i* and *j*. If the opposition leader wins the elections, he randomizes between leader *i* and *j* when he selects the coalition partner for period 2. Voters can improve upon the selection of politicians by electing either leader *i* or *j*. The reason is that leader *i* and/or *j* may be an idealist and, hence, may be informed about the quality of policies in period

1. Then, leader *i* or *j* is better able to select a competent coalition partner than the opposition leader.²⁶

Finally, in case *d*) one leader in office votes in favor of both policies whereas the other leader in office votes in favor of his own policy and against the other policy. The latter leader is either a pure idealist or a pure opportunist. A pure idealist *i* votes against y_j only if y_j is bad. On the contrary, a pure opportunist *i* may only vote against y_j so as to increase his reelection chances. Voters prefer leader *i* to win the elections only if leader *i* is sufficiently more likely to be an informed pure idealist than to be a pure opportunist. The condition in Lemma 2.2 therefore only holds if w_1 is not too large. The condition always hold if neither leader is a pure opportunist ($w_1 = 0$). Then leader *i* is a pure idealist for sure, whereas leader *j* is identified as a moderate opportunist. Swing voters trust a pure idealist and select leader *i*. On the contrary, the condition is violated if leader *i* is very likely to be a pure opportunist (w_1 close to 1). Then, only an equilibrium in mixed strategies exists, which will be discussed below.

(f) Period 1

Let us now consider the implications of swing voters' behavior for the incumbents' decisions in period 1. In period 1, each coalition leader decides whether or not to become informed about the

²⁶In case *c*), the coalition in period 2 consists of leader *i* and *j* if both leaders have voted (Y_i, Y_j) . If leader *i* voted (Y_i, N_j) and leader *j* voted (N_i, Y_j) , the winner of the elections (*i* or *j*) forms a coalition with the opposition party if the winner is a pure idealist (and hence knows that the other leader did not admit a policy failure in period 1). If the winner is a pure opportunist, the coalition in period 2 consists of leader *i* and *j*. The same holds in case *d*).

quality of the other leader's policy. Next, the leaders make a decision whether to vote in favor or against y_i and y_j . Proposition 2.3 summarizes the voting decision of each type of leader.

Proposition 2.3 *Suppose that the opposition leader votes (N_i, N_j) . Suppose only pure idealists collect information about the quality of other leader's policy. Then, a pure idealist i votes Y_i if and only if y_i is good and votes Y_j if and only if y_j is good. A moderate opportunist i votes (Y_i, Y_j) irrespective of the quality of y_i . A pure opportunist i votes (Y_i, Y_j) if y_i is good, and votes (Y_i, N_j) if y_i is bad and the condition in Lemma 2.2 holds. When the condition in Lemma 2.2 does not hold, a pure opportunist i votes (Y_i, Y_j) if y_i is good and mixes between (Y_i, Y_j) and (Y_i, N_j) if y_i is bad. Given this, the voting strategy of the opposition leader is optimal.*

Above, we already discussed the voting behavior of pure idealists and of moderate opportunists. A pure opportunist i always votes for his own policy. His vote on the other leader's policy y_j depends on the quality of his own policy y_i . When his own policy turned out to be good, leader i votes for the other leader's policy. The reason is that, given that y_i is good, he stays in office for sure as he is either the winner of the elections or afterwards selected as a coalition party (see the proof of Lemma 2.2 in the Appendix). Hence, there is no reason to vote against y_j . However, if y_i is bad, leader i 's reelection is uncertain. Voting against y_j then increases leader i 's reelection chances as this harms the reputation of the other incumbent leader, given that the other leader votes in favor of his policy. When leader j votes (Y_i, Y_j) , and the condition in Lemma 2.2 holds, a pure opportunist i is sure to win the elections when he votes (Y_i, N_j) , see case *d*) in Lemma 2.2. When leader j votes (N_i, Y_j) , a pure opportunist i wins the elections with probability 1/2 when he votes against y_j (see case *c*)) whereas he loses the elections when he votes in favor of the other leader's policy. Since pure opportunists maximize their probability of reelection, they vote against the other leader's policy when their own policy turned out to be bad. As a result, efficient policies

may be reversed.

It is easy to show that an equilibrium in pure strategies does not exist if the condition in Lemma 2.2 is violated. Suppose swing voters believe that a pure opportunist i always votes (Y_i, N_j) when his policy is bad. Then, a leader j who votes (Y_i, Y_j) wins the elections if leader i votes (Y_i, N_j) , given that the condition in Lemma 2.2 is violated. Clearly, given the swing voters' beliefs, pure opportunists have an incentive to vote (Y_i, Y_j) . Suppose swing voters believe that a pure opportunist i always votes (Y_i, Y_j) . Then, swing voters vote for leader i when he votes (Y_i, N_j) since only a pure idealist i may vote against y_j . Given these swing voters' beliefs, a pure opportunist i has an incentive to vote (Y_i, N_j) when his policy is bad. Clearly, only an equilibrium in mixed strategies exists when the condition in Lemma 2.2 is violated. A pure opportunist votes with a probability against the other leader's policy when his own policy turned out to be bad. Swing voters select leader i with a probability when leader i votes (Y_i, N_j) and leader j votes (Y_i, Y_j) , and select leader j with the remaining probability. Also in this case, efficient policies may be reversed.²⁷

(g) Decision to collect information

Lastly, consider leaders' incentive to collect information about the quality of each other's policy. For sufficiently high K , opportunists do not incur private cost K since they do not care sufficiently about the public interest. Consider pure idealists' incentive to collect information. Suppose leader i received a signal that his own policy y_i is good. Given the equilibrium voting strategies described above, leader i decides to evaluate y_j if:

$$\beta_i(1-x) \left[(w_1 + w_2)(c - d) + \left(\frac{1}{2}w_1 + w_2\right) \frac{1}{2} b_i^j (x - \hat{x}^r) \right] \geq K. \quad (2.14)$$

²⁷Likewise, only an equilibrium in mixed strategies exists when we consider a two-type model with only pure idealists and pure opportunists.

Clearly, a pure idealist only has an incentive to collect information if there is a probability that the other leader does not admit a policy failure ($w_1 \neq 0$ and/or $w_2 \neq 0$). When the other leader does not admit a policy failure, information collection raises utility from policies in period 1 with $c - d$, and improves upon the selection of competent politicians for office in period 2. These benefits and β_i must be sufficiently high to make up for the cost of information collection, K . When leader i received a signal that his own policy y_i is bad, he decides to evaluate y_j if:

$$\beta_i(1-x) \left[(w_1 + w_2)(c - d) + (w_1 + w_2) \frac{1}{2} \hat{x}^r (b_i^i - b_i^j) \right] + \frac{1}{2}(1-x)(w_1 + w_2)X \geq K \quad (2.15)$$

Like above, evaluation may prevent the cost of continuing a bad policy. However, evaluation affects the selection of period 2 politicians differently than when y_i is good. As leader i is an idealist, he admits that y_i is bad. If he decides not to evaluate the other leader's policy, leader i faces a probability of reelection only if leader j is an idealist as well and y_j is bad. When leader j is an opportunist, leader i can increase his probability of reelection by finding out that y_j is bad. Then, leader i is reelected with probability 1/2 since leader i and j look equally (in)competent in the eyes of the voters when leader i votes (N_i, N_j) . Hence, when a pure idealist's policy turned out to be a failure, electoral concerns may give him an additional incentive to evaluate the other leader's policy, as it increases the probability of receiving the private rents from office X in period 2.

2.6 Concluding Remarks

We have studied politicians' incentive to behave opportunistically for reelection purposes. A key element of our model is that politicians do not only differ in competence and policy preferences, but also differ in their intrinsic motivation to improve upon the well-being of citizens. We have focused on an agency problem that arises when voters are less informed about the effects of policies

than politicians are. We have shown that a higher reward from holding office and increased polarization in the policy positions strengthen the politicians' incentive to behave opportunistically. When several politicians are involved in decision making, these effects are magnified by a strategic complementarity in politicians' opportunism. We have shown that politicians have stronger incentives to behave opportunistically if they believe other politicians are more likely to behave opportunistically. A political culture may therefore be self-reinforcing and multiple equilibria may arise. Lastly, we have shown that efficient policies may be reversed by opportunistic politicians so as to damage the reputation of their competitors. This may happen when politicians may be informed about the effects of each other's policies, and there is a sufficiently large number of publicly spirited politicians among the pool of candidates. Public spiritedness among politicians lends some credibility to a politician's claim that his competitor's policy is a failure. Opportunistic politicians take advantage of this and may vote against efficient policies designed by other politicians.

A particularly interesting extension of the model would be to endogenize politicians' participation decision, as in Caselli and Morelli (2004), Besley (2004), and other recent papers. While a higher reward from holding office may encourage people with high ability, or with high moral cost of taking bribes, to strive for a political career, it may also attract people who care most about the rewards from office, not about society. This, in turn, may strengthen the incentive of the politicians that already participated to behave opportunistically as a result of the strategic complementarity in politicians' opportunism. Other interesting extensions include examining endogenous removal of a party's leader by party members, the endogenous determination of politicians' pay, and information provision to voters by media and 'independent' agencies.

Appendix

Proof of unique equilibrium if $\partial\hat{\beta}/\partial w > 0$

First note that equation (2.8) can be written as $\hat{\beta} = \bar{\beta}w$: a linear relation with slope $\bar{\beta}$, with minimum 0 when $w = 0$ and maximum $\bar{\beta}$ when $w = 1$. Next consider equation (2.5). Denote the function on the right-hand side by $\hat{\beta}(w)$. When $w = 0$, it follows that $\hat{\beta}(0) > 0$ given that $X > 0$. In the main text, we showed that, under a plausible condition, $\hat{\beta}'(w)$ is positive. To ensure that at least one interior solution exists, it is sufficient to assume that $\bar{\beta}$ is sufficiently high such that $\hat{\beta}(1) < \bar{\beta}$. The second derivative reads:

$$\frac{\partial^2 \hat{\beta}}{\partial w^2} = \frac{\left((1-x)^2 \left\{ (c-d) + [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - \hat{x}^r (b_i^i - b_i^j) \right\} \times \right.}{\left. \times \left\{ [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - \frac{1}{2} \hat{x}^r (b_i^i - b_i^j) \right\} X \right)}{\left\{ (c-d) - [x + (1-x)w] [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - (1-x)(1-w) \frac{1}{2} \hat{x}^r (b_i^i - b_i^j) \right\}^3} \quad (2.16)$$

By comparing (2.6) with (2.16), and using (2.7), it is easy to verify that if $\hat{\beta}'(w) > 0$, then $\hat{\beta}''(w) > 0$ for any $0 \leq w \leq 1$. Hence, $\hat{\beta}(w)$ is convex and increasing. Since (2.8) is linear, it follows that a unique equilibrium is guaranteed, see also Figure 2.1 in Section 2.3.

Proof of Lemma 2.2: Swing voters strategies in the three-types case

The results of cases *a*), *b*), and *c*) follow directly from the intuition in the main text. Consider case *d*). Suppose leader i votes (Y_i, N_j) and leader j votes (Y_i, Y_j) . Given the equilibrium strategies of each type as defined in Proposition 2.3, voters infer three possible combinations of types; 1) leader i is a pure idealist, leader j is a moderate opportunist, 2) leader i is a pure opportunist, leader j is a moderate opportunist, and 3) both leader i and j are pure opportunists. Swing voters maximize the expected quality of period 2 policies. As discussed in the main text, selecting the

opposition leader is not optimal as the opposition leader is equally informed as the voters about the competence of the incumbents. Swing voters vote for leader i rather than leader j if:

$$\begin{aligned} w_2(1 - w_1 - w_2)x(1 - x)(\hat{x}^g + x) + w_2w_1(1 - x)(\hat{x}^r + x) + w_1w_1x(1 - x)(\hat{x}^r + \hat{x}^g) \geq \\ w_2(1 - w_1 - w_2)x(1 - x)(\hat{x}^r + \hat{x}_i) + w_2w_1(1 - x)[x(\hat{x}^g + x) + (1 - x)(\hat{x}^r + \hat{x}_i)] \\ + w_1w_1x(1 - x)(\hat{x}^g + x) \end{aligned}$$

After some straightforward algebra, the condition in Lemma 2.2 follows from the above condition.

Note that when leader j wins the elections and leader j is a moderate opportunist, then he selects leader i if y_j is bad and he select the opposition leader if y_j is good. In the latter case, leader j infers from the vote of leader i that leader i is a pure opportunist and y_i is bad. When y_j is bad, leader j can not fully infer the type of leader i . Either leader i is a pure idealist and y_i is good or he is pure opportunist and y_i is bad. The posterior probability that leader i designs a good policy in period 2 then is:

$$\hat{x}_i = \left[\frac{(1 - w_1 - w_2)x}{(1 - w_1 - w_2)x + w_1(1 - x)} \right] \hat{x}^g + \left[\frac{w_1(1 - x)}{(1 - w_1 - w_2)x + w_1(1 - x)} \right] \hat{x}^r$$

Note that $\hat{x}_i < \hat{x}^g$. If $(1 - w_1 - w_2)x(\hat{x}^g - x) > w_1(1 - x)(x - \hat{x}^r)$, then $\hat{x}_i > x$ and leader j selects leader i . Otherwise, leader j selects the opposition leader when his own policy is bad. Then, the condition in Lemma 2.2 becomes $w_2(1 - w_2)x(\hat{x}^g - \hat{x}^r) \geq w_2w_12x(\hat{x}^g - \hat{x}^r) + w_1w_1x(x - \hat{x}^r)$. The intuition is the same as in the main text.

Definition of a pure idealist

A pure idealist evaluates y_j and votes in line with the public interest. This requires that condition (2.14) and (2.15) are satisfied, which is the case for sufficiently high β_i . Given that a pure idealist i is informed about y_j he votes Y_i if and only if y_i is good and votes Y_j if and only if

y_j is good.

Suppose y_i is good. Clearly, leader i votes Y_i . Furthermore, as leader i is in office for sure he votes Y_j if y_j is good and votes N_j if y_j is bad.

Suppose y_i is bad and y_j is good. Then a pure idealist prefers (N_i, Y_j) over all other voting strategies. First, a pure idealist i votes (N_i, Y_j) rather than (N_i, N_j) if:

$$\beta_i \left[(b_i^j + d) + \frac{1}{2}(\hat{x}^g b_i^j - \hat{x}^r b_i^j) + \frac{1}{2}(\hat{x}^g - \hat{x}^r) d \right] - (1 - w_1 - w_2) \frac{1}{2} X \geq 0$$

Second, a pure idealist i votes (N_i, Y_j) rather than (Y_i, N_j) if:

$$\begin{aligned} \beta_i \left\{ (b_i^j + d) + (w_2 + w_1)(c - d) - \left[w_1 + w_2 + \frac{1}{2}(1 - w_1 - w_2) \right] \left[(\hat{x}^r b_i^j - x b_i^j) - (x - \hat{x}^r) d \right] \right\} \\ - \left[w_1 + w_2 + \frac{1}{2}(1 - w_1 - w_2) \right] X \geq 0 \end{aligned}$$

Third, a pure idealist i votes (N_i, Y_j) rather than (Y_i, Y_j) if:

$$\beta_i \left\{ (1 - w_1 - w_2)(c - d) - (w_1 + w_2) \left[(\hat{x}^r b_i^j - x b_i^j) - (x - \hat{x}^r) d \right] \right\} - (w_1 + w_2) X \geq 0$$

All three conditions require that β_i is sufficiently high compared to the decrease in expected rents from office.

Suppose y_i is bad and y_j is bad. Then a pure idealist votes (N_i, N_j) rather than (Y_i, N_j) if:

$$\beta_i \left\{ w_2(c - d) - w_1 \frac{1}{2} \left[(\hat{x}^r b_i^j - x b_i^j) - (x - \hat{x}^r) d \right] - w_2 \frac{1}{2} (\hat{x}^r b_i^j - \hat{x}^r b_i^j) \right\} - \frac{1}{2} (w_1 + w_2) X \geq 0$$

which also hold if a pure idealist cares sufficiently about social welfare.

Definition of a moderate opportunist

We assumed that a moderate opportunist i decides to remain uninformed about the quality

of y_j . When y_i is good this requires that the level of β_i is such that condition (2.14) is violated.

When y_i is bad, a moderate opportunist decides to remain uninformed if:

$$\beta_i \left[(1-x)(w_1 + w_2)(c - d) + (1-x)(w_1 \frac{1}{2} + w_2)b_i^j (x - \hat{x}^r) \right] < K.$$

This requires that a moderate opportunist does not care too much about social welfare. Given that a moderate opportunist i decides to remain uninformed he votes (Y_i, Y_j) . When y_i is good this is always an optimal strategy. The reason is that leader i is in office for sure if y_i is good and the expected benefits of policy y_j are positive (see Lemma 2.1).

Suppose y_i is bad. Then a moderate opportunist votes (Y_i, Y_j) rather than (N_i, N_j) if:

$$\beta_i \left\{ \begin{array}{l} x(b_i^j + d) - (1-x)(w_1 + w_2)(c - d) \\ + x \left[\left(\frac{1}{2}\hat{x}^g b_i^j + \frac{1}{2}\hat{x}^r b_i^i - x b_i^j \right) + \left(\frac{1}{2}\hat{x}^g + \frac{1}{2}\hat{x}^r - x \right) d \right] \\ + (1-x)(w_1 + w_2) \left[\left(\frac{1}{2}\hat{x}^r b_i^j + \frac{1}{2}\hat{x}^r b_i^i - x b_i^j \right) - (x - \hat{x}^r) d \right] \\ + \left[w_1 + w_2 - \frac{1}{2}x(1 - w_1 - w_2) \right] X \geq 0 \end{array} \right\}$$

If the term within the curly brackets is positive the condition always hold. Otherwise, β_i should not be too high.

Second, a moderate opportunist i votes (Y_i, Y_j) rather than (Y_i, N_j) if:

$$\begin{aligned} \beta_i \left\{ \left[x(b_i^j + d) - (1-x)(w_1 + w_2)(c - d) \right] - x(1 - w_1 - w_2) \frac{1}{2} \left[\left(\hat{x}^r b_i^i - x b_i^j \right) - (x - \hat{x}^r) d \right] \right\} \\ - \left[\frac{1}{2}(1 - w_1 - w_2)x \right] X \geq 0 \end{aligned}$$

which requires that a moderate opportunist cares sufficiently about the other policy and β_i is sufficiently high.

Finally, a moderate opportunist votes (Y_i, Y_j) rather than (N_i, Y_j) if:

$$\beta_i \left\{ (w_1 x + w_2)(c - d) + (w_1 + w_2) \left[(x b_i^j - \hat{x}^r b_i^i) + (x - \hat{x}^r)d \right] \right\} - (w_1 + w_2) X \leq 0$$

which is satisfied if β_i is sufficiently low.

Definition of a pure opportunist

Recall that a pure opportunist i decides to remain uninformed about the quality of y_j . This requires that β_i is sufficiently low such that condition (2.14) is violated for a pure opportunist when y_i is good. When y_i is bad, a pure opportunist maximizes his probability of reelection by voting (Y_i, N_j) both if he is informed and if he is uninformed. As the voting strategies are the same, there is no reason to incur cost K to become informed.

Given that a pure opportunist remains uninformed, he votes (Y_i, Y_j) if y_i is good. This is optimal as leader i is in office for sure and the expected benefits of y_j are positive. Furthermore, a pure opportunist i votes (Y_i, N_j) if y_i is bad. A pure opportunist i votes (Y_i, N_j) rather than (N_i, N_j) if:

$$\begin{aligned} \beta_i \left\{ \begin{aligned} & -(w_2 + xw_1)(c - d) + x(1 - w_1 - w_2) \frac{1}{2} \left[(\hat{x}^g b_i^j - x b_i^j) + (\hat{x}^g - x)d \right] \\ & + (w_1 + w_2) \left[\left(\frac{1}{2} \hat{x}^r b_i^j + \frac{1}{2} \hat{x}^r b_i^i - x b_i^j \right) - (x - \hat{x}^r)d \right] \end{aligned} \right\} \\ + (w_1 + w_2) X \geq 0. \end{aligned}$$

Second, a pure opportunist i votes (Y_i, N_j) rather than (Y_i, Y_j) if:

$$\begin{aligned} \beta_i \left\{ \begin{aligned} & -x(b_i^j + d) + (1 - x)(w_1 + w_2)(c - d) + x(1 - w_1 - w_2) \frac{1}{2} \left[(\hat{x}^r b_i^i - x b_i^j) - (x - \hat{x}^r)d \right] \\ & + \left[\frac{1}{2}(1 - w_1 - w_2)x \right] X \geq 0 \end{aligned} \right\} \end{aligned}$$

Finally, a pure opportunist i votes (Y_i, N_j) rather than (N_i, Y_j) if:

$$\beta_i \left\{ \begin{array}{l} -x(b_i^j + d) - [x(w_1 + w_2) - (1 - x)w_1] (c - d) \\ -[w_1 + w_2 + \frac{1}{2}x(1 - w_1 - w_2)] \left[(\hat{x}^r b_i^j - x b_i^j) - (x - \hat{x}^r)d \right] \\ + \left[w_1 + w_2 + \frac{1}{2}x(1 - w_1 - w_2) \right] X \geq 0 \end{array} \right\}$$

All three conditions are satisfied if β_i is sufficiently close to zero.

Notation

$i \in \{l, m, r\}$ a leader attached to party I

y_i policy designed by leader i in office

α prior belief that a leader is competent

x prior probability that a leader designs a good policy

$\hat{\alpha}^v$ where $v \in \{c, r\}$, voters' posterior belief that a leader is competent

when he voted for his policy in period 1 (c), or against (r).

$\hat{\alpha}^p$ where $p \in \{g, b\}$, a leader's posterior belief that he is competent

when he has observed that his policy in period 1 is good (g), bad (b)

\hat{x}^v voters' posterior probability that leader i designs a good policy in period 2

\hat{x}^p leader i 's posterior probability that he designs a good policy in period 2

b_i^i increase in social welfare according to leader i if a good policy y_i is continued

b_i^j increase in social welfare according to leader i if a good policy y_j is continued

c decrease in social welfare when a bad policy is continued

d decrease in social welfare when a policy is reversed

$\beta_i \in [0, \bar{\beta}]$ value attached to social welfare by leader i

X private rents from being in office in a period

w probability that an incumbent plays the dishonest voting strategy (Section 2.4)

w_1, w_2 probability that a leader is a 'pure opportunist', 'moderate opportunist'
(Section 2.5)

K private cost of acquiring information about the other leader's policy

Chapter 3

Party Governance and the Selection of Parliamentarians

3.1 Introduction

In representative democracies, citizens delegate the task to design public policies to office holders.

After designing a policy, the office holder may become informed, possibly by means of his public servants, about the consequences of his policy. Office holders may continue pursuing a policy even if they know that the policy is not in the public interest. One reason may be that the executive cares about his reputation of being competent (see e.g. Dur, 2001, Chiu, 2002, Majumdar and Mukand, 2004). To protect society for an inefficient project, implementation therefore normally requires the support of a majority of parliament. Members of parliament are expected to evaluate the pros and cons of projects and to vote on their implementation. Hence, the ability of parliamentarians to evaluate the consequences of policies is likely to have a major impact on the quality of government decision making.

Although voters ultimately elect members of parliament, the set of candidates is to large extent predetermined inside the distinct parties. Each party decides before the elections which members are allowed to stand for parliament. Moreover, under proportional elections the position of each candidate on the party list affects the candidates' probability of obtaining a legislative seat.¹

¹Proportional elections can be found in many, mainly European, countries among others in Austria, the Netherlands, Belgium and Spain. In Germany, there is a mixed system in which one half of the parliament is elected using party lists while the other half is elected by majority rule in several districts. An overview of electoral systems is

Particularly, if lists are closed the electorate only determines the distribution of seats among the parties. The order of the party list is decided on by means of the parties' candidate selection process. Office holders may exert influence on the candidate selection process, especially if the office holder is also the leader of the party. The extent to which the office holder can affect the composition of parliament depends on the internal organization of the party.

Political scientists show that parties vary significantly in the organization of their candidate selection process.² Lundell (2004) classifies for a large number of parties the degree of centralization of the candidate selection process. In some parties, mainly in the Nordic countries, ordinary members of the party are allowed to decide on the list. Other parties in e.g. Israel, Italy, and Spain exhibit a more centralized structure in which the party leader or a special committee makes up the list. This raises the question how party governance affects the selection and functioning of parliament. Persson and Tabellini (2003, p. 21) state that "if lists are drawn up by party leaders (as is commonly the case), the ranking is likely to reflect criteria unrelated to competence in providing benefits to voters, such as party loyalty or effort within the party". Supporting every policy designed by the office holder seems to be in conflict with the task of parliament to control the government. Particularly, this may result in inefficient decisions if the party in office constitutes a majority in parliament, sufficient to implement policies.³

The main objective of this chapter is to examine the incentives to replace a sitting member of parliament. We compare a situation in which the leader in office is entitled to replace the member with a situation in which the rank-and-file of the party decides on replacement. We show under

given in Lijphart (1994).

²See, for instance, Pennings and Hazan (2001) and subsequent papers in the special issue on candidate selection of *Party Politics*, 2001 7(3).

³In a parliamentary system, the party or parties in office normally constitute a majority in parliament. By contrast, in a presidential system the leader in office (the president) and the members of parliament are elected separately. As a result, the leader in office may be affiliated with a different party than the majority in parliament (divided government).

which conditions the replacement decision of the leader is not optimal from the society's point of view. We develop a simple two-period model with the same leader in office in each period. In every period, the leader designs one policy which is either good or bad. A competent leader designs good policies while an incompetent leader designs bad policies. The leader knows the quality of the policies. Implementing a policy requires the support of the member of parliament who receives a private signal about the quality. We assume that the member prefers that only good policies are implemented. Furthermore, we consider a situation in which the member responds to his signal. A competent member always receives a correct signal while an incompetent member's signal is correct only by chance. At the end of period 1, either the rank-and-file or the leader decides on replacing the member active in period 1 with a new member. The rank-and-file's objectives are assumed to be in line with the public interest. The leader is either an idealist, caring about the public interest, or an opportunist, caring about his reputation of being competent. An idealistic leader is assumed to be competent whereas an opportunistic leader is either competent or incompetent. The leader's ability and motivation are private information.

We show that the leader replaces the member only if the member does not support the leader's policy. In other words, critical parliamentarians are replaced. The intuition is as follows. A critical member of parliament received negative information about the leader's policy. Consequently, a leader who designs good policies infers that a critical member is incompetent. An incompetent member may vote against good policies. An idealistic as well as an opportunistic leader prefer that a good policy is implemented. The former because implementation is in the public interest, the latter since implementation improves the leader's reputation. Hence, every leader who designs good policies replaces a critical member of parliament. An opportunistic leader may also be incompetent designing inefficient policies. In that case, the leader infers that a critical parliamentarian is most

likely competent. A competent member discovers policy failures and thus votes against the second period policy. Reputational concerns therefore induce an incompetent leader to replace a critical member. Similarly, an incompetent leader keeps a member who supports an inefficient policy exactly because the member is incompetent. A competent leader keeps a member who supports a good policy since the member is most likely competent.

The rank-and-file does not observe the quality of the policies. We show that the rank-and-file always replaces the member, independent of his vote, to reduce the risk of a wrong decision in period 2. The likelihood of a wrong decision is lower with two different members than with one member present in both periods. From the societies' point of view, the leader is thus too conservative in replacing sitting members of parliament. We would therefore expect a higher turnover of parliamentarians if the selection process becomes more decentralized. Empirical observations from the Netherlands seem to confirm this expectation. We calculated the turnover rate for the three major political parties in the Netherlands after each election since 1948 by using information on the composition of the Dutch parliament. We found that especially over time there are significant changes. The average turnover rate of parliamentarians after an election rose from about 25% in the fifties to almost 60% after the 2003 elections. This increase in legislative turnover is partially due to stronger electoral fluctuations. However, controlling for electoral volatility we still find that mainly in the sixties and in the last decade sitting members of parliament are replaced more often than before (see Figure 1 and 2 in the Appendix). At the same time, parties changed the organization of their candidate selection process. Especially in the sixties, party members called for more influence on the composition of the party list. Nowadays, almost all parties in the Netherlands exhibit a more decentralized selection process than in the 1950's (Katz and Maier, 1992, Koole, 1992). This trend towards decentralized candidate selection processes is observed in several Eu-

ropean countries (Bille, 2001). In a decentralized party, members of parliament who support the party leader may be more easily replaced than if the leader can exert influence on the list.⁴

The set-up of the chapter is as follows. Section 2 discusses the literature related to this chapter. Section 3 describes the model. Section 4 examines the selection of the member of parliament for a decentralized party. Section 5 examines the incentives of the leader to replace the member. Section 6 compares the two governance forms. Section 7 concludes.

3.2 Related Literature

The internal functioning of political parties in selecting and motivating politicians has received little attention from economists so far. Recently, Caillaud and Tirole (1999, 2002) provided a first analysis of the use of intra-party competition to select and motivate the leader of the party. Caillaud and Tirole (1999) examine how the possibility for a parties' rank-and-file to overrule the leader's policy affects the incentive to design high quality policies. Policies differ both in quality and in policy position. As leaders are office oriented, they design policies in line with the median voter's policy preferences. The rank-and-file may propose a different policy by overruling the leader. However, overruling comes at a cost as the rank-and-file never designs a high quality policy. Consequently, there is no incentive to overrule in a centrist party since there the leader designs policies in line with the preferences of the rank-and-file. As a result, the incentive for the leader to design a high quality policy is low in a centrist party reducing the parties' electoral chances.

⁴Matland and Studlar (2004) find that legislative turnover is significantly higher under proportional elections than under majoritarian elections. One reason for this may be that under majoritarian elections legislators have a stronger incentive to acquire a so-called "personal vote", see Cain, Ferejohn and Fiorina (1987) and Carey and Shugart (1995). Parties may be reluctant to replace an incumbent legislator who attracts many voters. Matland and Studlar do not examine how changes in a parties' governance structure affects the turnover rate over time.

Caillaud and Tirole (2002) show that intra-party competition for the position of the leader (primaries) may increase the candidates' incentives to design good projects. The reason is that the uninformed voters infer that the candidates designed a good project when both candidates propose the same project (internal validation). A primary therefore increases the returns to exerting effort in designing the single good project. However, intra-party competition discourages the candidates to exert effort when the quality of policies is publicly revealed with a large probability (external validation). In that case, designing a good policy results almost immediately in an electoral success in a hierarchical party whereas an additional hurdle has to be taken in a party using primaries. Castanheira, Crutzen and Sahuguet (2004) build on Caillaud and Tirole (2002) by examining how the internal organization of a party depends on the governance structure selected by the other party running for office. They show that the rank-and-file uses primaries to select the leader if inter-party competition is low. In Crutzen (2004), the rank-and-file can discipline legislators by using the party list. Crutzen shows that if the order of the list depends on politicians' behavior, rent extraction may be higher under majoritarian elections than under proportional elections, in contrast with Persson and Tabellini (2000).

This chapter differs from Caillaud and Tirole (1999, 2002) and from Crutzen (2004) in several respects. In this chapter, the replacement decision does not work as a disciplining device but rather as a selection device. We compare the selection of parliamentarians who differ in ability for different party governance structures. The party leader has an informational advantage over the consequences of the policies. As a consequence, an idealistic as well as an opportunistic leader replaces the member if a new member is more likely to support implementation. The replacement decision of the leader may not be in the public interest since the leader may select incompetent members.

Carrillo and Mariotti (2001) also study a parties' incentive to replace incumbent politicians. They show that voters prefer to replace incumbents more often than the two competing parties. This stems from the fact that each party cares only about beating the candidate of the other party during the elections. Voters learn about the ability of each candidate through their campaign performance and select the candidate with the highest expected ability. The ability of a new candidate is surrounded by a higher degree of uncertainty than the ability of an incumbent politician. As a result, the probability of electing at least one high qualified politician is larger with two new candidates than when two mediocre incumbents are not replaced. Carrillo and Mariotti thus show that a parties' turnover rate may be too low from the societies' point of view, like in this chapter. In our chapter, however, the difference in replacement strategies stems from the information asymmetry about the effects of policies.

Some papers show that the ability of political parties to exert influence on their members' voting behavior is a rationale for the existence of the party.⁵ For instance, in Snyder and Ting (2002) there are costs of joining a party which are increasing in the distance between a candidate's ideal platform and the platform of the party. As joining is costly, Snyder and Ting show that parties enable candidates to credibly signal their preferences to the voters. In Levy (2004) organizing into a party enables candidates with different policy preferences to reach a compromise on a policy platform. A party thus works as a commitment device towards voters since policy promises are not credible if a candidate operates independently. In this chapter, the party leader can not exert influence on the member's voting behavior. However, the leader can increase the probability that the parliament supports the second period policy by replacing critical members.

⁵Empirical evidence suggests that centralized parties impose party discipline on their members of parliament by inducing MP's to support the parties' platform, see Bowler, Farrell and Katz (1999) and Kam (2001). Hix (2004) shows that members of the European Parliament vote more in line with the preferences of their national party when the electoral system is more party centered (such as proportional elections) and the selection of candidates is centralized.

Indridason (2003) shows that the electoral chances of a party may improve if a parliamentarian votes against the leader in office. In that paper, each member of parliament represents a district with distinct policy preferences which are unknown to the leader in office. As voting against the office holder's policy is assumed to be costly, dissent is a credible signal about the preferences of the member's district. This enables the office holder to design policies more in line with the interest of the district's electorate. In our chapter, voting against the leader's policy may also be in the public interest because the policy may be inefficient. The reason, however, that critical parliamentarians are replaced is not due to conflicting policy preferences within a party but stems from the selection of members on the basis of their ability.

3.3 The Model

The rationale for the existence of parliament is that the leader in office may design a project detrimental to the public interest. To protect society for such a project, implementation of a project requires the support of parliament. We focus on how political parties select their members of parliament given that members may differ in their ability. The internal organization of the party determines which player is entitled to replace a member of parliament. We compare a centralized organization, in which the leader in office may replace a member, with a decentralized structure in which the rank-and-file decides on replacement.

3.3.1 *Polity*

We consider a two-period model. In both periods, the same leader is in office. In each period, this leader designs one policy y_t , where $t \in \{1, 2\}$. A policy lasts for one period. The leader is either competent or incompetent. A competent leader designs good policies whereas an incompetent

leader designs bad policies. The leader knows his own ability. All other players have a prior belief about the competence of the leader denoted by α .

Implementation of a policy requires the support of parliament. In our model, parliament is represented by a single member. This member MP decides on the implementation of y_t . The MP in period t receives a private signal $s_t \in \{g, b\}$ which may contain information about the quality of y_t . The signal $s_t = g$ says that y_t is good, while the signal $s_t = b$ says that y_t is bad. When the MP is competent, his signal is correct: $s_t = g$ if and only if y_t is good. When the MP is incompetent, his signal says that y_t is good or bad both with probability $\frac{1}{2}$: $\Pr(s_t = g \mid y_t = \text{good}) = \frac{1}{2}$. The ability of an MP is unknown to all players including the MP himself. The prior belief that an MP is competent is denoted by λ . The posterior beliefs about the competence of the leader and of an MP are denoted by $\hat{\alpha}$ and $\hat{\lambda}$, respectively.

After receiving the private signal, the MP votes in favor of or against implementation of y_t , $v_t \in \{Y, N\}$. If a good policy y_t is implemented, the benefit for the public in period t is $G > 0$. Implementing a bad policy y_t implies a cost for the public denoted by $B > 0$. The payoff to the public in period t is normalized to zero if no policy is implemented. Note that the payoff of an implemented policy is not observable. In the analysis, we distinguish two cases. One in which the expected benefits of implementing a policy without further information are positive: $\alpha G - (1 - \alpha)B \geq 0$, and one in which the expected benefits without receiving a signal are negative: $\alpha G - (1 - \alpha)B < 0$.

3.3.2 Party organization

At the end of period 1, there is a possibility to replace the member from the first period MP_1 with a new member MP_2 . The internal organization of the party determines which player is entitled

to make the replacement decision. In a centralized party, the leader is allowed to replace MP_1 . In a decentralized party, the rank-and-file of the party, represented by a single player RF , decides whether MP_1 is replaced.⁶

3.3.3 Politicians' objectives

We assume that the leader is either an idealist or an opportunist. An idealistic leader acts in the public interest. An opportunistic leader cares about his reputation of being competent. More precisely, an opportunistic leader maximizes the belief the public holds about his competence at the end of period 2.⁷ The public is informed about the implementation decision on y_1 and y_2 and about the internal organization of the party. The public does not observe the replacement decision but takes into account under which conditions MP_1 is replaced. In the conclusions, we discuss the implications of relaxing this assumption.

For simplicity, we assume that an idealistic leader is always competent. The analysis does not change when an idealistic leader may be incompetent. The reason is that an incompetent idealist has no incentive to design a policy. An incompetent leader is thus always an opportunist while a competent leader is either an idealist or an opportunist. The motivation of the leader is private information. The prior belief that a competent leader is an opportunist is denoted by w . The rank-and-file of the party cares about the public interest. Table 1 summarizes the game.

Table 1: Overview of the game

Players: leader in office, members MP_1 and MP_2 , rank-and-file RF .

⁶We abstract from the possibility to replace the leader after period 1. See the conclusions for a further discussion on this.

⁷An opportunistic leader may, for instance, care about the wage after he left politics, which depends positively on perceived ability.

Timing:

Period 1

- Nature chooses the type (ability and motivation) of each player.
- The leader designs y_1 .
- MP_1 receives a signal about the quality of y_1 .
- MP_1 votes on implementing y_1 .
- The leader (centralized party) or RF (decentralized party) decide whether to replace MP_1 .

Period 2

- The leader designs y_2 .
- MP_1 or MP_2 receives a signal about the quality of y_2 .
- MP_1 or MP_2 votes on implementing y_2 .

Payoffs

- *Benefits to the public in period t :* $G > 0$ if a good policy y_t is implemented, $-B < 0$ if a bad policy y_t is implemented, 0 if no policy is implemented.

3.3.4 Definition of equilibrium

The model discussed above defines a game for each governance structure. If the party is organized decentrally, there is a game between the rank-and-file and the member of parliament in each period. Section 4 presents a Perfect Bayesian Equilibrium of this game. In such an equilibrium neither player has an incentive to deviate from his equilibrium strategy, given the strategies of all other players. Beliefs are formed using Bayes' rule. If the party is organized centrally, there is

a game between the leader and the members of parliament. Section 5 derives a Perfect Bayesian Equilibrium of this game. In Section 6, we compare the outcomes of each game and examine the conditions under which the replacement decision of the leader is in the public interest.

There exist more than one equilibrium in each of these games. We focus on equilibria in which the member of parliament responds to information. The following assumption ensures an active role for parliament in each period.

$$\textbf{Assumption 1: } \lambda \geq \left| \frac{\alpha G - (1-\alpha)B}{\alpha G + (1-\alpha)B} \right|$$

Assumption 1 says that a member is competent with a sufficiently high probability. As a result, a private signal leads an *MP* to respond to his signal in period 1 and 2. If Assumption 1 were violated, parliament would be redundant and selection would not play a role.

3.4 Decentralized party

In this section, we discuss an equilibrium of the game in which the *RF* takes the replacement decision. To ensure a time consistent solution, the game is solved by backward induction. Initially, assume that the ex ante benefits of implementing a policy without receiving a signal are negative: $\alpha G - (1 - \alpha)B < 0$. At the end of this section, we discuss the results if we assume that $\alpha G - (1 - \alpha)B \geq 0$.

3.4.1 Period 2

Suppose that in period 1 MP_1 votes in line with his signal. That is $v_1 = Y$ if and only if $s_1 = g$. In Subsection 4.3 we identify under which condition this is a best response. Furthermore suppose that the *RF* has kept MP_1 . Now consider the voting behavior of MP_1 in period 2.

By assumption, y_2 yields G if and only if y_1 is good. That is, a competent leader always designs

a good project, and an incompetent leader always designs a bad project. This feature of the model has direct implications for the information MP_1 can infer from the signals known in period 2. MP_1 's posterior beliefs about the competence of the leader, conditional on s_1 and s_2 , are:

$$\begin{aligned}\hat{\alpha}(s_1 = g, s_2 = g) &= \left[\frac{\alpha [\lambda + (1 - \lambda) \frac{1}{4}]}{\alpha [\lambda + (1 - \lambda) \frac{1}{4}] + (1 - \alpha)(1 - \lambda) \frac{1}{4}} \right] > \alpha \\ \hat{\alpha}(s_1 = g, s_2 = b) &= \alpha \\ \hat{\alpha}(s_1 = b, s_2 = g) &= \alpha \\ \hat{\alpha}(s_1 = b, s_2 = b) &= \left[\frac{\alpha(1 - \lambda) \frac{1}{4}}{\alpha(1 - \lambda) \frac{1}{4} + (1 - \alpha) [\lambda + (1 - \lambda) \frac{1}{4}]} \right] < \alpha.\end{aligned}\tag{3.1}$$

Equation (3.1) shows that two positive signals increase the probability that the leader is competent, whereas two negative signals decrease the probability that the leader is competent. Two opposite signals cancel each other out. The reason is that $s_1 \neq s_2$ imply that MP_1 is not competent. A competent MP_1 receives the same signal on y_2 as on y_1 , since the two policies are of the same quality. The signals of an incompetent MP_1 do not contain information, so that $\hat{\alpha}(s_1 \neq s_2) = \alpha$. In conjunction with our assumption that $\alpha G - (1 - \alpha) B < 0$, (3.1) implies that if $s_1 = b$, it is always optimal for MP_1 to vote against implementation, $v_2 = N$. Likewise, if $s_1 = g$ and $s_2 = b$ MP_1 votes $v_2 = N$. Suppose $s_1 = s_2 = g$. In that case, MP_1 votes $v_2 = Y$ if:

$$\hat{\alpha}(s_1 = g, s_2 = g) G - [1 - \hat{\alpha}(s_1 = g, s_2 = g)] B \geq 0.$$

This requires that λ is sufficiently high. As we assumed an environment in which the member of parliament responds to information (Assumption 1), this condition hold. Hence, if RF has kept MP_1 in period 2, the policy y_2 is implemented if and only if the signal set is $\{s_1 = g, s_2 = g\}$.

Now suppose that the RF has replaced MP_1 so that MP_2 represents parliament in period 2. From the implementation decision on y_1 , MP_2 can infer the signal MP_1 has received in period 1.

Consequently, MP_2 can base his vote decision on $\{s_1, s_2\}$. Two conflicting signals imply that at least one MP is incompetent. As MP_2 does not know which MP is incompetent, again the signals cancel out. Therefore, MP_2 votes $v_2 = Y$ if the signals set is $\{s_1 = g, s_2 = g\}$ provided that the signals are sufficiently informative. The incentive to vote $v_2 = Y$ with $s_1 = s_2 = g$ is stronger for MP_2 than for MP_1 . The reason is that the probability that y_2 is good is higher when two members receive one good signal than when MP_1 receives two good signals. Lemma 1 summarizes the voting behavior in period 2.

Lemma 3.1 *Suppose $\alpha G - (1 - \alpha) B < 0$. Then, in period 2 the MP votes in favor of y_2 if and only if the signal set is $\{s_1 = g, s_2 = g\}$.*

3.4.2 Replacement decision

Lemma 3.1 implies that the replacement decision is only relevant if $s_1 = g$. If $s_1 = b$, then both MP_1 and MP_2 prefer to vote $v_2 = N$. Therefore, suppose that $s_1 = g$. Replacing MP_1 yields an expected payoff to the RF equal to:

$$\widehat{\alpha}(s_1 = g) \left[\lambda + (1 - \lambda) \frac{1}{2} \right] G - [1 - \widehat{\alpha}(s_1 = g)] (1 - \lambda) \frac{1}{2} B \quad (3.2)$$

with $\widehat{\alpha}(s_1 = g) = \Pr(\alpha \mid s_1 = g) = \left[\frac{\alpha [\lambda + (1 - \lambda) \frac{1}{2}]}{\alpha [\lambda + (1 - \lambda) \frac{1}{2}] + (1 - \alpha)(1 - \lambda) \frac{1}{2}} \right] > \alpha$.

The likelihood that a good project will be implemented equals the probability that the leader is competent, conditional on $s_1 = g$, times the probability that MP_2 receives signal $s_2 = g$. The first term of (3.2) denotes this. Implementation of a bad project requires that both the leader and MP_2 are incompetent, and that MP_2 receives signal $s_2 = g$. This is denoted by the second term of (3.2).

Keeping MP_1 yields an expected payoff to the RF equal to:

$$\hat{\lambda}(s_1 = g)G - [1 - \hat{\alpha}(s_1 = g)] \frac{1}{2}B + [\hat{\alpha}(s_1 = g) - \hat{\lambda}(s_1 = g)] \frac{1}{2}G \quad (3.3)$$

with $\hat{\lambda}(s_1 = g) = \Pr(\lambda \mid s_1 = g) = \left[\frac{\alpha\lambda}{\alpha[\lambda + (1 - \lambda)\frac{1}{2}] + (1 - \alpha)(1 - \lambda)\frac{1}{2}} \right]$.

To understand (3.3), notice that with $s_1 = g$ there are three possible situations in period 2. First, MP_1 and the leader are both competent. This situation occurs with probability $\hat{\lambda}(s_1 = g)$. Then, the good policy y_2 is always implemented (first term). Second, the leader and MP_1 are both incompetent. This occurs with probability $1 - \hat{\alpha}(s_1 = g)$. In that situation, the bad policy y_2 is implemented with probability $\frac{1}{2}$ (second term). Finally, with probability $\hat{\alpha}(s_1 = g) - \hat{\lambda}(s_1 = g)$ the leader is competent while MP_1 is incompetent. Then y_2 is also implemented with probability $\frac{1}{2}$ (third term). When $s_1 = g$, it is not possible that MP_1 is competent while the leader is incompetent.

A comparison between (3.2) and (3.3) leads to the main result of this section.

Proposition 3.1 *Suppose Lemma 1 holds. Then, always replacing MP_1 is a best response for the RF .*

Proof. See the Appendix. □

To understand Proposition 3.1, notice that keeping MP_1 would amount to letting the same member to evaluate the same leader twice. The probability that a single member is competent is lower than the probability that one out of two members is competent. Therefore, the probability that one member makes a mistake twice exceeds the probability that two independent members make the same mistake. As a result, replacing MP_1 reduces the risk that a bad policy is implemented. In period 2, RF wants a fresh view on the leader's policy.

3.4.3 *Period 1*

So far we have assumed that in period 1 MP_1 votes in line with his signal. Let us now check whether this is a best response. Our assumption that $\alpha G - (1 - \alpha) B < 0$ implies that without further information about the project, the MP prefers the status quo. Hence, $s_1 = b$ induces MP_1 to vote $v_1 = N$. Thus, what matters is if $s_1 = g$ leads MP_1 to vote $v_1 = Y$. Suppose $s_1 = g$. Supporting y_1 is in the public interest if:

$$\hat{\alpha}(s_1 = g) G - [1 - \hat{\alpha}(s_1 = g)] B \geq 0. \quad (3.4)$$

This condition is satisfied given the assumption that λ is sufficiently high.

3.4.4 *Results if $\alpha G - (1 - \alpha) B \geq 0$*

The analysis of the case in which $\alpha G - (1 - \alpha) B \geq 0$ is analogous to the analysis above. In that case, y_2 is not implemented if and only if the signal set is $\{s_1 = b, s_2 = b\}$. In period 1, MP_1 follows his signal. When MP_1 receives $s_1 = b$ and votes against y_1 , he is replaced. Again the reason is that replacement lowers the probability of a wrong decision. Now replacement reduces the risk that a good policy is not implemented. Concluding, RF benefits from replacing MP_1 in either case. This is because two signals received by one member are correlated. In the proof of Proposition 1, we formally derive the replacement decision in each case. In the next section, we consider the replacement decision in a centralized party.

3.5 Centralized party

In this section, we discuss an equilibrium of the game in which the leader takes the replacement decision. Again we solve the model by backward induction. Again we first consider the case that

$\alpha G - (1 - \alpha)B < 0$. At the end of the section, we discuss the other case.

3.5.1 *Period 2*

The analysis of period 2 is the same as in the previous section. For this reason, we only summarize the results of period 2. Suppose MP_1 votes in line with his signal in period 1. When MP_1 is not replaced, the posterior beliefs about the competence of the leader are again denoted by (3.1). From (3.1), we know that two opposite signals cancel out. As a result, y_2 is implemented if and only if $s_1 = s_2 = g$ given Assumption 1. If MP_1 is replaced, two opposite signals cancel out as only one signal is correct. Therefore, MP_2 supports y_2 only if $s_1 = s_2 = g$. Hence, Lemma 3.1 also summarizes the MP 's voting behavior in period 2 if the party is centralized.

3.5.2 *Replacement decision*

The replacement decision is only relevant if $s_1 = g$. Suppose $s_1 = g$. Contrary to the rank-and-file, the leader knows the quality of y_1 . As a result, the leader's posterior belief about the competence of MP_1 is different than the posterior belief of RF about MP_1 . Let us now discuss the incentive for each type of leader to replace MP_1 .

Suppose the leader is an idealist designing good policies. Consequently, it is in the public interest when y_2 is implemented. Implementation requires that $s_2 = g$. A competent MP receives $s_2 = g$ more often than an incompetent MP given that y_2 is good. Therefore, the leader does not replace MP_1 if MP_1 is competent with a higher probability than MP_2 . The leader's posterior belief about the competence of MP_1 given $v_1 = Y$ is denoted by:

$$\hat{\lambda}(s_1 = g) = \Pr(\lambda \mid s_1 = g, y_1 = \text{good}) = \left[\frac{\lambda}{\lambda + (1 - \lambda)\frac{1}{2}} \right] > \lambda. \quad (3.5)$$

An idealistic leader thus keeps MP_1 if $v_1 = Y$ to enhance the probability that y_2 is implemented.

Suppose the leader is an opportunist and competent. An opportunistic leader does not care about the public interest, but cares about his reputation of being competent. In equilibrium, the public knows that y_2 is implemented only if $s_2 = g$. Moreover, suppose that the public beliefs that MP_1 is not replaced if $v_1 = Y$. The expected payoff for the leader if MP_1 is replaced are then:

$$\left[\hat{\lambda} + (1 - \hat{\lambda}) \frac{1}{2} \right] \hat{\alpha} + (1 - \hat{\lambda}) \frac{1}{2} \alpha, \quad (3.6)$$

where $\hat{\lambda}$ is denoted by (3.5) and $\hat{\alpha} > \alpha$ is denoted by (3.1). The reputation of the leader improves if y_2 is implemented. If y_2 is not implemented, the public believes that the signal set is $\{s_1 = g, s_2 = b\}$. Then the two conflicting signals cancel out and the posterior belief about the leader's competence is equal to the prior. The expected payoff for the leader if MP_1 is replaced are equal to:

$$\left[\lambda + (1 - \lambda) \frac{1}{2} \right] \hat{\alpha} + (1 - \lambda) \frac{1}{2} \alpha \quad (3.7)$$

As replacement is not observable, the posterior beliefs about the competence of the leader are the same as in (3.6). However, the probability that y_2 is implemented depends on whether MP_1 is replaced. Keeping MP_1 is optimal if condition (3.6) $>$ (3.7). This is always satisfied. The reason is simple. Implementation of y_2 improves the reputation of the leader. A competent member supports the implementation of a good policy more often than an incompetent member. MP_1 is competent with a higher probability than MP_2 since MP_1 received the correct signal in period 1. Consequently, alike an idealistic leader, an opportunistic and competent leader has no incentive to replace MP_1 if $v_1 = Y$.

Finally, suppose the leader is incompetent. Along the same lines as above, the opportunistic

leader maximizes the probability that y_2 is implemented. The leader knows, however, that y_2 is bad. A bad policy may only be implemented in case the member is incompetent. From $v_1 = Y$, the leader infers that MP_1 is incompetent. The incompetent leader therefore does not replace MP_1 if $v_1 = Y$ since an incompetent member may fail in screening y_2 .

3.5.3 *Period 1*

In period 1, MP_1 votes $v_1 = N$ if $s_1 = b$ given that $\alpha G - (1 - \alpha)B < 0$. Suppose MP_1 receives $s_1 = g$. If MP_1 votes in favor of y_1 , he is not replaced. However, there is also no reason for the leader to replace MP_1 if $v_1 = N$. In that case, the leader believes that $s_1 = b$ and that y_2 is never implemented. As a consequence, MP_1 supports y_1 if condition (3.4) holds.

3.5.4 *Results if $\alpha G - (1 - \alpha)B \geq 0$*

Now consider the other case in which $\alpha G - (1 - \alpha)B \geq 0$. In that case, the policy y_2 is always implemented if $v_1 = Y$. If $v_1 = N$, implementation of y_2 requires $s_2 = g$. The replacement decision is therefore only relevant if $v_1 = N$. As above, an idealistic as well as an opportunistic leader replace MP_1 if this increases the probability that y_2 is implemented. This desire for implementation induces the leader to replace MP_1 if $v_1 = N$. When the leader designs good policies, MP_1 is incompetent if $v_1 = N$. As a result, replacing MP_1 is optimal as MP_2 discovers more often that y_2 is good. When the leader designs bad policies, the posterior belief about the competence of MP_1 increases if $v_1 = N$. However, implementation of a bad policy may happen only if the member is incompetent. An incompetent leader therefore replaces a competent parliamentarian to prevent that future the policy failure is also discovered. In period 1, MP_1 follows his signal given Assumption 1.

The following proposition summarizes the replacement strategy of the leader for the cases in

which replacement is relevant.

Proposition 3.2 *The leader strictly prefers not to replace MP_1 if $v_1 = Y$ and $\alpha G - (1 - \alpha)B < 0$ and to replace MP_1 if $v_1 = N$ and $\alpha G - (1 - \alpha)B \geq 0$.*

Proof. See the Appendix. □

Proposition 2 says that in a centralized party there is an incentive to keep a member who supports the leader's policy and to replace a member who votes against the policy. The leader selects a new member to increase the probability that y_2 is implemented. As a result, the leader selects members on the basis of their competence given the leader's own ability. When the leader designs good policies, he prefers a competent parliament. When the leader designs bad policies he prefers an incompetent parliament. An incapable leader therefore either keeps a dumb MP or replaces a smart MP .⁸ In the previous section, we showed that the rank-and-file selects a new member to obtain additional information about the quality of the second period policy. Let us now compare the selection of parliamentarians for the two governance forms.

3.6 Comparison

So far, we derived the selection of the member of parliament in period 2 for a centralized party and for a decentralized party. By assumption, the preferences of the RF are exactly in line with the public interest. The objectives of the leader, however, may conflict with the public interest. This raises the question whether a centralized candidate selection process is optimal from the societies' point of view. Therefore, suppose that RF may select a governance structure at the beginning

⁸In our model, a competent leader always designs a good policy while an incompetent leader always designs a bad policy. The replacement strategy of the leader does not change when a competent leader occasionally designs a bad policy and an incompetent leader sometimes designs a good policy. As long as the probability that y_2 is good (bad) increases sufficiently if y_1 is good (bad), a competent leader prefers a competent member while an incompetent leader prefers an incompetent member.

of period 1. RF compares the expected payoff of policies implemented under a centralized party structure with those implemented under a decentralized structure. The voting behavior of MP_1 and MP_2 does not depend on the governance structure. However, the replacement strategy of the leader may be different than the replacement strategy of RF . As a result, the expected benefits of policies implemented in period 2 may depend on the governance structure.

The replacement strategy of the leader and RF coincides if $\alpha G - (1 - \alpha)B \geq 0$. In that case, the leader and the RF benefit from replacing MP_1 if $v_1 = N$. The leader prefers a new member to enhance the probability that y_2 is implemented. The rank-and-file prefers a new member to reduce the risk of a wrong decision in period 2. As a consequence, the rank-and-file is indifferent between a centralized and a decentralized party structure if $\alpha G - (1 - \alpha)B \geq 0$.

The replacement strategies conflict, however, if $\alpha G - (1 - \alpha)B < 0$. In this case, the leader prefers to keep MP_1 if $v_1 = Y$. The reason is that MP_1 supports implementation of y_2 more often than MP_2 given $v_1 = Y$. However, RF prefers a new member to reduce the risk that a bad policy y_2 is implemented. Replacing MP_1 if $v_1 = Y$ is therefore in the public interest. In this case, a centralized party thus deteriorates the selection of parliamentarians and decreases the expected benefits of period 2. As a consequence, the rank-and-file prefers a decentralized party organization. The incentive to organize the party decentrally becomes stronger if the trust in the capacities of the leader decreases.

Proposition 3.3 *Suppose RF selects the governance structure of the party at the beginning of period 1. RF is indifferent between a centralized and a decentralized party when $\alpha G - (1 - \alpha)B \geq 0$. RF strictly prefers a decentralized party when $\alpha G - (1 - \alpha)B < 0$.*

3.7 Conclusions

In this chapter, we have compared the incentives of the leader and of the rank-and-file to replace a member of parliament. The leader replaces the member if this increases the likelihood of implementing the second period policy. A competent member only implements good policies whereas an incompetent member may implement a bad policy or may vote against a good policy. A competent leader therefore replaces an incompetent parliamentarian. By contrast, an incompetent leader replaces a competent parliamentarian to prevent that a future policy failure is discovered. It is interesting to note that this result may also hold in a different setting. For instance, in a firm an employee who knows that he has made mistakes may prefer that the evaluation of his tasks is done by someone who is incompetent.

The selection of a member of parliament has been analyzed in a very stylized set-up ignoring several elements. Let us discuss some limitations of the model. First of all, we assumed that the replacement decision is not observed by the public. As a result, the leader replaces a member if a new member is more likely to support implementation in the second period. What happens if replacement is observable? In that case, the reputation of the leader depends not only on the implementation decision but also on the replacement decision. This is because the reputation of the leader increases more if two members each support implementation in one period than if one member supports implementation in both periods. As a result, there may be an incentive for an opportunistic leader to replace a member who supports implementation in the first period. However, this comes at the cost of being detected as an opportunist, since an idealistic leader keeps the member in case of implementation. Moreover, as we have shown, a member who supports implementation in period 1 is more likely than a new member to support implementation in period 2, irrespective of the quality of the policies. Therefore, with observable replacement there is still a

strong incentive for an opportunistic leader to keep a member who supports implementation and to replace a critical member of parliament.

Second, we considered members of parliament as truly concerned about the societies' interest. As a result, a member responds to negative information about the leader's policy. Clearly, a parliamentarian may also have career concerns. A member of parliament who cares about his position may ignore private information and vote such that he is not replaced. Selection then not only refers to the ability of a parliamentarian but also to his motivation. Third, we have abstracted from electoral competition between different parties. Elections enable voters to select an other party with a new leader and a new member of parliament. If the voters do not observe the replacement decision, our analysis remains unaffected. The outcome of the elections then only affects when the replacement decision matters but does not affect the incentive to replace a member. When replacement is observable, an idealistic leader may try to signal his motivation through the replacement decision. For instance, an idealist may keep a critical member if this increases his reelection chances. Finally, an interesting extension would be to allow the rank-and-file to replace the leader. The leader may then prefer to select incompetent parliamentarians to prevent that a member of parliament becomes the new leader.⁹ These extensions are left for further research.

⁹This relates to the analysis of Friebel and Raith (2004). They show that managers may have an incentive to select incompetent subordinates when there is a threat that a subordinate takes over the manager's position.

Appendix: Turnover data

We compared the composition of the Dutch parliament a day before and a day after each election since 1948. To control for electoral fluctuations, we calculated the turnover rate for each party in the following way. Suppose party A obtained 30 seats during an election compared to 25 seats during the last election. In that case, the maximum number of legislators party A can keep is equal to 25. Then the percentage of legislative turnover due to party A is described by:

$$\left[\frac{\text{number of new legislators for party A} - \text{increase in seats}}{\text{number of seats before elections}} \right] * 100\%.$$

For instance, if there are 10 new legislators for party A then the turnover percentage is equal to $\left[\frac{10-5}{25} \right] * 100\% = 20\%$. Now suppose party A obtained less seats during an election compared to the last election. Then the maximum number of legislators party A can keep is equal to the number of seats after the election. Then the percentage of legislative turnover due to party A is described by:

$$\left[\frac{\text{number of new legislators for party A}}{\text{number of seats after elections}} \right] * 100\%.$$

Figure 1 shows the turnover rate for each of the three major parties. Figure 2 shows the average turnover rate.

Figure 1: Turnover per party

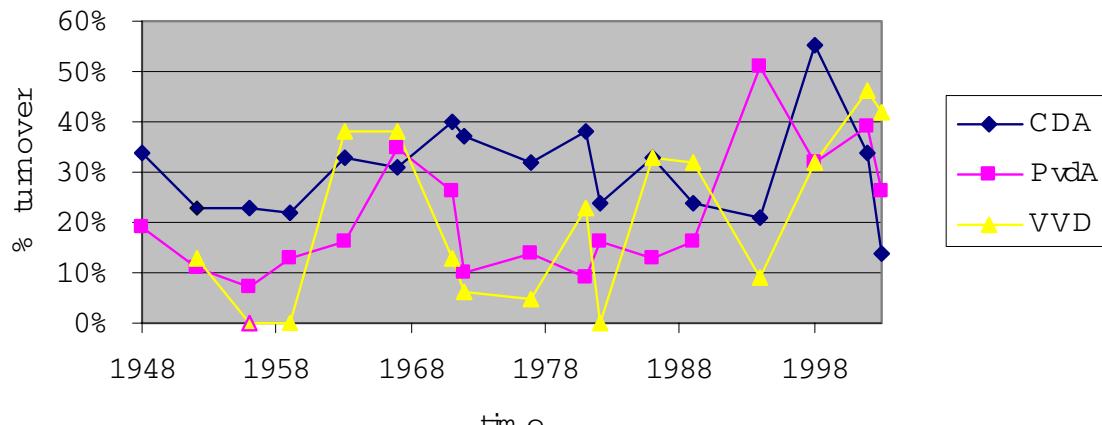
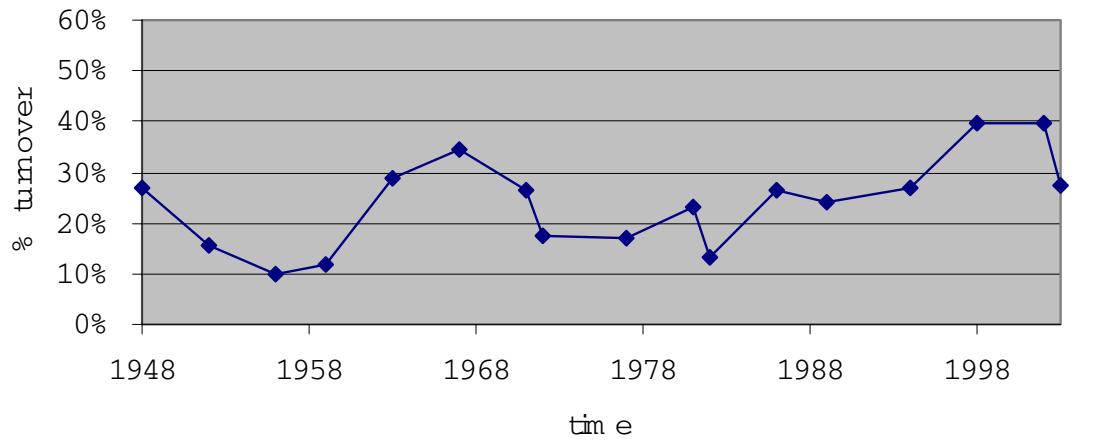


Figure 2: Average turnover



Proof. Proposition 1

We have to proof that always replacing MP_1 is a best respond for the RF . Suppose

$\alpha G - (1 - \alpha)B < 0$. In this case, the replacement decision is only relevant if $s_1 = g$. Suppose $s_1 = g$. Replacing is optimal if condition (3.2) \geq (3.3). Rewriting yields that this holds if $\lambda [\hat{\alpha}G + (1 - \hat{\alpha})B] \geq \hat{\lambda}G$. Inserting $\hat{\alpha}$ and $\hat{\lambda}$ denoted by (3.2) and (3.3) yields that replacement is optimal if $0 \geq \alpha G - (1 - \alpha)B$.

Suppose $\alpha G - (1 - \alpha)B \geq 0$. Replacement is now only relevant if $s_1 = b$. Suppose $s_1 = b$. Replacing MP_1 yields an expected payoff to the *RF* equal to:

$$\hat{\alpha}(s_1 = b) \left[\lambda + (1 - \lambda) \frac{1}{2} \right] G - [1 - \hat{\alpha}(s_1 = b)] (1 - \lambda) \frac{1}{2} B$$

$$\text{with } \hat{\alpha}(s_1 = b) = \Pr(\alpha \mid s_1 = b) = \left[\frac{\alpha(1 - \lambda) \frac{1}{2}}{\alpha(1 - \lambda) \frac{1}{2} + (1 - \alpha) [\lambda + (1 - \lambda) \frac{1}{2}]} \right].$$

Keeping MP_1 yields an expected payoff to the *RF* equal to:

$$\hat{\alpha}(s_1 = b) \frac{1}{2} G - \left[1 - \hat{\alpha}(s_1 = b) - \hat{\lambda}(s_1 = b) \right] \frac{1}{2} B$$

$$\text{with } \hat{\lambda}(s_1 = b) = \Pr(\lambda \mid s_1 = b) = \left[\frac{(1 - \alpha)\lambda}{\alpha(1 - \lambda) \frac{1}{2} + (1 - \alpha) [\lambda + (1 - \lambda) \frac{1}{2}]} \right].$$

When the leader is competent, MP_1 is incompetent. Then y_2 is implemented with probability $\frac{1}{2}$ (first term). When MP_1 is competent, the leader is incompetent. In that case, MP_1 receives $s_2 = b$ and votes $v_2 = N$. Finally, it is also possible that both MP_1 and the leader are incompetent. Then y_2 is implemented with probability $\frac{1}{2}$ (second term). Comparing the expected payoff if MP_1 is replaced and if he is not replaced yields that replacement is optimal if $\lambda [\hat{\alpha}G + (1 - \hat{\alpha})B] \geq \hat{\lambda}B$. Inserting $\hat{\alpha}$ and $\hat{\lambda}$ yields that replacement is optimal if $\alpha G - (1 - \alpha)B \geq 0$. \square

Proof. Proposition 2

We have to proof that the leader replaces MP_1 if and only if $v_1 = N$. In the main text, we showed that the replacement decision is redundant if $v_1 = Y$ and $\alpha G - (1 - \alpha)B \geq 0$ and if

$\alpha G - (1 - \alpha)B < 0$ and $v_1 = N$.

Suppose $v_1 = Y$ and $\alpha G - (1 - \alpha)B < 0$. Suppose the leader is competent. As a result, y_2 will be good as well. An idealistic leader then does not replace MP_1 if:

$$\begin{aligned} \left[\hat{\lambda} + (1 - \hat{\lambda}) \frac{1}{2} \right] G &\geq \left[\lambda + (1 - \lambda) \frac{1}{2} \right] G \\ \implies \hat{\lambda} &> \lambda, \end{aligned}$$

which always hold as $\hat{\lambda} = \left[\frac{\lambda}{\lambda + (1 - \lambda) \frac{1}{2}} \right] > \lambda$. An opportunistic leader then does not replace MP_1 member if:

$$\begin{aligned} \left[\hat{\lambda} + (1 - \hat{\lambda}) \frac{1}{2} \right] \hat{\alpha}_{v_t=Y} + (1 - \hat{\lambda}) \frac{1}{2} \hat{\alpha}_{v_1=Y, v_2=N} &\geq \left[\lambda + (1 - \lambda) \frac{1}{2} \right] \hat{\alpha}_{v_t=Y} + (1 - \lambda) \frac{1}{2} \hat{\alpha}_{v_1=Y, v_2=N} \\ \implies (\hat{\lambda} - \lambda) (\hat{\alpha}_{v_t=Y} - \hat{\alpha}_{v_1=Y, v_2=N}) &\geq 0. \end{aligned}$$

As showed in the main text, $\hat{\alpha}_{v_t=Y} > \hat{\alpha}_{v_1=Y, v_2=N} = \alpha$. The reputation of the leader improves if parliament votes in favor of rather than against y_2 . Hence, the condition is always satisfied. Suppose the leader is incompetent. As $v_1 = Y$, the leader infers that MP_1 is incompetent. The opportunistic leader then does not replace MP_1 if:

$$\begin{aligned} \frac{1}{2} \hat{\alpha}_{v_t=Y} + \frac{1}{2} \hat{\alpha}_{v_1=Y, v_2=N} &\geq (1 - \lambda) \frac{1}{2} \hat{\alpha}_{v_t=Y} + \left[\lambda + (1 - \lambda) \frac{1}{2} \right] \hat{\alpha}_{v_1=Y, v_2=N} \\ \implies \lambda (\hat{\alpha}_{v_t=Y} - \hat{\alpha}_{v_1=Y, v_2=N}) &\geq 0. \end{aligned}$$

Suppose $v_1 = N$ and $\alpha G - (1 - \alpha)B \geq 0$. Suppose the leader is competent and an idealist. Then he replaces MP_1 if:

$$\left[\lambda + (1 - \lambda) \frac{1}{2} \right] G \geq \frac{1}{2} G,$$

which always hold. Suppose the leader is competent and an opportunist. Then the leader replaces MP_1 if:

$$\left\{ \left[\lambda + (1 - \lambda) \frac{1}{2} \right] - \frac{1}{2} \right\} (\hat{\alpha}_{v_1=N, v_2=Y} - \hat{\alpha}_{v_t=N}) \geq 0,$$

which holds. Finally, suppose the leader is incompetent. The opportunistic leader now replaces MP_1 if:

$$\begin{aligned} \left\{ (1 - \lambda) \frac{1}{2} - (1 - \hat{\lambda}) \frac{1}{2} \right\} \hat{\alpha}_{v_1=N, v_2=Y} &\geq \left\{ \left[\hat{\lambda} + (1 - \hat{\lambda}) \frac{1}{2} \right] - \left[\lambda + (1 - \lambda) \frac{1}{2} \right] \right\} \hat{\alpha}_{v_t=N} \\ \implies (\hat{\lambda} - \lambda) (\hat{\alpha}_{v_1=N, v_2=Y} - \hat{\alpha}_{v_t=N}) &\geq 0, \end{aligned}$$

which again holds. \square

Chapter 4

On the Composition of Committees

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4.1 Introduction

The consequences of many decisions are complicated and difficult to foresee. Often small groups - committees - assist decision makers with collecting information. Committees are used in all types of organizations. In U.S. Congress committees prepare and propose bills; in firms committees rather than single persons prepare major investment decisions; in universities committees have much say in appointment decisions.

A common rationale for the existence of committees is that they lead to decisions which are based on more and/or better information. However, it is also well-known that committees may raise an agency problem. When the interests of committee members on the one hand and the interests of the decision maker or organization on the other hand do not perfectly align, committee members may have an incentive to manipulate or conceal information.

We argue that apart from manipulation and concealment of information committees may raise two other agency problems. First, committee members may lack incentives to collect information.

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Information is usually not for free. In most studies on committees, it is assumed rather than explained that committees are informed. Second, committee members must be motivated to collect the proper pieces of information. The reason for this agency problem is that the consequences of many decisions are multi-dimensional. For instance, the construction of a new railroad has economic consequences, consequences for the environment and social consequences. A committee thus faces the problem of determining which pieces of information to collect. Concerning this choice, the desires of the principal may deviate from those of the committee members.

This chapter is concerned with the role of committees in collective decision making processes in a world where agents must be motivated to collect information. We analyze a model in which a decision maker has to make a binary decision under uncertainty. The decision maker misses three pieces of information. A committee consisting of two members is tasked with the provision of information. Each member can collect at most one piece of information.

An important aspect of our model is that the nature of the three pieces of information differs. One piece of information is soft and can be manipulated if it is found. The other two pieces are hard information. If hard information is found, it can costlessly be verified. We make a distinction between hard and soft information because of its importance for the scope of communication. If information is hard, then the receiver of information does not need to assess its credibility. Since hard information can easily be verified, it is very likely that manipulation of information will be discovered. For example, when a committee member puts forward data that are collected by a well-known public agency, say the U.S. Census Bureau, it is relatively easy for the receiver of information to check the data. The effort of collecting hard information lies in finding sources. Once found, other agents can easily check the content. A wide variety of performance indicators (economic performance, school achievements, etc.) belong to this category of information. In case of hard

information, it is therefore not essential *who* transmits information. The facts speak for themselves.

If information is soft, the sender's identity is very important. Since soft information cannot easily be verified, the sender can manipulate it. Consequently, the receiver of soft information has to ask herself whether the sender had an incentive to manipulate it. As a typical example of soft information, one could think of knowledge gained from personal experience. Such information is not always less true or less important than formal data. However, it is easier to manipulate.²

Of course, we are aware that the distinction between soft information and hard information is not always clear cut. In reality, information may differ in the degree it can be manipulated. For simplicity, however, we will assume that information can either be manipulated or cannot be manipulated.³

Another important aspect of our model is that the decision maker cannot guide the behavior of committee members through monetary rewards. The reason why in our model committee members may collect and supply information is that they have an interest in the outcomes. These interests may differ from those of the decision maker. Our setting enables us to address two types of questions: First, how does the composition of a committee affect final decisions? Second, what is the optimal composition of a committee from the decision maker's point of view?

As to the question of the optimal composition of the committee, we show that the cost of information collection plays an important role. If this cost is low, then the preferences of the

²In the context of a bank providing loans to its customers, Stein (2002) also distinguishes between hard and soft information. Information on income required for a mortgage loan is denoted as hard, as it can easily be checked. Providing a loan for setting up a small firm requires information over whether the client is honest and hardworking. A bank employee dealing with the client for a long time potentially possesses this type of information. However, this information is difficult to transmit credible to the manager of the bank as it belongs to the personal experience of the bank employee. Stein uses the distinction between hard and soft information to explain the level of centralization of banks.

³Dewatripont and Tirole (2004) recently developed a theory of communication in which the degree of verifiability of information is endogenous. The probability that information is hard increases in the effort level of both the sender and the receiver of information. The sender decides whether to exert effort in communication while the receiver decides whether to exert effort in attention.

committee members should be aligned to those of the decision maker. The committee should be composed of members with polarized preferences if the cost is high. The intuition behind this result is as follows. From the decision maker's point of view, there are two benefits of committee members with preferences similar to those of himself. First, recommendations based on soft information are most informative when the preferences of the members and the principal are consonant. This result is well-known from the cheap talk literature. In the context of the literature on committees, Krehbiel (1991) speaks about the outlier principle. Second, if the preferences of the committee members and the principal are consonant, then the committee members will collect the pieces of information the principal wants them to collect. The benefit of appointing preference outliers is that preference outliers have stronger incentives to collect information. For example, a member who is strongly biased against a project has strong incentives to search for information that may convince the decision maker that the project should not be implemented.⁴ If the cost of acquiring information is high, then members with moderate preferences will not collect information. A related result is that if the costs of collecting information is high, only hard information will be collected. The reason is that preference outliers have incentives to manipulate soft information. Manipulation precludes communication between the principal and the members. Consequently, outliers do not collect soft information. Hard information cannot be manipulated by definition.

We believe that our results improve our understanding of the role of committees in decision-making processes. On the basis of our results we can categorize alternative types of committees. At one extreme, we have the advocacy committee. An advocacy committee consists of a strong proponent and a fierce opponent of the project. The former will try to find hard evidence supporting the project, while the latter will try to find hard evidence against the project. As a rule, advocacy

⁴Interest groups can be seen as preference outliers. Interest groups provide information through, for example, lobbying, see among others Potters and van Winden (1992).

committees do not speak with one voice. At the other extreme, we have the moderate committee. The members of a moderate committee have preferences which are approximately congruent with those of the principal. Transmission of soft information between committee members and the decision maker is possible. Moderates may also search for hard information. Unlike in advocacy committees, in moderate committees there is not a natural division of tasks. Tasks have to be coordinated.

Both archetypes of committees, as well as mixed forms, can be found in organizations. Krehbiel (1990) finds that most legislative committees in U.S. Congress consist of members with moderate preferences. He finds preference outliers in some committees, however. We identify the conditions under which the various types of committees are desirable from the point of view of the median floor member.

This chapter is organized as follows. The next section discusses the literature related to this chapter. Section 4.3 describes the model. Section 4.4 presents equilibria of our game first under the assumption that information is hard, and next under the assumption that information is soft. Section 4.5 examines what kind of information is provided if members can decide to search for either hard or soft information. In Section 4.6, we examine the consequences of our results for the composition of committees and contrast these results with the related literature. Section 4.7 concludes.

4.2 Related Literature

This chapter closely relates to the literature on the composition of committees in U.S. Congress. There are two strands in this literature. First, the informational theory argues that preferences of

committee members should be close to the preferences of the median floor member.⁵ The principal (e.g. Congress) can prevent manipulation of information by appointing members with moderate preferences.⁶ Second, the distributive theory argues that committees are composed of preference outliers.⁷ Each member of Congress tries to defend the interest of the constituency he represents. As different constituents have different interests, members are willing to trade off less influence in one policy area for more influence in another. Each representative then applies for a committee that potentially benefits his constituency most. On the basis of these considerations, Shepsle and Weingast (1987) argue that committees consist of "homogeneous high demanders".

As the informational theory, this chapter also examines how the committee system can improve the quality of decision-making through the provision of information. However, one focus in this literature is on how rules and procedures affect the behavior of committees. For instance, Gilligan and Krehbiel (1989) show that using a closed rule, allocating the power to propose and amend policies to committees at the expense of Congress, leads to most informative decisions.⁸ This chapter abstracts from the institutional setting of the committee system and focuses solely on the acquisition of different kinds of information. Thereby, we provide a rationale for outliers, different than presented in the distributive theory, which stems from the cost of collecting information.

Empirical research shows that in most committees in U.S. Congress moderates are found while sometimes preference outliers are found.⁹ This chapter provides the conditions under which dif-

⁵See the papers by Gilligan and Krehbiel (1987, 1989, 1990, 1997).

⁶In their 1990 paper, Gilligan and Krehbiel argue that preference outliers may have lower costs of collecting information. This provides a rationale for using members with polarized preferences. In our paper, the cost of searching is equal for all agents. However, biased agents have a stronger interest in the decision to be made. Hence, rather than the costs the benefits of searching differ among agents.

⁷The major references are Shepsle and Weingast (1987) and Weingast and Marshall (1988).

⁸More recently, Krishna and Morgan (2001a) reexamines the informational efficiency of rules in the committee system. Krehbiel (2001) responds to this contribution of Krishna and Morgan.

⁹See for example Krehbiel (1990). Londregan and Snyder (1994) show, using a different technique of measuring outliers than Krehbiel, that about one-third of the committees are composed of outliers. Groseclose (1994) provides an overview of the empirical literature on the composition of committees in U.S. Congress.

ferent types of committee members are optimal. As in the informational theory, there is a clear incentive for the principal to use like-minded committee members if the costs of searching are low. However, members with moderate preferences have no incentive to collect information if the costs of searching are high. Then it is optimal to make use of preference outliers.

Furthermore, this chapter makes use of several elements employed in other papers. The collection of information is delegated to committees.¹⁰ The principal retains the formal authority to make the decision.¹¹ However, by providing information committee members essentially control the decision (Aghion and Tirole, 1997). Taking this into account, the principal wants to guide the actions of the committee members.

In this chapter, we consider the collection of several pieces of information, verifiable as well as non-verifiable. As far as the latter is concerned, communication between the members and the principal plays an important role. Crawford and Sobel (1982) show that perfect communication of non-verifiable information requires that the preferences of the players are congruent. Using a model of soft information, Krishna and Morgan (2001b) study information transmission between a principal and two perfectly and identically informed experts. They focus on the aggregation and extraction of soft information rather than on the collection of information. In the same spirit, Ottaviani and Sorensen (2001) examine how the order of speech affects the extraction of information within committees. Li, Rosen and Suen (2001) show that voting procedures may improve the extraction of information when committee members have conflicting preferences.¹²

Dur and Swank (2001) study the selection of an advisor in a situation in which the collection

¹⁰See for an excellent overview of theories of delegation Bendor, Glazer and Hammond (2001).

¹¹Li and Suen (2004) examine the decision to delegate the power to decide to informed but biased experts. They show that there is a trade off between the value and the influence of an expert. Delegating the decision to an informed expert who is more strongly biased than the decision maker does not alter the prior decision that often. Therefore, such an expert is of little informational value. However, exactly because the expert changes the prior decision only if the evidence is overwhelming, a wide range of equally but less extreme biased decision makers are willing to give this expert the power to decide.

¹²Piketty (1999) provides an overview of the information-aggregation literature.

of information is costly. As in this chapter, the collection of soft information requires that the preferences of the advisor and the principal are congruent. An unbiased advisor, however, has strong incentives to collect soft information since information often affects his recommendation. This chapter focuses on the collection of information through the use of committees. Committees may also facilitate the coordination of information collection if the consequences of the decision are multi-dimensional.

Finally, this chapter relates to the paper of Dewatripont and Tirole (1999). They show that using two competing agents defending their own special interest improves the quality of decision-making compared to using a single information-collecting agent. They thus provide a rationale for advocacy. This chapter deviates from the paper by Dewatripont and Tirole in two respects. First, Dewatripont and Tirole assume that agents are ideologically neutral and can be induced to search through monetary decision-based rewards. We focus on situations in which committee members collect information solely because they have a non-monetary interest in the outcomes. Second, in Dewatripont and Tirole agents can only collect hard information, while in our model agents may also collect soft information.

4.3 The Model

4.3.1 *Policies*

A decision maker, for example the median voter of Congress, has to make a decision about a project, X . There are two alternatives: implementation ($X = 1$) and status quo ($X = 0$). The consequences of the project are surrounded by uncertainty. The decision maker prefers $X = 1$ to

$X = 0$ if

$$p + \theta_A + \theta_B + \mu > 0. \quad (4.1)$$

The parameter θ_A is equal to $-z$ with probability $\frac{1}{2}$ and 0 with probability $\frac{1}{2}$. The parameter θ_B equals z with probability $\frac{1}{2}$ and 0 with probability $\frac{1}{2}$. The parameter μ is uniformly distributed over the interval $[-h, h]$. The reason for the asymmetry among the parameters is as follows. As we will see below, information about μ cannot be verified (it captures soft information). Communication about μ occurs through recommendations. By assuming that μ is distributed according to a continuous function, we allow for the possibility of imperfect communication. Information about θ_A and θ_B cannot be manipulated by assumption (it captures hard information). We assume for simplicity that both are binary parameters. The three parameters are independently distributed. The parameter p denotes the expected benefit of the project from the decision maker's point of view. It is meant to capture the decision maker's political attitude towards the project. We assume that $p < 0$.¹³ The implication is that without information about the stochastic terms the decision maker would choose $X = 0$.

4.3.2 *Information Collection*

The decision maker constitutes a committee of two agents to learn the consequences of the project. Each agent can learn the value of at most one stochastic term. Formally, agent i , $i \in \{1, 2\}$, selects $L_i \in \{\theta_A, \theta_B, \mu, 0\}$, where $L_i = 0$ denotes that agent i chooses to learn nothing. To learn the value of a stochastic term, an agent must incur disutility of effort K . When agent i selects $L_i = \theta_A$ or $L_i = \theta_B$, he learns its value with certainty. We assume that θ_A and θ_B contain hard

¹³The analysis of the case that $p > 0$ is analogous to the case analyzed below.

information, in the sense that if agent i finds that $\theta_A = -z$ or $\theta_B = z$, he can credibly communicate this information to anybody. Discovering $\theta_A = -z$ can be interpreted as finding an argument for maintaining the status quo. Likewise, discovering $\theta_B = z$ can be interpreted as finding an argument for implementation. Though information about θ_A and θ_B cannot be forged, it can be concealed.

When agent i selects $L_i = \mu$ and incurs K , he receives a private signal s_i about μ with probability π and learns nothing with probability $1 - \pi$. The signal s_i is fully informative: $s_i = \mu$. For simplicity, we assume that whether or not an agent has received a signal is common knowledge.¹⁴ However, the content of the signal is only known to the agent. The signal contains soft information, that is information that cannot be verified. If the agent has received a signal about μ , then he makes a recommendation about the project. We allow for two recommendations: Y_i (agent i recommends $X = 1$) and N_i (agent i recommends $X = 0$). Formally, the message space of agent i is $m_i \in \{0, -z, z, Y_i, N_i\}$.

4.3.3 The Committee

Like the decision maker, the agents are concerned with policy outcomes. Agent i prefers $X = 1$ to $X = 0$ if

$$a_i + \theta_A + \theta_B + \mu > 0, \quad (4.2)$$

where $a_i \in (-\infty, \infty)$ denotes agent i 's political attitude towards the project. Without loss of generality, we assume that $a_2 \geq a_1$. As to the nature of the a_i 's, we make two alternating assumptions. In the next two sections, the a_i 's are exogenous. In Section 4.6, the decision maker appoints members of the committee. We model this by allowing the decision maker to determine

¹⁴This assumption does not affect the results qualitatively.

the political attitude of each agent. Throughout, we assume that agents' decisions are voluntary. They cannot be forced to collect information. Nor can they be forced to collect information about a specific stochastic term.

4.3.4 *The Timing*

First, nature chooses θ_A , θ_B and μ . Next, the decision maker appoints two agents: a_1 and a_2 . Once appointed, each agent decides whether or not to examine an aspect of the project or to do nothing $L_i \in \{\theta_A, \theta_B, \mu, 0\}$. The two agents examine the project simultaneously.¹⁵ When the process of information collection has been completed, communication may take place between the agents on the one hand and the decision maker on the other hand. If found, hard information may be transmitted. In addition, agents who have received a signal about μ may make a recommendation. We assume that if agent i looks for hard information while agent j looks for soft information, agent j speaks after agent i .¹⁶ Finally, the decision maker chooses $X = 1$ or $X = 0$.

We have a game with asymmetric information. To solve the game we identify equilibria in which (1) players' strategies are optimal responses to each other given the players' beliefs about the stochastic terms, and (2) given this set of strategies, the beliefs about the stochastic terms are updated according to Bayes' Rule.

For reasons of brevity, we confine ourselves to analyzing two equilibria of the game. First, we identify the conditions under which a committee searches only for hard information. Second, we identify the conditions under which a committee only searches for soft information. We are

¹⁵This assumption is not innocuous. For example, in our model we allow for the possibility that $L_1 = L_2 = \mu$. If there were no time constraint, it would be always better to let agent i to examine μ first, and to let agent j to select L_j conditional on the findings of agent i .

¹⁶This assumption seems plausible. As it turns out later, a recommendation may depend on the realization of θ_A or θ_B . As a consequence, an agent may change his recommendation when new information becomes available. This assumption makes this possible. It should be emphasized that this assumption does not affect our results qualitatively.

aware of the existence of other equilibria. Appendix A discusses one of them. We believe that analyzing the conditions of the existence for the two prototypes suffices for understanding the main mechanism at work. The results of Appendix A confirm this belief.

Table of notation

$p < 0$	predisposition of the decision maker towards the project X
$a_i \in (-\infty, \infty)$	predisposition of agent i towards the project X
$\theta_A \in \{-z, 0\}$	stochastic term capturing verifiable information
$\theta_B \in \{0, z\}$	stochastic term capturing verifiable information
$\mu \in [-h, h]$	stochastic term capturing non-verifiable information
$L_i \in \{0, \theta_A, \theta_B, \mu\}$	action space of agent i
$m_i \in \{0, -z, z, Y_i, N_i\}$	message space of agent i
K	cost of learning the value of one stochastic term
π	probability that a signal $s = \mu$ is received given that K is incurred.

4.4 Hard and Soft information

This section consists of two parts. In the first part we examine the model of Section 4.3 under the assumption that $h = 0$. Thus each agent looks for hard information or does not look for information, $L_i \in \{\theta_A, \theta_B, 0\}$. In the second part, we assume that $z = 0$, so that the model revolves around soft information.

4.4.1 Hard Information ($h = 0$)

Proposition 4.1 *Suppose $p > -z$, $a_1 \leq -4K$ and $a_2 > 4K - z$.*

Then an equilibrium exists in which the strategies are defined as follows: (i) agent 1 examines θ_A and reports information, if found; (ii) agent 2 examines θ_B and reports information, if found; (iii) the DM chooses $X = 1$ if and only if he learns $\theta_B = z$ and infers that $\theta_A = 0$. The posterior probabilities are given by $\Pr(\theta_A = 0 | \text{no report } \theta_A = -z) = 1$ and $\Pr(\theta_B = 0 | \text{no report } \theta_B = z) = 1$.

Proof. The proofs in this chapter can be found in the Appendix. \square

Proposition 4.1 shows the conditions under which both pieces of hard information are collected. A necessary condition for committee members to collect information is that the principal responds to information. This requires that the principal is not too strongly opposed towards implementation, $p > -z$.

The second condition states that agent 1 has an incentive to search for the disadvantages of the project if he is sufficiently biased against the project. To understand why, first recall that the DM implements the project only if an argument in favor and no argument against the project is found. Consequently, finding evidence against the project only affects the decision if an argument in favor of the project is found. A committee member who is biased towards implementation is in favor of implementation if an argument in favor of the project is found. Hence, searching for arguments against the project requires a bias against the project. The agent has to be *sufficiently* biased, because investigation is costly.

The third condition shows that agent 2 has an incentive to search for the advantages of the project if he is sufficiently biased towards the project. However, if the costs are low then agent 2 may also have an incentive to search for the pros of the project if he is slightly opposed towards the project. The reason is simple. Suppose $K = 0$. Finding an argument in favor of the project convinces the DM to implement the project only if no argument against the project is found. An agent opposed to implementation also prefers $X = 1$ if an argument in favor is found an

no argument against is found. Hence, without costs of searching also agents biased against the project want to search for the advantages of the project. For high costs of searching, the benefits of searching exceed the costs of searching only for agents who are biased towards implementation.

There is thus a natural division of tasks if the committee is composed of a strong opponent and a strong proponent of the project.¹⁷ The former tries to find evidence against the project, while the latter tries to find evidence in favor of the project. Communication between the members to divide tasks is not necessary. Note that members with moderate preferences do not collect hard information if the costs of searching are high. Moderates do have an incentive to collect hard information if the costs of searching are low. Coordination of tasks is necessary, however, when the committee is composed of two members with moderate preferences.

4.4.2 *Soft Information ($z = 0$)*

Now the model revolves around soft information. The following proposition shows the conditions for the existence of an equilibrium in which both agents collect soft information.¹⁸

Proposition 4.2 *Suppose*

- i) $a_i \in [-h, h]$,
- ii) $p \in (\frac{1}{2}(a_2 - h), 0)$,
- iii) $p \leq \frac{1}{2}(a_1 + a_2)$,
- iv) $\frac{1}{4h}\pi(1 - \pi)(h + a_1)^2 + \frac{1}{4h}\pi^2(a_2 - a_1)^2 \geq K$, and
- v) $\frac{1}{4h}\pi(1 - \pi)(h + a_2)^2 \geq K$.

¹⁷Krehbiel (1990) calls these agents "bipolar outliers", on each side of the political spectrum there is an outlier.

¹⁸An equilibrium in which one agent collects soft information while the other agent refrains from searching may exist. This equilibrium, however, requires coordination. In addition, there exists an equilibrium in which the DM ignores all recommendations and neither of the agents examine μ . In this equilibrium, posterior beliefs are equal to the prior beliefs.

Then, an equilibrium exists in which the strategies are: (i) agent i examines μ ; he sends $m_i = 0$ if he has not received a signal; he sends $m_i = Y_i$ if he has found $s_i > -a_i$; he sends $m_i = N_i$ if he has found $s_i \leq -a_i$; (ii) the DM chooses $X = 1$ if he has received (Y_1, Y_2) , $(Y_1, 0)$, or $(0, Y_2)$, and chooses $X = 0$ otherwise.

The posterior beliefs are given by: $E(\mu | Y_1, Y_2) = E(\mu | Y_1, 0) = \frac{1}{2}(h - a_1)$; $E(\mu | N_1, N_2) = E(\mu | 0, N_2) = -\frac{1}{2}(h + a_2)$; $E(\mu | N_1, Y_2) = -\frac{1}{2}(a_1 + a_2)$; $E(\mu | 0, Y_2) = \frac{1}{2}(h - a_2)$; $E(\mu | N_1, 0) = -\frac{1}{2}(h + a_1)$ and $E(\mu | 0, 0) = 0$.

To understand Proposition 4.2 let us explain the conditions in it in detail. If condition i) were to be violated then agent i would always recommend either implementation or not implementation, irrespective of the information agent i collected. The second condition shows the combination of parameters for which the DM has an incentive to follow a recommendation for implementation made by agent 2. We refer to this condition as the condition for communication. If $a_2 \geq 2p + h$, then this condition is violated. The reason is that if agent 2 has a different predisposition than the DM, then for a range of μ agent 2's recommendation does not accord with the DM's interest. By following agent 2's recommendation, the DM runs the risk of making a wrong decision. If agent 2 is too strongly biased towards implementation, then the probability of making a wrong decision is so large that the DM prefers not to follow the recommendation. Notice that the condition for communication is always satisfied if agent 2 has the same preferences as the DM ($a_2 = p$) as $h > |p|$. With identical preferences, agent 2's recommendation is always in line with the DM's interest. Why is condition ii) written in terms of a_2 rather than in a_1 ? The reason is that if the DM follows the recommendation made by agent 2, he will certainly follow the recommendation made by agent 1. The inequality $p < 0$ implies that the DM has to be convinced to choose implementation. Since $a_2 \geq a_1$, agent 1 is less inclined than agent 2 to recommend $X = 1$. Hence, if the DM chooses

$X = 1$ when agent 2 recommends implementation, then the DM certainly chooses $X = 1$ when agent 1 recommends implementation.

The third condition implies that if agent 1 recommends not to implement the project whereas agent 2 recommends to implement it, then the DM prefers $X = 0$ to $X = 1$. As discussed above, the more the preferences of the DM and an information provider deviate, the higher is the probability that by following the recommendation the DM makes a wrong decision. For this reason, when two agents make conflicting recommendations, the DM will follow the agent whose preferences are closest to his own preferences.

Finally, consider the last two conditions in Proposition 4.2. These conditions give the incentive constraint to collect soft information for agent 1 and agent 2, respectively. Three features of these constraints are worth emphasizing. First, the higher is h , the less restrictive are the incentive constraints. Of course, the reason is that more uncertainty, that is an increase in h , increases the value of information. Second, the higher is a_i , the less restrictive are the incentive constraints. Agents who are more biased towards the project have a stronger incentive to collect information to convince the DM to implement the project. Recall, however, that soft information is only provided if the condition for communication is satisfied. This requires that the committee is composed of moderates. As a result, there exists no equilibrium in which soft information is provided if the costs of searching are high.¹⁹ The reason is as follows. On the one hand, a committee composed of preference outliers does not collect soft information since communication with the DM is not possible. On the other hand, although moderates can communicate with the DM, they are not sufficiently interested in the outcome to be willing to incur a high cost. In contrast, as seen in Section 4.4.1, preference outliers are willing to incur a high costs to collect hard information.

¹⁹Formally, if $K \geq \pi(1 - \pi) \left[\frac{(p+h)^2}{h} \right]$, then agents satisfying the condition for communication have no incentive to search for soft information.

The reason is that communication is not required for collecting hard information. Third, the benefits of collecting soft information depend on the probability of receiving a signal in case K is incurred. Proposition 4.2 shows under what conditions *both* agents collect soft information. Clearly, duplication of effort only makes sense if the chances of success are not too high. In case $\pi = 1$, an equilibrium in which both agents always decide to collect soft information does not exist.²⁰ One solution to this problem is a committee of one agent. Alternatively, the agents could agree that only one of them collects soft information. The latter solution requires coordination.

4.5 Who Collects What?

In this section, we relax the assumption that either $h = 0$ or $z = 0$. This extension increases the action space of each agent. Obviously, it also increases the number of equilibria of the game. However, as in the previous section, we do not identify all equilibria but restrict attention to two equilibria: The equilibrium in which each agent collects hard information, and the equilibrium in which each agent collects soft information.²¹

4.5.1 Hard Information

This subsection examines under what circumstances an equilibrium can occur in which agent 1 selects $L_1 = \theta_A$ and agent 2 selects $L_2 = \theta_B$. To this end, we identify the conditions under which neither agent has an incentive to deviate from his strategy given the other agent's strategy and the posterior beliefs. Proposition 4.1 gives the conditions for the same equilibrium when $h = 0$. Therefore, if the conditions in Proposition 4.1 are satisfied, then neither agent 1 nor agent 2 has

²⁰If $\pi \left[\frac{(h+a_1)^2}{4h} \right] \geq K$, then also an equilibrium in which both agents select $L_i = 0$ with probability one does not exist. Without coordination, then only an equilibrium in mixed strategies may exist.

²¹Appendix A discusses an equilibrium of the game in which one agent collects hard information and one agent collects soft information.

an incentive to select $L_i = 0$. As this section allows for the possibility that an agent collects soft information, there remains to show under what conditions neither agent has an incentive to select $L_i = \mu$.

In subsection 4.4.2, we have argued that an agent is only willing to collect soft information if communication is possible. Of course, this is also the case in the present model. The implication is that if the conditions for communication are violated, then neither agent will deviate from his strategy by collecting soft information. To identify the conditions for the equilibrium, we therefore begin with identifying the conditions under which communication is impossible. Lemma 4.1 gives the conditions under which no communication about μ is possible when one agent collects hard information and the other agent deviates by collecting soft information.

Lemma 4.1 *Suppose agent i has selected $L_i = \theta_A$ ($L_i = \theta_B$), agent j has selected $L_j = \mu$, $a_j \in [-h - \frac{1}{2}z, h + \frac{1}{2}z]$, $h > \frac{1}{2}z$, and agent j has received a signal. Then*

- (1) *in case $m_i = -z$ ($m_i = 0$), then the DM ignores the recommendation of agent j if $p \notin (\frac{1}{2}(a_j - h) + \frac{1}{4}z, 0)$.*
- (2) *in case $m_i = 0$ ($m_i = z$), then the DM ignores the recommendation of agent j if $p \notin (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$.*

Lemma 4.1 shows that the conditions for communication depend on whether or not hard evidence has been found. In case hard evidence has been found against implementation (or no evidence has been found in favor of implementation) the condition for communication is more restrictive than when both agents collect soft information (see condition *ii*) in Proposition 4.2). In case hard evidence has been found in favor of implementation (or no evidence has been found against implementation) the condition for communication becomes less restrictive than in Section

4.4.2. To understand these results first recall that the reason why the DM may follow advice is that advice may reduce the risk of making a wrong decision. The probability that, without advice, the DM makes a wrong decision depends on his predisposition (p). The higher is the absolute value of p , the lower is the probability that information about the stochastic terms affects his decision. For example, when the DM is strongly opposed against the project, it is unlikely that information about μ should affect his decision. The effect of hard information on the benefits of advice is similar to the effect of a change in the DM's predisposition. Hard evidence against implementation makes the DM more biased against the project (recall $p < 0$). A direct implication is that the benefits of soft information reduce. Hard evidence in favor of the project decreases the DM's bias against the project. Consequently, the probability that soft information affects the decision about the project rises. Hence, hard evidence against the project reduces the benefits of advice, whereas hard evidence in favor of the project increases the benefits of advice.

On the basis of Lemma 4.1 three situations can be distinguished. First, if both conditions hold, then neither agent can affect the DM's decision about the project by making a recommendation on the basis of μ . Then, together Proposition 4.1 and Lemma 4.1 give the conditions for an equilibrium in which both agents collect hard information. Loosely speaking, these conditions say that if a committee consists of outliers (with opposite preferences), so that communication about μ is not possible, then the two members of a committee will collect hard information. Secondly, if one of the two conditions is violated, then whether or not the DM follows an agent's recommendation depends on whether or not the other agent presents hard evidence. In this situation, an agent may prefer collecting soft information to collecting hard information. Finally, if both conditions in Lemma 4.1 are violated, then the DM will follow an agent's recommendation about the project irrespective of the evidence presented by the other agent. Clearly, the incentive to collect soft

information is stronger in the third situation than in the second situation. Proposition 4.3 gives the conditions under which each agent prefers collecting hard information to soft information in the third situation.²²

Proposition 4.3 *Suppose that the conditions presented in Proposition 4.1 hold and that both conditions in Lemma 4.1 are violated. Suppose furthermore that:*

- i) $(a_1 + z) \geq \frac{\pi}{h} \left[(h + a_1)^2 + \frac{1}{4}z^2 \right] + 2(1 - \pi)(a_1 + \frac{1}{2}z)$ and
- ii) $(a_2 + z) \geq \frac{\pi}{h} \left[(h + a_2)^2 + \frac{1}{4}z^2 \right].$

Then an equilibrium exists in which the strategies and the posterior probabilities are as described in Proposition 4.1.

It is easy to verify that the constraints presented in the above proposition become more restrictive if h increases. Furthermore, provided that $h > \frac{1}{4}$, the constraints become less restrictive, if z increases.²³ The intuition is straightforward. If h increases, then the degree of uncertainty increases, and hence the value of soft information increases. Consequently, a rise in h leads to stronger incentives to collect soft information. Likewise, an increase in z leads usually to stronger incentives to collect hard information.

4.5.2 Soft Information

Proposition 4.2 shows under what conditions an equilibrium exists in which each agent collects soft information when $z = 0$. When $z > 0$, it is no longer obvious that an agent prefers collecting soft information to collecting hard information. Therefore, there remains to show under what

²²The conditions for an equilibrium in which each agent collects hard information are weaker in the second situation (see Appendix B).

²³To understand why an increase in z weakens the incentive to collect soft information only if h is sufficiently large, recall that the value of soft information depends on the availability of hard evidence (see Lemma 4.1).

conditions each agent has no incentive to collect hard information, given that he prefers collecting soft information to collecting no information. As in Subsection 4.5.1, deviating may imply a situation where one agent collects hard information and one agent collects soft information. We have already argued that in such a situation the possibility of communication about μ depends on the availability of hard information.²⁴ Here we focus on the case that hard information does not affect the possibility of communication. This is implied by condition *i*) in Proposition 4.4.²⁵

Proposition 4.4 *Suppose that the conditions in Proposition 4.2 hold. Suppose furthermore that:*

- i) $p \in (\frac{1}{2}(a_2 - h) + \frac{1}{4}z, -\frac{1}{2}z]$,*
- ii) $(1 - \pi)(h + a_1)^2 + \pi(a_2 - a_1)^2 \geq \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z)$, and*
- iii) $(1 - \pi)(h + a_2)^2 \geq \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z)$.*

Then an equilibrium exists in which the strategies and the posterior probabilities are as described in Proposition 4.2.

From Section 4.4 we know that communication requires that the agents' predispositions towards the project do not deviate too much from the DM's predisposition. This is a necessary condition for an equilibrium in which both agents select $L_i = \mu$. In addition, agents must prefer collecting soft information to collecting hard information. In Proposition 4.4, these conditions are given by *ii) and iii).* It is easy to show that both conditions become more restrictive if z increases and/or h decreases. Hence, an equilibrium in which each agent collects soft information is more likely to occur when h is large and z is small. The intuition behind this result is as in the previous

²⁴Of course there is one difference. In this subsection, point of departure is a situation where both agents collect soft information. When one agent deviates by searching for hard evidence, but does not find evidence, the DM will believe that the agent has tried to find soft information. In the previous subsection, point of departure was a situation where agents collect hard information.

²⁵Thus, as in Subsection 4.5.1 several cases can be distinguished, depending on the possibility of communication and the effect of hard information on the decision about the project. The main text discusses the case that communication is possible whether or not hard evidence has been found. In addition, when no recommendation is made, hard information does not affect the decision about the project. See Appendix C for a description of all cases.

subsection. The value of soft information increases with h , while the value of hard information increases with z .

One can also verify that the conditions in Proposition 4.4 become more restrictive if a_1 and a_2 diverge. To understand why, suppose that agent 1 collects soft information. If $a_2 > a_1$, then agent 1 recommends $X = 0$ too often from agent's 2 point of view. From Lemma 4.1 we know that agent 2 can influence agent 1's recommendation by providing hard evidence. Hard evidence in favor of the project increases the probability that agent 1 recommends $X = 1$. Hence, by searching for the advantages of the project agent 2 may affect agent 1's recommendation in a favorable way.

4.6 Explaining the Composition of Committees

So far, we have analyzed how the composition of a committee affects the decision whether or not to collect information, and the decision which pieces of information to collect. The main motivation for doing this research was to shed light on the empirical literature on the composition of committees in U.S. Congress. In particular, Krehbiel (1990) finds that most committees are composed of members alike the median floor member (moderates). Only occasionally, committee members are outliers. In this section, we grant the DM with the power to appoint the committee members. We show that the results derived in the previous sections are consistent with Krehbiel's (1990) empirical findings. In the main text, we informally discuss our results on the composition of committees. In Appendix D we formally identify the conditions under which alternative types of committees exist.

Let us start with briefly recalling the main results of the two previous sections. First, in Section 4.4 we have shown that when the cost of acquiring information is sufficiently high, only agents who are sufficiently biased towards or against the project are willing to incur the cost of

collecting information. We have argued that the implication of this result is that a very high cost of collecting information excludes the possibility that soft information is collected. Second, in Section 4.5 we have shown that which pieces of information moderate committee members collect depends on the importance of the pieces of information. Committee members collect soft (hard) information, when the availability of soft (hard) information has an important effect on the benefits of projects.

From these results it is only a small step towards explaining the composition of committees. As discussed in the introduction, the decision maker (e.g. the Congress) faces three agency problems. First, committee members should put effort in information collection. Second, committee members should try to find the proper pieces of information. Third, committee members may manipulate certain pieces of information. If the cost of collecting pieces of information is low relative to the benefits, then the decision maker simply solves the agency problems by appointing agents who have the same preferences as himself. "Low" means here that the cost is at a level for which the decision maker himself would have collected information if he had the time and ability. The reason for this result is simple. There is no need for the decision maker to encourage agents to search for information, because the cost of searching is low. Moreover, when the agents have the same preferences as the decision maker, agents have neither incentives to manipulate information nor incentives to collect the wrong pieces of information. Basically, the former result is in line with existing literature on the composition of committees. More than a decade ago, Gilligan and Krehbiel (1990) already argued that the transmission of information requires that the provider and user of information have similar preferences. We add that, when the cost of information collection is low, this result still holds if information is verifiable, and, hence, communication is not a problem. This is because moderates optimally coordinate the collection of information. Outliers may neglect

important pieces of information. Moreover, we show that when a committee of moderates collect hard information tasks should be coordinated, and when a committee of outliers collect hard information, a natural division of tasks exist.

There remains to provide an explanation for the exceptions. As mentioned before, occasionally, committee members are outliers. In our model, a committee of outliers may exist when the decision maker wants agents to collect hard information. If the cost of information acquisition is low, then the decision maker is indifferent between a committee consisting of moderates and a committee consisting of outliers. Moderates as well as outliers prefer to collect both pieces of hard information. If the cost of information collection is high, then the decision maker has to rely on outliers. The reason is that outliers have stronger incentives to collect hard information than moderates. Hence, on the basis of our model, we expect that when the data suggest that when committees consist of outliers, members of such committees search for hard information.

Our analysis implies the following picture of the organization of U.S. Congress. As in the signaling literature, the desire of informed decisions is the rationale for the existence of jurisdictions and the committee system. Point of departure for our study is that jurisdictions differ in at least three respects. First, some jurisdictions are more important than others from the point of view of the legislature at large. Second, the cost of collecting information varies across jurisdictions. Finally, the nature of information varies across jurisdictions. We have argued that these three differences among jurisdictions imply differences among the composition of committees responsible for the jurisdictions. For a jurisdiction where the cost of information acquisition is high relative to the importance of the jurisdiction and information is hard, our model predicts that the committee will consist of outliers. Here, our predictions sharply deviate from the existing signaling literature on committees. Our model is more in line with this literature for jurisdictions where information

about policy consequences is soft. Then, transmission of information requires that the sender and receiver of information have similar preferences. When information is hard and the cost of acquiring is low, then our model does not yield clear predictions of the composition of committees.

All in all our analysis suggests that the composition of committees can be explained by (i) the cost of information collection relative to the importance of information and (ii) the type of information the legislation at large wants to be collected. Since we can identify the conditions under which committees consist of outliers or moderates, the predictions of our model can be tested.

4.7 Conclusions

In this chapter, we have analyzed a model to gain insight into the role of committees in collective decision-making processes in a world where agents must be motivated to collect the proper pieces of information. We have addressed two types of questions: First, how does the composition of a committee affect final decisions? Second, what is the optimal composition of a committee from the decision maker's point of view? We have shown that the answer to the second question depends to a large extent on the cost of information collection. If this cost is low, then it is likely that a committee will consist of members whose preferences are closely aligned to those of the decision maker. The advantage of members with similar preferences is that they collect the pieces of information the decision maker wants them to collect. Moreover, with similar preferences information will not be manipulated. If the cost of searching is high, then the committee is composed of members with polarized preferences. The reason is that outliers have strong incentives to search for information.

Admittedly, our results have been derived from a rather specific model. Some of the assumptions underlying our model are restrictive but innocuous. Other assumptions call for relaxation.

Let us first briefly discuss two examples of restrictive, but rather unimportant assumptions. To reduce straightforward algebra, we have assumed that the decision maker observes whether or not committee members receive a signal. Relaxing this assumption does not affect our results qualitatively. The main implication would be that the conditions for communication become more restrictive. Uncertainty about whether or not an information provider is informed jeopardizes communication. Another illustration of the fact that our model is specific is the way we have specified the two types of uncertainty. Soft information has been represented by a stochastic term being continuously distributed, while hard information has been represented by a discrete distribution function. Again our excuse is simplicity. On the one hand, to address the problem of communication a discrete distribution function would not suffice. On the other hand, discrete distribution functions facilitate the illumination of the agency problems in a situation where agents should collect hard information.

In spite of several restrictive assumptions, our model is still complicated in the sense that a full description of the equilibria is cumbersome. For this reason, we have analyzed the conditions for the existence of two prototypes of committees: a committee consisting of only outliers and a committee consisting of only moderates. We believe that by focusing on the two prototypes of committees, we have highlighted the features that make some types of committees more likely than others. Of course we are aware that mixed committees, for example a committee composed of one moderate and one outlier, may exist. Such a case is discussed in Appendix A. The analysis of that case confirms our conjecture that analyzing all cases would not yield new insights.

Less innocent are our assumptions about the institutional setting and the size of the committee. Our model revolves around one decision maker who can appoint committee members. Although one could think of this decision maker as the median floor member in Congress, it is important to

realize that political institutions are more complex. We have ignored the role political parties and the president play in the composition of committees. Concerning the size of the committee, we have simply assumed that a committee consists of two members even though it may be optimal to create a committee consisting of more members. We leave the question on the optimal size of the committee for future research. However, whatever the size of the committee, the mechanism illuminated by this chapter will also be relevant when the size of the committee is endogenous. As members must be motivated to collect the proper pieces of information, the cost of collecting information, the magnitudes of the various types of uncertainty, and the members' preferences will remain important.

Appendix

Proof of Proposition 4.1

Proof. To prove Proposition 4.1, we have to show that no player has an incentive to deviate from his strategy, and that priors are updated according to Bayes' Rule. The proof consists of four steps.

(1) If $\theta_A = -z$ ($\theta_B = z$), then agent 1 (2) reports this to the DM. Consequently, the DM can infer that $\theta_A = 0$ ($\theta_B = 0$) if agent 1 (2) does not report evidence.

(2) When the DM makes his decision about X , he has learned or has inferred the values of θ_A and θ_B . Since $-z < p < 0$, $X = 1$ yields a higher payoff than $X = 0$ if and only if $\theta_A = 0$ and $\theta_B = z$.

(3) Consider agent 1's strategy. Reporting $\theta_A = -z$ induces the DM to choose $X = 0$. Not reporting $\theta_A = -z$ induces the DM to choose $X = 1$ if $\theta_B = z$. Reporting thus yields a higher payoff than not reporting if $a_1 < 0$. It is easy to verify that in equilibrium, the expected payoff to agent 1 equals $\frac{1}{4}(a_1 + z) - K$. If $L_1 = 0$ agent 1 would not incur K and, obviously, would never report evidence. His expected payoff would become $\frac{1}{2}(a_1 + \frac{1}{2}z)$. Agent 1 thus selects $L_1 = \theta_A$ if $a_1 \leq -4K$. Note that if this restriction is satisfied, then agent 1 reports evidence, if found.

(4) Now consider agent 2's strategy. Reporting $\theta_B = z$ induces the DM to choose $X = 1$ if $\theta_A = 0$. Not reporting $\theta_B = z$ induces the DM to choose $X = 0$. Reporting thus yields a higher payoff than not reporting if $a_2 > -z$. It is easy to verify that in equilibrium, the expected payoff to agent 2 equals $\frac{1}{4}(a_2 + z) - K$. If $L_2 = 0$ agent 2 would not incur K and, obviously, would never report evidence. His expected payoff would be equal to zero. Agent 2 thus selects $L_2 = \theta_B$ if

$a_2 > 4K - z$. Note that if this restriction is satisfied, then agent 2 reports evidence, if found. \square

Proof of Proposition 4.2

Proof. To prove Proposition 4.2, we have to show that no player has an incentive to deviate from his strategy, and that priors are updated according to Bayes' Rule. The proof consists of four steps.

(1) The posterior beliefs directly follow from the agents' strategies and the assumption that $a_2 \geq a_1$.

(2) Consider agent 1's strategy. The DM's strategy implies that if agent 1 has received a signal, agent 1's recommendation is decisive: Y_1 (N_1) implies $X = 1$ ($X = 0$). Since agent 1 prefers $X = 1$ to $X = 0$ if $\mu > -a_1$, he sends Y_1 if $s_1 > -a_1$ and N_1 if $s_1 \leq -a_1$. Agent 1 selects $L_1 = \mu$, if $L_1 = \mu$ yields a higher expected payoff than $L_1 = 0$:

$$\begin{aligned} & \pi \left[\frac{h + a_1}{2h} \right] \left[a_1 + \frac{1}{2} (h - a_1) \right] + (1 - \pi) \pi \left[\frac{h + a_2}{2h} \right] \left[a_1 + \frac{1}{2} (h - a_2) \right] - K \\ & \geq \pi \left[\frac{h + a_2}{2h} \right] \left[a_1 + \frac{1}{2} (h - a_2) \right], \end{aligned}$$

implying $\frac{1}{4h} \pi (1 - \pi) (h + a_1)^2 + \frac{1}{4h} \pi^2 (a_2 - a_1)^2 \geq K$.

(3) Consider agent 2's strategy. The DM's strategy implies that agent 2's message is only decisive if agent 1 has not received a signal. Agent 2 prefers $X = 1$ to $X = 0$ if $\mu > -a_2$. Since the DM may follow his recommendation, it is optimal for agent 2 to send Y_2 if $s_2 > -a_2$ and N_2 if $s_2 \leq -a_2$. It is easy to verify that $L_2 = \mu$ yields a higher expected payoff than $L_2 = 0$ if $(1 - \pi) \pi \frac{1}{4h} (h + a_2)^2 \geq K$.

(4) Using the posterior beliefs, it is easy to verify that, given $p \in (\frac{1}{2} (a_2 - h), 0)$ and $p \leq$

$\frac{1}{2}(a_1 + a_2)$, the DM prefers $X = 1$ to $X = 0$ if he has received (Y_1, Y_2) , $(Y_1, 0)$, $(0, Y_2)$, and prefers $X = 0$ to $X = 1$ otherwise. \square

Proof of Lemma 4.1

Proof. We have to derive the conditions for communication if an agent deviates from an equilibrium in which $L_1 = \theta_A$ and $L_2 = \theta_B$ by collecting soft information. First note that agent j speaks after agent i if $L_j = \mu$ and $L_i = \theta_A$ ($L_i = \theta_B$).

Suppose $m_i = -z$ ($m_i = 0$). Then agent j recommends $X = 1$ if $s_j > \frac{1}{2}z - a_j$. Given $h > \frac{1}{2}z$, the posterior beliefs are given by $E(\mu \mid m_j = Y, m_i = -z \ (m_i = 0)) = \frac{1}{2}(h + \frac{1}{2}z - a_j)$ and $E(\mu \mid m_j = N, m_i = -z \ (m_i = 0)) = -\frac{1}{2}(h - \frac{1}{2}z + a_j)$. The DM follows agent j 's recommendation if $p - \frac{1}{2}z + \frac{1}{2}(h + \frac{1}{2}z - a_j) > 0$ and $p - \frac{1}{2}z - \frac{1}{2}(h - \frac{1}{2}z + a_j) \leq 0$. The latter condition is always satisfied since $p < 0$. Hence, in case $m_i = -z$ ($m_i = 0$), the DM ignores agent j 's advice if $p \notin (\frac{1}{2}(a_j - h) + \frac{1}{4}z, 0)$.

Suppose $m_i = 0$ ($m_i = z$). Then agent j recommends $X = 1$ if $s_j > -\frac{1}{2}z - a_j$. Given $h > \frac{1}{2}z$, the posterior beliefs are given by $E(\mu \mid m_j = Y, m_i = 0 \ (m_i = z)) = \frac{1}{2}(h - \frac{1}{2}z - a_j)$ and $E(\mu \mid m_j = N, m_i = 0 \ (m_i = z)) = -\frac{1}{2}(h + \frac{1}{2}z + a_j)$. The DM follows agent j 's recommendation if $p + \frac{1}{2}z + \frac{1}{2}(h - \frac{1}{2}z - a_j) > 0$ and $p + \frac{1}{2}z - \frac{1}{2}(h + \frac{1}{2}z + a_j) \leq 0$. Hence, in case $m_i = 0$ ($m_i = z$), the DM ignores agent j 's advice if $p \notin (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$. \square

Appendix A: Hard and soft information

In this appendix, we show the conditions for an equilibrium in which agent 1 selects $L_1 = \mu$ and agent 2 selects $L_2 = \theta_B$.

Proposition 4.5 Suppose $p \in (\frac{1}{2}(a_1 - h) + \frac{1}{4}z, \frac{1}{2}(a_1 + h) - \frac{1}{4}z]$, $p \leq \frac{1}{2}(a_1 + a_2)$, $h > \frac{1}{2}z$ and $p \leq -\frac{1}{2}z$. Furthermore, suppose $\frac{\pi}{4h} \left[(h + a_1)^2 + \frac{1}{4}z \right] \geq K$, $\frac{\pi}{2h} \left[\frac{1}{4}z^2 + a_2 \right] \geq K$ and $\frac{1}{4}z^2 \geq (1 - \pi)(h + a_2)$. Then an equilibrium exists in which the strategies are defined as follows: (i) agent 1 examines μ ; he sends $m_1 = 0$ if he has not received a signal; he sends $m_1 = Y_1$ if he has inferred that $\theta_B = 0$ and has found $s_i > -a_i + \frac{1}{2}z$; he sends $m_1 = Y_1$ if he has observed that $\theta_B = z$ and has found $s_i > -a_i - \frac{1}{2}z$; he sends $m_i = N_i$ in all other cases; (ii) agent 2 examines θ_B and reports information, if found (iii) the DM chooses $X = 1$ if he has received $(Y_1, 0)$, (Y_1, z) and chooses $X = 0$ otherwise. The posterior beliefs are given by: $E(\mu | Y_1, 0) = \frac{1}{2}(h - a_1 + \frac{1}{2}z)$; $E(\mu | Y_1, z) = \frac{1}{2}(h - a_1 - \frac{1}{2}z)$; $E(\mu | N_1, 0) = -\frac{1}{2}(h + a_1 - \frac{1}{2}z)$; $E(\mu | N_1, z) = -\frac{1}{2}(h + a_1 + \frac{1}{2}z)$; $E(\mu | 0, 0) = E(\mu | 0, z) = 0$ and $\Pr(\theta_B = 0 | \text{not report } \theta_B = z) = 1$.

Proof. The proof is given in four steps.

- (1) The posterior beliefs follow directly from the strategies of the agents.
- (2) Consider agent 1's strategy. The DM's strategy implies that if agent 1 has received a signal, his recommendation is decisive. Before a recommendation is made, agent 1 observes the message of agent 2 and infers the value of θ_B . If $m_2 = 0$ then agent 1 recommends Y_1 if $s_i > -a_i + \frac{1}{2}z$ and N_1 if $s_i \leq -a_i + \frac{1}{2}z$. If $m_2 = z$ then agent 1 recommends Y_1 if $s_i > -a_i - \frac{1}{2}z$ and N_1 if $s_i \leq -a_i - \frac{1}{2}z$. Agent 1 selects $L_1 = \mu$ if he prefers $L_1 = \mu$ to $L_1 = 0$, to $L_1 = \theta_A$, and to $L_1 = \theta_B$. Agent 1 prefers selecting $L_1 = \mu$ to selecting $L_1 = 0$ if:

$$\begin{aligned} & \frac{1}{2}\pi \left[\frac{h + a_1 - \frac{1}{2}z}{2h} \right] \left[a_1 + \frac{1}{2}(h - a_1) - \frac{1}{4}z \right] + \\ & \frac{1}{2}\pi \left[\frac{h + a_1 + \frac{1}{2}z}{2h} \right] \left[a_1 + \frac{1}{2}(h - a_1) + \frac{1}{4}z \right] - K \geq 0, \end{aligned} \quad (\text{A1})$$

which reduces to $\frac{\pi}{4h} \left[(h + a_1)^2 + \frac{1}{4}z \right] \geq K$. Note that since $p \leq -\frac{1}{2}z$ and $h > \frac{1}{2}z$, the DM

never selects $X = 1$ if no recommendation is made. Consequently, agent 1 has no incentive to select $L_1 = \theta_A$ or to select $L_1 = \theta_B$ if (A1) is satisfied.

(3) Consider agent 2's strategy. Although the DM always follows the recommendation of agent 1, there is an incentive for agent 2 to search. This is because agent 2 can affect the recommendation of agent 1 by searching for hard evidence. Agent 2 selects $L_2 = \theta_B$ if he prefers $L_2 = \theta_B$ to $L_2 = 0$, to $L_2 = \mu$ and to $L_2 = \theta_A$. Agent 2 prefers selecting $L_2 = \theta_B$ to selecting $L_2 = 0$ if:

$$\begin{aligned} & \frac{1}{2}\pi \left[\frac{h + a_1 - \frac{1}{2}z}{2h} \right] \left[a_2 + \frac{1}{2}(h - a_1) - \frac{1}{4}z \right] \\ & + \frac{1}{2}\pi \left[\frac{h + a_1 + \frac{1}{2}z}{2h} \right] \left[a_2 + \frac{1}{2}(h - a_1) + \frac{1}{4}z \right] - K \\ & \geq \pi \left[\frac{h + a_1 - \frac{1}{2}z}{2h} \right] \left[a_2 + \frac{1}{2}(h - a_1) + \frac{1}{4}z \right], \end{aligned}$$

which reduces to $\frac{\pi}{2h} \left[\frac{1}{4}z^2 + a_2 \right] \geq K$. After some straightforward algebra, we can show that agent 2 prefers $L_2 = \theta_B$ to $L_2 = \mu$ if $\frac{1}{4}z^2 \geq (1 - \pi)(h + a_2)^2$. Note that this condition is always satisfied if $\pi = 1$. If agent 1 receives a informative signal $s_1 = \mu$ with certainty then there is no use for agent 2 to select $L_2 = \mu$. Agent 2 prefers $L_2 = \theta_B$ to $L_2 = \theta_A$ if $2(a_2 - a_1) + z \geq 0$. Using $a_2 \geq a_1$ this condition is always satisfied. Note that if the incentive constraints are satisfied, then agent 2 reports information if found.

(4) Using the posterior beliefs, it is easy to verify that, given $p \in (\frac{1}{2}(a_1 - h) + \frac{1}{4}z, \frac{1}{2}(a_1 + h) - \frac{1}{4}z]$ and $p \leq -\frac{1}{2}z$, the DM prefers $X = 1$ if he has received $(Y_1, 0)$, (Y_1, z) and chooses $X = 0$ otherwise. \square

Appendix B: Hard information

In this appendix, we show under what conditions $L_1 = \theta_A$ and $L_2 = \theta_B$ are selected rather

than $L_j = \mu$. From Lemma 4.1 we know that the conditions for communication depend on the availability of hard evidence. As a consequence, the incentive to deviate by collecting soft information depends on the conditions in Lemma 4.1. Four cases can be distinguished. In each case, agent j refers to the agent who considers to collect soft information and agent i refers to the agent who collects hard information. The second case is described in Proposition 4.3.

i) No communication is possible, $p \notin (\frac{1}{2}(a_j - h) + \frac{1}{4}z, 0)$ and $p \notin (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$.

Then neither agent has an incentive to collect soft information.

ii) Full communication, $p \in (\frac{1}{2}(a_j - h) + \frac{1}{4}z, 0)$ and $p \in (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$. Hence,

$p \in (\frac{1}{2}(a_j - h) + \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$. The implication is that the DM follows a recommendation of agent j irrespective of the hard evidence presented by agent i . The following condition shows when agent 1 prefers selecting $L_1 = \theta_A$ to selecting $L_1 = \mu$, given that $L_2 = \theta_B$,

$$\begin{aligned} \frac{1}{4}(a_1 + z) - K &\geq \frac{1}{2}\pi \left[\frac{h - \frac{1}{2}z + a_1}{2h} \right] \left[\frac{1}{2}(h + a_1) - \frac{1}{4}z \right] \\ &+ \frac{1}{2}\pi \left[\frac{h + \frac{1}{2}z + a_1}{2h} \right] \left[\frac{1}{2}(h + a_1) + \frac{1}{4}z \right] + \frac{1}{2}(1 - \pi) \left(a_1 + \frac{1}{2}z \right) - K, \end{aligned} \quad (\text{B1})$$

implying $(a_1 + z) \geq \frac{\pi}{h} \left[(h + a_1)^2 + \frac{1}{4}z^2 \right] + 2(1 - \pi)(a_1 + \frac{1}{2}z)$. Similarly, we can show that agent 2 has no incentive to select $L_2 = \mu$ if $(a_2 + z) \geq \frac{\pi}{h} \left[(h + a_2)^2 + \frac{1}{4}z^2 \right]$.

iii) Partial communication, $p \notin (\frac{1}{2}(a_j - h) + \frac{1}{4}z, 0)$ and $p \in (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$. Hence,

$p \in (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j - h) + \frac{1}{4}z]$ which implies that the DM follows Y_1 only if $m_2 = z$. The following condition shows when agent 1 prefers selecting $L_1 = \theta_A$ to selecting $L_1 = \mu$, given that $L_2 = \theta_B$,

$$\frac{1}{4}(a_1 + z) - K \geq \frac{1}{2}\pi \left[\frac{h + \frac{1}{2}z + a_1}{2h} \right] \left[\frac{1}{2}(h + a_1) + \frac{1}{4}z \right] + \frac{1}{2}(1 - \pi) \left(a_1 + \frac{1}{2}z \right) - K, \quad (\text{B2})$$

implying $(a_1 + z) \geq \frac{1}{2}\frac{\pi}{h} (h + a_1 + \frac{1}{2}z)^2 + 2(1 - \pi)(a_1 + \frac{1}{2}z)$. Note that $X = 1$ is selected if

$m_2 = z$ and agent 1 has received no signal since the DM infers from $m_1 = 0$ that $\theta_A = 0$. It is easy to show that (B2) is less restrictive than (B1). This is because the DM does not always follow the recommendation of agent 1 and therefore the benefits of collecting soft information are lower. Along the same line, we can show that agent 2 has no incentive to select $L_2 = \mu$ if

$$(a_2 + z) \geq \frac{1}{2} \frac{\pi}{h} (h + a_2 + \frac{1}{2}z)^2.$$

iv) Partial communication, $p \in (\frac{1}{2}(a_j - h) + \frac{1}{4}z, 0)$ and $p \notin (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j + h) - \frac{1}{4}z]$. Hence, $p \in (\frac{1}{2}(a_j + h) - \frac{1}{4}z, 0)$ which implies that the DM follows N_1 only if $m_2 = 0$. Condition (B3) shows when agent 1 prefers selecting $L_1 = \theta_A$ to selecting $L_1 = \mu$, given that $L_2 = \theta_B$,

$$\frac{1}{4}(a_1 + z) - K \geq \frac{1}{2} \frac{\pi}{h} \left[\frac{h - \frac{1}{2}z + a_1}{2h} \right] \left[\frac{1}{2}(h + a_1) - \frac{1}{4}z \right] + \frac{1}{2} \left(a_1 + \frac{1}{2}z \right) - K, \quad (\text{B3})$$

implying $(a_1 + z) \geq \frac{1}{2} \frac{\pi}{h} (h + a_1 - \frac{1}{2}z)^2 + 2(a_1 + \frac{1}{2}z)$. For the same reason as in *iii*), condition (B3) is less restrictive than condition (B1). Along the same line, we can show that agent 2 has no incentive to select $L_2 = \mu$ if $(a_2 + z) \geq \frac{1}{2} \frac{\pi}{h} (h + a_2 - \frac{1}{2}z)^2 + 2\pi(a_2 + \frac{1}{2}z)$.

Appendix C: Soft information.

In this appendix, we show under what conditions both agents select $L_i = \mu$ rather than $L_i = \theta_A$ or $L_i = \theta_B$. As in Appendix B, the incentive to deviate depends on the possibility of communication. However, now we consider an equilibrium in which both agents select $L_i = \mu$. Now, the DM infers from $m_i = 0$ that agent i received no signal. This implies that the DM selects $X = 0$ if $p \leq -\frac{1}{2}z$ and selects $X = 1$ if $p > -\frac{1}{2}z$ when $m_i = 0$ and $m_j = z$. In the remaining part of this appendix, we show the conditions for which agents prefer collecting soft information to collecting hard information. On the basis of the conditions in Lemma 4.1, we can distinguish three cases. In each case we show four incentive constraints; 1) when agent 1 prefers selecting $L_1 = \mu$ to $L_1 = \theta_A$,

2) when agent 1 prefers selecting $L_1 = \mu$ to $L_1 = \theta_B$, 3) when agent 2 prefers selecting $L_2 = \mu$ to $L_2 = \theta_A$, and 4) when agent 2 prefers selecting $L_2 = \mu$ to $L_2 = \theta_B$.

i) Suppose $p \in (\frac{1}{2}(a_j - h) + \frac{1}{4}z, -\frac{1}{2}z]$. The incentive constraints are:

$$(1) (1 - \pi)(h + a_1)^2 + \pi(a_2 - a_1)^2 \geq \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z)$$

$$(2) (1 - \pi)(h + a_1)^2 + \pi(a_2 - a_1)^2 \geq \frac{1}{2}z[-(a_2 - a_1) + \frac{1}{4}z]$$

$$(3) (1 - \pi)(h + a_2)^2 \geq \frac{1}{2}z[-(a_2 - a_1) + \frac{1}{4}z]$$

$$(4) (1 - \pi)(h + a_2)^2 \geq \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z).$$

Clearly, the second and the third constraint are redundant. The first and the fourth constraint are mentioned in Proposition 4.4. Now suppose $p > -\frac{1}{2}z$. The implication is that $X = 1$ is selected if $m_i = z$ and $m_j = 0$. As a consequence, the RHS of constraint 2 increases with $2h(\frac{1-\pi}{\pi})(a_1 + \frac{1}{2}z)$ and the RHS of constraint 4 increases with $2h(\frac{1-\pi}{\pi})(a_2 + \frac{1}{2}z)$.

ii) Suppose $p \in (\frac{1}{2}(a_j - h) - \frac{1}{4}z, \frac{1}{2}(a_j - h) + \frac{1}{4}z]$ and $p \leq -\frac{1}{2}z$. The incentive constraints are:

$$(1) (h + a_1)^2 + (1 - 2\pi)(h + a_2)[a_1 + \frac{1}{2}(h - a_2)] \geq (h + a_2)\frac{1}{2}z$$

$$(2) (h + a_1)^2 + \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z) \geq 2\pi(h + a_2)[a_1 + \frac{1}{2}(h - a_2)]$$

$$(3) (h + a_1)[a_2 + \frac{1}{2}(h - a_1) - \frac{1}{2}z] + (1 - \pi)(h + a_2)^2 \geq 0$$

$$(4) (1 - \pi)(h + a_2)^2 \geq \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z).$$

Now, suppose $p > -\frac{1}{2}z$. As in i), the RHS of constraint 2 increases with $2h(\frac{1-\pi}{\pi})(a_1 + \frac{1}{2}z)$ and the RHS of constraint 4 with $2h(\frac{1-\pi}{\pi})(a_2 + \frac{1}{2}z)$.

iii) Suppose $p \in (\frac{1}{2}(a_j + h) - \frac{1}{4}z, 0)$. As a consequence, $p > -\frac{1}{2}z$. The incentive constraints are:

$$(1) (h + a_1)^2 - 2\pi(h + a_2)[a_1 + \frac{1}{2}(h - a_2)] \geq \frac{1}{2}z(a_2 - a_1 + \frac{1}{4}z)$$

$$(2) \pi(h + a_1)^2 - (1 - \pi)\pi(h + a_2)[a_1 + \frac{1}{2}(h - a_2)] \geq -\frac{1}{2}z(h + a_2) + h(a_1 + \frac{1}{2}z)$$

$$(3) (h + a_1) \left[a_2 + \frac{1}{2}(h - a_1) - \frac{1}{2}z \right] + (1 - \pi)\pi (h + a_2)^2 \geq 0$$

$$(4) \pi (h + a_1) \left[a_2 + \frac{1}{2}(h - a_1) + \frac{1}{2}z \right] + (1 - \pi)\pi (h + a_2)^2 \geq 2h(a_2 + \frac{1}{2}z).$$

Appendix D: Explaining the Composition of Committees

The discussion of Section 4.4.6 relies on two propositions. This Appendix presents the two propositions and gives the proofs.

Proposition 4.6 Suppose i) $K < \frac{1}{8}z$, ii) $p \in (4K - z, -4K]$, and iii) $K \leq \frac{1}{4h}\pi(1 - \pi)(h + p)^2$.

Then, $a_i = p$ yields at least the same payoff to the DM as $a_i \neq p$.

Proof. We have to proof that $a_i = p$ yields at least the same payoff for the DM as $a_i \neq p$ if $K < \frac{1}{8}z$, $p \in (4K - z, -4K]$ and $K \leq \frac{1}{4h}\pi(1 - \pi)(h + p)^2$. First, note that if $a = p$, then members collect the pieces of information the DM wants to be collected. We focus on two cases; i) the DM wants both pieces of hard information to be collected, and ii) the DM wants both members to collect soft information.

i) The DM yields an expected payoff of $\frac{1}{4}(z + p)$ in case $L_1 = \theta_A$ and $L_2 = \theta_B$. This payoff is independent of a_1 and a_2 . Two members with predisposition $a_i = p$ have an incentive to collect both pieces of hard information if $a_i \leq -4K$ and if $a_i > 4K - z$. This requires that $K < \frac{1}{8}z$ and $p \in (4K - z, -4K]$.

ii) The DM yields an expected payoff of

$$\pi \left[\frac{h + a_i}{2h} \right] \left[p + \frac{1}{2}(h - a_i) \right] + (1 - \pi) \pi \left[\frac{h + a_j}{2h} \right] \left[p + \frac{1}{2}(h - a_j) \right]. \quad (\text{D1})$$

in case $L_i = \mu$ and $L_j = \mu$. Maximizing (D1) towards a_i and a_j gives $\frac{\partial}{\partial a_i} = \frac{\pi}{2h}(p - a_i) = 0$ and $\frac{\partial}{\partial a_j} = \frac{\pi(1 - \pi)}{2h}(p - a_j) = 0$. Hence, the expected payoff for the DM in case soft information

is collected is maximized if $p = a_i = a_j$. Remains to show when members alike the DM have an incentive to collect soft information. Proposition 4.2 shows the incentive constraints for which both agents select $L_i = \mu$ rather than $L_i = 0$. Inserting $a = p$ gives that $K \leq \frac{1}{4h}\pi(1 - \pi)(h + p)^2$. \square

Proposition 4.7 *Suppose $K \geq \frac{1}{8}z$, and $K > \frac{1}{4h}\pi(1 - \pi)(h + p)^2$. Then*

- i) *if K rises, the range of parameters for which the DM prefers both committee members to collect soft information shrinks;*
- ii) *if the DM prefers the committee members collecting soft information to collecting hard information, he selects $\min a_i \in (p, 2p + h)$, such that the conditions in Proposition 4.2 and 4.4 are satisfied;*
- iii) *if the DM prefers the committee members collecting hard information to collecting soft information, he selects a_i such that the conditions in Proposition 4.1 and 4.3 are satisfied.*

Proof. From the proof of Proposition 4.6 we know that if $K \geq \frac{1}{8}z$ and $K > \frac{1}{4h}\pi(1 - \pi)(h + p)^2$ then agents with $a = p$ do not collect information. Hence, the DM has to appoint two agents with $a_i \neq p$. The remaining part of the proof is divided into three parts, as in Proposition 4.6.

- i) The DM prefers both members to collect soft information if the expression in (D1) is higher than $\frac{1}{4}(z + p)$. If the DM prefers the collection of soft information, then he should appoint two members with $a > p$ since the costs are high. It is easy to show that the expected payoff for the DM decreases with $\frac{1}{4h}(a - p)^2$ if $a > p$ rather than if $a = p$. An increase in a decreases the expected payoff for the DM. From the incentive constraints in Proposition 4.2, we know that a should rise if K increases. Hence, the DM prefers both members to collect soft information for a smaller range of parameters if K increases.

ii) In *i*) we have seen that the DM prefers selecting a_i as close as possible to p to maximize the expected payoff in case soft information is collected. The conditions in Proposition 4.2 and 4.4 show when both members select $L_i = \mu$ given that $h > 0$ and $z > 0$. The condition for communication requires that $a_i < 2p + h$.

iii) This follows simply from the fact that the conditions in Proposition 4.1 and 4.3 show when $L_1 = \theta_A$ and $L_2 = \theta_B$ are selected given that $h > 0$ and $z > 0$. \square

Chapter 5

Sequential Search for Information

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5.1 Introduction

In several organizations, agents are not expected to maximize the stated goals of their organization. Rather, they have specific tasks. A typical example can be found in courts. Trials are an instrument of getting the truth. However, it is not the primary task of lawyers and prosecutors to get the truth. Lawyers are expected to defend their clients, while prosecutors are expected to make cases against the defendants. Another example of such an advocacy system can be found in politics. We hope that the government promotes the public interest. Ministers, however, have specific tasks. The minister of industry, for example, is not expected to defend the environment. He is there to advocate the interest of industry.

Dewatripont and Tirole (1999), henceforth DT, provide an appealing rationale for advocacy systems. They argue that advocacy systems facilitate guiding the behavior of agents who are hired to collect information. The basic idea behind their argument is as follows. Proper decision making often requires information on the pros and cons of policy alternatives. The decision maker hires agents to collect information. Because decisions are easier to verify than information, the decision maker has to motivate agents by offering decision-based rewards. With decision-based

rewards, however, it is hard to motivate a single agent to search for both the pros and cons of policy alternatives. The reason is that conflicting pieces of information cancel each other out. From an agent's perspective, having found no information is equivalent to having found two pieces of conflicting information. An advocacy system solves this problem. When one agent collects information on the cons and another agent collects information on the pros, it is relatively easy to provide the two agents incentives to search for information.¹

This chapter extends DT's analysis to stress the importance of a striking feature of advocacy systems. In advocacy systems, information collection is often sequential.² A prominent example can be found in politics. Budgetary processes have a clear sequential nature. In most European countries, spending ministries first prepare for the submission of their budget proposals. At this early stage of the budgetary process, spending ministries are expected to be advocates of increased appropriations (Von Hagen and Harden, 1994). As advocates, the spending ministries supply information crucial to other agents in the process (Ott, 1993). At a later stage of the budgetary process, the ministry of finance evaluates budget proposals. The ministry of finance is expected to search for arguments for cuts in the budget proposals: it is expected to be an advocate of decreased appropriations.

To provide an explanation for why information collection in advocacy systems is often sequential, we augment the DT model by allowing the different pieces of evidence to be found, and presented, at different moments in time. To capture this feature of information collection processes, we divide the time available for collecting information into two stages. The implication of this extension is twofold. First, since rewards are decision-based, the discovery of evidence in

¹DT's analysis can therefore been seen as an information rationale for adversarial legal systems. Shin (1998) and Palumbo (2000) also compare the relative merits of adversarial and inquisitorial legal systems.

²In some cases, information collection is sequential by nature. For instance, a prosecuting attorney must have evidence before a case against a suspect can be made anyway, see e.g. Daughety and Reinganum (2000). This chapter focuses on cases in which information collection can in principle take place simultaneously as in DT.

favor of one cause at an early stage affects the incentive of the other agent to continue collecting information at a later stage. Full information collection requires that each agent has an incentive to continue investigating her cause in period 2, when information about the other cause has been found in period 1. We show that this forces the decision maker to leave rents to the agents. Second, the extension enables us to analyze a sequential advocacy system, in which one agent investigates her cause in the first stage, and the other agent investigates her cause in the second stage. We show that a sequential advocacy system reduces the rents agents receive. The reason is that a sequential advocacy system enables the decision maker to offer the agent collecting information in the second stage a decision-based reward scheme conditional on the information found in the first stage. When sufficient time is available, a sequential advocacy system yields full information collection and minimizes the rents left to the agents. It comes, however, at the cost of a more sluggish decision-making process. When time is limited, a sequential advocacy system eliminates rents but comes at the cost of less information collection.

Apart from DT, this chapter is related to several other papers. Milgrom and Roberts (1986) identify the conditions under which interested agents supply private information to a principal. They consider a situation where agents cannot manipulate information but can conceal it. They make a distinction between a sophisticated and an unsophisticated principal. A sophisticated principal understands the motives of agents. He makes inferences from concealment of information. By assumption, an unsophisticated principal becomes informed only if he actually receives information. The existence of several interested agents with conflicting preferences increases the likelihood that an unsophisticated principal receives information. Hence the principal benefits from the existence of several interested parties. An important difference between this chapter and Milgrom and Roberts (1986) is that in this chapter agents have to exert costly effort to get information.

A direct implication is that agents only look for information if they want to supply it. Hence, in equilibrium information is never concealed.

The collection of verifiable pieces of information is central in Rotemberg and Saloner (1995). They study the role and origin of conflicts between the production and the sales department of a firm. The firm has to choose between extending existing production and the introduction of an additional product. The two departments disagree: the production department prefers extending production, while the sales department favors the introduction of an additional product. Rotemberg and Saloner show that when the firm is biased towards extending production, the sales department first searches for evidence supporting the introduction of a new product. Only if the sales department delivers evidence, the production department searches for evidence in favor of extending production. The reason for this sequence is saving on search costs. Without evidence in favor of the introduction of a new product, the firm wants to extend production. Initially, the production department thus has no incentive to search for information. In this chapter there would also be an obvious reason for sequential information collection if the decision to be made were binary. Then, a decision maker inclined towards the status quo would want to be informed first on the possible pros of a new project before asking an agent to search for the cons. In this way, the decision maker reduces expected search costs.

Finally, there is a large literature on the transmission of information that can be manipulated. Crawford and Sobel (1982) show that communication between a sender and receiver of information improves when their preferences are more congruent. Ottaviani and Sorensen (2001) examine how the order of speech affects the aggregation of information from different experts. They consider a situation where experts have the same preferences but different abilities. As experts care about their reputation, herding problems might occur. This chapter deviates from the cheap-talk

literature in that we assume that information cannot be manipulated.

We proceed as follows. Section 5.2 describes the model. Next, Section 5.3 presents the optimal wage scheme under simultaneous information collection. Section 5.4 makes the case for a sequential advocacy system. Section 5.5 concludes.

5.2 The Model

In DT, a decision maker makes one of three decisions: $I \in \{A, B, SQ\}$ where SQ refers to status quo. The decision maker's preferences depend on two independent parameters: $\theta_A \in \{-1, 0\}$ and $\theta_B \in \{0, 1\}$. Each parameter is equal to zero with probability $1 - \alpha$. Under full information, the decision maker would choose decision A when $\theta_A + \theta_B = -1$, decision B when $\theta_A + \theta_B = 1$, and SQ when $\theta_A + \theta_B = 0$.

To learn θ_A and θ_B , the decision maker can hire two agents. Each agent investigates one cause. To investigate a cause ($i = A, B$), each agent must incur unverifiable disutility of effort. We augment the DT model by splitting the time available for research in two periods ($t = 1, 2$). In each period, the costs of investigating is denoted by K . If $|\theta_i| = 1$ and K is incurred, an agent learns nothing with probability $1 - q$ and obtains hard evidence that $|\theta_i| = 1$ with probability q . If $\theta_i = 0$, an agent cannot learn anything. Our assumptions have the following consequences. If K is incurred in period 1, an agent finds evidence in period 1 with probability $x = \alpha q$. When an agent has not found evidence in period 1 and K is incurred in period 2, he finds evidence in period 2 with probability $\hat{x} = \hat{\alpha}q$, where

$$\hat{\alpha} = \frac{\alpha(1 - q)}{1 - \alpha q} < \alpha. \quad (5.1)$$

At the end of period 2, the decision maker selects the decision. Like DT, we make the following

three assumptions. First, the decision A (B) is optimal for the decision maker if there is evidence that $\theta_A = -1$ ($\theta_B = 1$), but there is no evidence that $\theta_B = 1$ ($\theta_A = -1$). Second, decision SQ is optimal either if $\theta_A = -1$ and $\theta_B = 1$ or if no information has been received. Third, K is sufficiently small, so that the benefits of investigating potentially exceed the costs of investigating.³ These three assumptions ensure that the decision maker wants each agent always to investigate her cause, and that the decision depends on the information supplied by the agents.

As in DT, the agents' effort and pieces of evidence are unverifiable. As a consequence, the organization has to rely on decision-contingent rewards. Even though pieces of evidence are unverifiable, they are observable. Agents cannot forge or conceal information. Agents are risk neutral and rewards are non-negative. Agent i , in charge with cause i , receives w_I^i , if the decision maker selects I .

5.3 The Optimal Wage Scheme

In DT, an advocacy system generates full information collection without abandoning rents to the agents. This section shows that when information may become available at different times full information collection implies that rents are abandoned to agents. Full information collection refers to our assumption that the decision maker prefers to induce both agents to investigate their cause in each period.

We focus on one contract for two periods which is set at the beginning of period 1. We can show

³The first assumption requires that $(1 - \check{\alpha})L_I - \check{\alpha}L_E > 0$, where $\check{\alpha}$ is the posterior probability that $|\theta_i| = 1$ after two periods of searching, L_I is the cost of choosing status quo when either A or B is the efficient choice (*inertia*), and L_E is the cost of choosing one of the causes when status quo is the efficient choice (*extremism*). The second assumption implies that $[1 - 2\check{\alpha}(1 - \check{\alpha})]L_E + \check{\alpha}(1 - \check{\alpha})(L_M - 2L_I) > 0$, where L_M is the cost of choosing cause A when cause B is the efficient choice or vice versa (*misguided activism*). This condition is satisfied if $L_M > 2L_I$. The third condition requires that the total cost of information collection (which depends upon the incentive scheme chosen) do not exceed the benefits of information. With full information collection, these benefits are: $2L_I [\alpha(1 - \alpha) - \alpha(1 - q)(1 - q)(1 - x)(1 - \hat{x})(1 - \check{\alpha})] - x\alpha(1 - q)(1 - q)2L_E(2 - q)$.

that offering a contract in period 2 conditional on the evidence found in period 1 is not optimal.

Then both agents would have an incentive to postpone exerting effort to the second period.⁴

We first argue that in the augmented model, full information collection requires that the contract must reward the agents when the decision maker selects status quo. Suppose that in period 1, both agents have investigated their cause and that agent i has found evidence in favor of cause i , while agent j has not found evidence in favor of cause j . In this case, the decision maker chooses at the end of period 2 either status quo or decision i . The decision maker never chooses decision j since evidence in favor of cause i has been found. Full information collection requires that agent j prefers investigating to not investigating in period 2. The incentive constraint is:

$$\hat{x}w_{SQ}^j + (1 - \hat{x})w_I^j - K \geq w_I^j. \quad (5.2)$$

If agent j finds evidence in favor of cause j in period 2, the decision maker chooses the status quo.

If agent j finds no evidence in period 2, decision i is chosen. Clearly, as in DT, it is optimal for the decision maker to set $w_I^j = 0$.⁵ Equation (5.2), therefore, reduces to:

$$w_{SQ}^j = \frac{K}{\hat{x}}. \quad (5.3)$$

Equation (5.3) implies that full information collection requires that the decision maker must reward the agents when he selects status quo. The reason is obvious. Once evidence has been found in favor of cause i , the decision moves away from decision j . Consequently, if agent j were not rewarded for SQ and agent i has found evidence in period 1, she would not have any incentive to investigate her cause in period 2.⁶

⁴The formal proof is provided in Appendix 1.

⁵The nonliability constraint excludes $w_I^j < 0$.

⁶The decision maker could offer a new contract at the beginning of the second period when one of the agents has found a piece of evidence in the first period. However, if agents cannot conceal information, the opportunity to offer

Let us now determine the lowest rewards that induce agent j to exert effort in period 2, when neither agent has found evidence in period 1 and both agents have exerted effort in period 1. Let β denote the probability that agent i chooses investigating in period 2. When agent j chooses investigating, her expected utility is:

$$\begin{aligned} & [\beta\hat{x}^2 + \beta(1-\hat{x})^2 + (1-\beta)(1-\hat{x})] w_{SQ}^j + [\beta\hat{x}(1-\hat{x}) + (1-\beta)\hat{x}] w_J^j - K \\ &= [1 - \beta\hat{x} + 2\beta\hat{x}^2 - \hat{x}] w_{SQ}^j + \hat{x}(1 - \beta\hat{x})w_J^j - K. \end{aligned} \quad (5.4)$$

When agent j chooses not investigating her expected utility is:

$$[(1-\beta) + \beta(1-\hat{x})] w_{SQ}^j = (1 - \beta\hat{x})w_{SQ}^j. \quad (5.5)$$

From (5.3), (5.4) and (5.5), it directly follows that the cost-minimizing reward scheme that induces agent j to investigate her cause in period 2 is given by (5.3) and:

$$w_J^j = 2\frac{K}{\hat{x}}. \quad (5.6)$$

Because the model is symmetric, an analogous reward scheme applies to agent i .

We have derived the rewards that induce the agents to exert effort in period 2, given that both agents have exerted effort in period 1. It is straightforward to verify that (5.3) and (5.6) also induce both agents to investigate their cause in period 1. The reason is that the cost of investigating are the same in period 1 and 2, while the expected benefits of investigating are smaller in period 2 than in period 1 ($\hat{\alpha}q = \hat{x} < x = \alpha q$).⁷

a new contract induces agents to postpone investigating to the second period. See Appendix 1. Introducing a third agent would resolve this. Then, in period 1 the decision maker induces two agents to search after contrary goals without rewarding the status quo. If one piece of evidence is found in period 1, a contract rewarding the status quo is offered to a third agent, which yields full information collection. With dynamic increasing returns to effort, however, it may be optimal to use two agents rather than three agents.

⁷The optimal contract given by (5.3) and (5.6) does not change if rewards are allowed to be contingent on delay in decision-making. The formal proof is provided in Appendix 2.

We can now calculate the rents each agent enjoys. Straightforward algebra shows that each agent enjoys rents:

$$U^j = \frac{1 - \hat{x}}{\hat{x}} K - (1 - x)K = [(x - \hat{x}) + (1 - x)(1 - \hat{x})] \frac{K}{\hat{x}} > 0. \quad (5.7)$$

The cost-minimizing wage scheme abandons rents to the agents for two reasons. The first reason is that agents must be rewarded for the status quo to induce them to continue investigating their cause in the second period when one of the agents has found evidence in the first period. Rewarding the status quo, however, introduces the possibility of receiving a reward without exerting any effort. Hence, to induce agents to exert effort, rents must be left. The second reason for leaving rents to the agents is a declining probability of finding evidence over time. To induce an agent to continue searching for two periods requires that rewards are based on the posterior probability of finding evidence in period 2, which is lower than the prior probability. Consequently, the rewards overcompensate for the cost of searching if evidence is already found in the first period.

With two periods available for searching, an advocacy system abandons rents to the agents also if agents can only provide information at the end of period 2 (so that the first reason is not valid anymore). Then, analogous to DT, the decision maker sets $w_{SQ}^i = w_I^j = 0$ ($i \neq j$) and $w_I^i = K / [\hat{x}(1 - x)(1 - \hat{x})]$. Each agent then enjoys rents:

$$U^j = (x - \hat{x}) \frac{K}{\hat{x}} > 0. \quad (5.8)$$

The difference between (5.7) and (5.8), which equals $(1 - x)(1 - \hat{x}) \frac{K}{\hat{x}}$, gives the rents that arise because agents must be induced to continue investigating when information about one cause has become available.

5.4 The Case for Sequential Information Collection

In this section we extend the model of Section 5.3 by allowing for the possibility that the agents search for evidence in favor of their cause sequentially. For example, a spending ministry first tries to find arguments for a higher budget. Subsequently, the finance ministry searches for arguments for cuts in the budget proposed by the spending minister. Finally, the Prime Minister (or the council of ministers) makes the final budget decision.

Specifically, we assume that agent a investigates cause A in period 1 and that agent b investigates cause B in period 2. We maintain the assumption of decision-based rewards. However, the sequential setting enables the policy maker to condition agent b 's rewards on the evidence found by agent a . As we will see below, the implication is that for agent b the difference between decision-based rewards and information-based rewards vanishes.

Let us first determine the cost-minimizing wage scheme for agent b . Two cases have to be distinguished: (1) agent a has found evidence in favor of his case in period 1, and (2) agent a has not found evidence. In the former case, the decision moves away from B . In the latter case, the decision moves away from A . The organization can induce agent b to investigate by setting $w_{SQ}^b = K/x$ and $w_A^b = 0$ when agent a has found evidence in favor of his cause. It sets $w_B^b = K/x$ and $w_{SQ}^b = 0$ when agent a has not found evidence. These wage schemes induce agent b to exert effort, without leaving rents.

In period 1, agent a prefers investigating to not investigating if:

$$[x^2 + (1-x)^2] w_{SQ}^a + x(1-x)w_A^a + x(1-x)w_B^a - K \geq (1-x)w_{SQ}^a + xw_B^a \quad (5.9)$$

The left-hand side of (5.9) gives agent a 's expected reward when he chooses investigating. The right-hand side gives the expected reward when he chooses not investigating. The cost-minimizing

wage scheme that satisfies (5.9) is $w_B^a = w_{SQ}^a = 0$ and $w_A^a = K/[x(1-x)]$. It is easy to show that this wage scheme fully extracts agent a 's rents.

A comparison between the advocacy system of Section 5.3 and the sequential advocacy system shows that the former leaves rents to the agents, while the latter does not. However, by nature, a sequential advocacy system does not induce full investigation as each cause is investigated for only one period. When time is available, extending the search period easily solves this problem. For example, we can allow agent a to search for information in period 1 and 2 and agent b to search for information in period 3 and 4. As in Section 5.3, full information collection then requires that the rewards to the agents depend on the posterior probabilities of finding evidence rather than on the prior probabilities. Consequently, rents are left to the agents.⁸ These rents are smaller than in Section 5.3, because rewards can be set conditional upon the information found in earlier stages. The difference between (5.7) and (5.8) gives the benefit of an extended sequential advocacy system relative to the advocacy system of Section 5.3.

5.5 Conclusions

In this chapter, we have provided a rationale for the sequential nature of information collection in advocacy systems. Information about different causes may become available at different times. When information collection takes place simultaneously by different agents, the detection of evidence favoring a particular cause by one agent affects the incentive of the other agent to continue collecting information in favor of her cause. Full information collection then requires that rents are left to the agents. A sequential advocacy system enables the decision maker to design a reward

⁸It is worth noting that these rents also arise if rewards are directly based on the information provided rather than on the decision. As above, rewards based on the moment of finding information are not optimal as agents may either conceal information or postpone searching until the last period.

scheme which fits with the information already found in earlier stages of the information collection process by the other agent. This implies that a smaller amount of rents needs to be abandoned to the information-collecting agents. A sequential advocacy system is, therefore, cheaper than an advocacy system with simultaneous information collection. However, it comes at the cost of either a more sluggish decision-making process or less information collection. The choice between a simultaneous and a sequential advocacy system thus ultimately entails a trade off between the cost of information collection on the one hand, and the quality and/or quick availability of information on the other hand.

Appendix 1

In Section 5.3, we have focussed on one contract for two periods which is set at the beginning of period 1. We have shown that the status quo must be rewarded and hence rents are left to the agents. Offering a second contract in period 2 conditional on the evidence found in period 1 seems a natural way to avoid leaving these rents. In this Appendix we show that the possibility of a second contract induces agents to postpone effort.

First we derive the contract offered in period 2 if only one piece of evidence is found in period 1.⁹ Recall from Section 5.3 that to induce agent j to continue searching, the decision maker sets $w_I^j = 0$ and:

$$w_{SQ}^j = \frac{K}{\hat{x}} \quad (\text{A1})$$

Let us now derive the contract offered to both agents at the beginning of period 1. Note that this contract applies for both periods in case no evidence is found in period 1. We start with the second period. Suppose no evidence has been found in period 1. To induce agent j to continue searching in period 2, the following incentive constraint should hold:

$$\begin{aligned} & \beta \left[\hat{x}(1 - \hat{x})w_J^j + (1 - \hat{x})\hat{x}w_I^j + \hat{x}\hat{x}w_{SQ}^j + (1 - \hat{x})(1 - \hat{x})w_{SQ}^j \right] \\ & + (1 - \beta) \left[\hat{x}w_J^j + (1 - \hat{x})w_{SQ}^j \right] - K \\ & \geq \beta \left[\hat{x}w_I^j + (1 - \hat{x})w_{SQ}^j \right] + (1 - \beta)w_{SQ}^j \end{aligned} \quad (\text{A2})$$

where β denotes the probability that agent i chooses investigating in period 2. Clearly, it is optimal

⁹If two pieces of evidence are found, there is no reason for offering a second contract. If no information is found, the initial contract is sufficient.

for the decision maker to set $w_I^j = w_{SQ}^j = 0$. Hence, (A2) reduces to:

$$w_J^j = \frac{K}{\hat{x}(1 - \beta\hat{x})} \quad (\text{A3})$$

Is the reward as stated in (A3) sufficient to induce agent j to start searching at the beginning of period 1? The total expected benefits for agent j of searching in both period 1 and 2 are:

$$\begin{aligned} & \gamma \left[x(1-x)(1-\hat{x})w_J^j + (1-x)x\hat{x}w_{SQ}^j + (1-x)(1-x)\hat{x}(1-\hat{x})w_J^j \right] \\ & + (1-\gamma) \left[x(1-x)w_J^j + (1-x)\hat{x}(1-x)w_J^j \right] - K - (1-x)K \end{aligned} \quad (\text{A4})$$

where w_{SQ}^j and w_J^j are defined by equation (A1) and (A3), respectively and γ denotes the probability that agent i chooses investigating in period 1. The total expected benefits for agent j of searching only in period 2 are:

$$\gamma \left[xxw_{SQ}^j + (1-x)(1-\hat{x})xw_J^j \right] + (1-\gamma)x(1-x)w_J^j - K \quad (\text{A5})$$

After some straightforward algebra it follows from (A4) and (A5) that agent j has an incentive to postpone exerting effort to the second period if:

$$\gamma xxw_{SQ}^j \geq (1-\gamma)(1-x)\hat{x}(1-x)w_J^j + \gamma(1-x)(1-x)\hat{x}(1-\hat{x})w_J^j - (1-x)K \quad (\text{A6})$$

It is obvious that condition (A6) becomes more restrictive if w_J^j increases. The reward w_J^j is increasing in the level of β . Therefore, if condition (A6) is satisfied when $\beta = 1$ then it is certainly satisfied for lower levels of β . Suppose $\beta = 1$ and insert w_{SQ}^j and w_J^j into condition (A6). Rewriting yields that postponing effort is optimal for agent j if:

$$\gamma \left(\frac{x^2}{\hat{x}} \right) K > (1-\gamma)(1-x) \left[\frac{\hat{x}-x}{1-\hat{x}} \right] K \quad (\text{A7})$$

Using $\hat{x} < x$, it is easy to see that this condition always holds for any level of γ . Hence, both agents have an incentive to search only in the second period.

Appendix 2

In this Appendix we show that when we allow for the possibility that rewards are contingent on delay in decision-making, the optimal contract as stated in Section 5.3 does not alter.

Recall that the optimal contract with simultaneous advocacy is described by $w_{SQ}^j = \frac{K}{\hat{x}}$, $w_J^j = 2\frac{K}{\hat{x}}$ and $w_I^j = 0$. To induce an agent who has not found evidence in the first period to continue searching in the second period we must have $w_{SQ}^{j,2} = \frac{K}{\hat{x}}$ as in Section 5.3 (the additional superscript refers to the moment of decision-making). Moreover, when rewards are contingent on delay, it is still optimal to choose $w_J^j = 2\frac{K}{\hat{x}}$ as cause J is never chosen after one period of searching. Let us now derive $w_{SQ}^{j,1}$. The expected benefits of searching in both period 1 and 2 for agent j are:

$$\begin{aligned} & \gamma \left\{ xxw_{SQ}^{j,1} + x(1-x)(1-\hat{x})w_J^j + x(1-x)\hat{x}w_{SQ}^{j,2} + (1-x)x\hat{x}w_{SQ}^{j,2} \right. \\ & \quad \left. + (1-x)(1-x) [\hat{x}\hat{x}w_{SQ}^{j,2} + (1-\hat{x})(1-\hat{x})w_{SQ}^{j,2} + \hat{x}(1-\hat{x})w_J^j] \right\} \\ & + (1-\gamma) \left[\begin{aligned} & xxw_{SQ}^{j,2} + x(1-x)w_J^j + (1-x)\hat{x}(1-x)w_J^j \\ & + (1-x)(1-\hat{x})(1-x)w_{SQ}^{j,2} + (1-x)\hat{x}xw_{SQ}^{j,2} \end{aligned} \right] - K - (1-x)K \end{aligned} \quad (\text{A8})$$

where γ denotes the probability that agent i chooses investigating in period 1 and the rewards $w_{SQ}^{j,2}$ and w_J^j are defined above. The expected benefits of searching only in period 2 are:

$$\begin{aligned} & \gamma [xxw_{SQ}^{j,2} + (1-x)(1-\hat{x})xw_J^j + (1-x)(1-\hat{x})(1-x)w_{SQ}^{j,2} + (1-x)\hat{x}xw_{SQ}^{j,2}] \\ & + (1-\gamma) [xxw_{SQ}^{j,2} + (1-x)xw_J^j + (1-x)(1-x)w_{SQ}^{j,2}] - K \end{aligned} \quad (\text{A9})$$

After some straightforward algebra, it follows that to induce agent j to search in both periods the

following should hold:

$$\gamma x x \left(w_{SQ}^{j,1} - w_{SQ}^{j,2} \right) \geq 0 \quad (\text{A10})$$

Clearly, costs are minimized by setting $w_{SQ}^{j,1} = w_{SQ}^{j,2} = \frac{K}{\hat{x}}$.

Chapter 6

Main Findings and Further Research

This thesis has examined how institutional arrangements may alleviate some agency problems present in politics. In each chapter, the provision of information in conjunction with the motivation of politicians has been central to the analysis. In this chapter, we briefly mention our main findings and discuss some topics for further research.

6.1 Main Findings

In Chapter 2 of this thesis, we have studied the interaction between politicians with different motivations. As politicians compete for the same positions, a politicians' incentive to behave opportunistically depends on the belief about other politicians' motivation and behavior. We have shown that the incentive to admit a policy failure is low if other politicians are likely to conceal their mistakes. Hence, a political culture may be self-reinforcing. Furthermore, we have examined the consequences of allowing coalition leaders to evaluate each other's policy. Although evaluation may prevent the continuation of an inefficient policy, it also enables opportunistic politicians to harm other politicians' reputation at the cost of repealing a good policy.

Chapter 3 has examined the decision to replace a parliamentarian for different governance structures of a party. We have shown that there is a strong incentive for the leader in office to replace a member of parliament who criticizes the leader's policy. A competent leader replaces a member

who does not support good policies. An incompetent leader replaces a member who discovered that the leader's policy is bad to lower the risk that a future policy failure is also discovered. A centralized candidate selection process may therefore result in maintaining incompetent members and replacing competent ones.

Chapter 4 of this thesis has shown that the composition of a committee depends on how costly it is to acquire information and on the extent to which information can be manipulated. Members who are biased in favor of or against a project have strong incentives to search for information supporting their cause. Members with similar objectives as the decision maker have no incentive to manipulate information and improve on the coordination of information acquisition. We have shown under which conditions different composition of committees are optimal from the decision maker's point of view. This may explain the observed variation in the composition of committees in U.S. Congress.

Finally, in Chapter 5 we have examined the timing of search efforts if several information providers each search for partial information. We have shown that with two information providers, finding an argument against a project lowers the incentives for an agent to search for information in favor of the project. Therefore, sequential searching lowers the cost of information collection at the expense of a slower decision making process. This result may help to explain the sequential nature of budgetary cycles.

6.2 Directions for Further Research

In many situations, politicians themselves are responsible for the design of institutional arrangements. As politicians may pursue their own interest, socially desirable institutional changes may not occur. For instance, in Chapter 3 we have shown that a centralized party may not be in the

public interest since the leader sometimes maintains incompetent parliamentarians. The leader, however, may have an incentive to prevent a more decentralized candidate selection process. Hence, it is important to analyze politicians' incentives to design and change the organization of the government. This requires an adequate understanding of how the behavior of politicians depends on institutional arrangements, as studied in this thesis.

Related to this, the principal-agent relation between voters and politicians may interact with the principal-agent relations inside the political arena. For instance, in a parliamentary system the incentive of a member of parliament to criticize his own leader in office may be lower than in a presidential system. The reason is that in the latter electoral system voters separately elect both political bodies. Consequently, a change in the electoral system affects the interaction between the office holder and the parliament. Furthermore, elections may induce office holders to conceal information about their policy failures. As a result, office holders have weak incentives to induce public servants to evaluate policies. It may therefore be in the societies' interest if "whistle blowers" reveal information about the failures of their political master. An interesting question is how the organization of a department or political party affects the incentive to reveal sensitive information.

Another topic of future research is to analyze political decision making jointly with the decision to enter politics. As politicians' actions are driven by their objectives, the selection of politicians and the allocation of tasks respond to the (expected) motivation of politicians. In our analysis, we kept the distribution of politicians' types fixed and known. The pool of politicians may also endogenously depend on the institutional environment. Different types of citizens may have different incentives to enter politics. Consequently, the desire to become a politician may depend on the existing set of political institutions. Institutional arrangements may then not only affect decision making directly, as emphasized in this thesis, but also indirectly by attracting particular types of

politicians.

Recently, several papers have studied the decision of citizens to enter politics (e.g. Osborne and Slivinsky, 1996, Besley and Coate, 1997, and Caselli and Morelli, 2004). In each of these papers, the decision to enter is made by every single citizen. In reality, political parties play an important role in recruiting and educating new politicians. Participating in a political party seems to be a prerequisite to become a politician. An interesting line of research is therefore to analyze the functioning of parties in selecting and motivating politicians. For instance, do opportunistic politicians crowd out idealistic politicians in the race for political positions? Is intra-party conflict always bad for the electoral chances of a party? As mentioned by Persson and Tabellini (2000, p. 484) "a more careful study of political parties may thus be a crucial step in political economics, perhaps even more crucial than the step in microeconomics of developing a theory of the firm". In this thesis, we have examined the incentives of the rank-and-file and of the leader to replace a member of parliament. Obviously, much more work remains to be done to understand the behavior of all actors involved in a political party.

Chapter 7

Samenvatting (Summary in Dutch)

7.1 Introductie

In representatieve democratieën dragen burgers bevoegdheden over aan politici. Op die manier kunnen besluiten op meer en betere informatie gebaseerd worden. Burgers zijn over het algemeen slecht geïnformeerd over de verschillende beleidsalternatieven en willen weinig moeite doen om de consequenties van beleid te achterhalen. Van politici wordt echter verwacht dat ze nadenken over de mogelijke beleidsalternatieven, onderzoeken wat de effecten van beleid zijn, en uiteindelijk een beslissing nemen. Dit is echter niet vanzelfsprekend het geval. Ministers zullen niet altijd het meest doeltreffende beleid voorstellen. Dit kan komen doordat ze zich te weinig verdiept hebben in de gevolgen van een voorstel. Het kan ook zijn dat politici proberen een kleine groep burgers te bevoordelen en zo tegen het belang van de meerderheid van de bevolking ingaan. In veel landen speelt daarom de vraag of politici wel het belang van de maatschappij voorop stellen of slechts uit zijn op hun eigen belang. Die belangentegenstelling tussen burgers en politici wordt weerspiegeld in de wijdverspreide sceptisie over de geschiktheid en betrouwbaarheid van politici.

In dit proefschrift staat de vraag centraal hoe de inrichting van de overheid eraan kan bijdragen dat volksvertegenwoordigers in hun handelen het maatschappelijke belang voorop stellen. Het doel is om institutionele details te verklaren vanuit de belangentegenstelling tussen kiezers en gekozenen.

Elk hoofdstuk bestudeert een ander onderdeel van het politieke besluitvormingsproces. Twee elementen spelen een belangrijke rol in de analyse: de informatievoorziening ten behoeve van de politieke besluitvorming en de motivatie van politici om deze informatie te vergaren en te gebruiken.

De effecten van beleidsvoorstellen zijn meestal onzeker. Om te voorkomen dat inefficiënte projecten geïmplementeerd worden is het belangrijk om vooraf de voor- en nadelen van een project in kaart te brengen. Dit proces van informatieverschaffing kenmerkt zich door een aantal mogelijke problemen. Niet alle beleidsmakers zullen uit zichzelf bereid zijn om tijd, moeite en geld te besteden aan het zoeken naar informatie. Daarnaast kunnen beleidsmakers informatie achterhouden of manipuleren. Rapporten over de effecten van beleid zijn vaak moeilijk te doorgronden, laat staan te controleren. Dit geeft beleidsmakers de mogelijkheid om de gevolgen van een voorstel te rooskleurig voor te stellen of negatieve informatie achter te houden. Ter illustratie, het recente onderzoek naar de besluitvorming over de Betuwelijn laat zien dat in dit geval besluiten zijn genomen op basis van te weinig en verkeerde informatie.

Naast kamerleden en ministers zijn ook ambtenaren verantwoordelijk voor het aanleveren van bewijsmateriaal. Derhalve kijken we in dit proefschrift niet alleen naar de relatie tussen kiezers en gekozen, maar ook naar de interactie tussen de verschillende spelers in het politieke systeem. De politieke instituties van een land weerspiegelt de verdeling van taken en verantwoordelijkheden tussen de verschillende actoren. De inrichting van het politieke systeem is daarmee een reactie op en beïnvloedt het gedrag van politici ten aanzien van de informatieverschaffing. Bijvoorbeeld, leden van een departement of van een kamercommissie hebben wellicht een sterkere prikkel om naar informatie te zoeken als ze verantwoordelijk gemaakt worden voor de besluitvorming op een bepaald terrein. Een ander voorbeeld is dat het parlement meestal de macht heeft om voorstellen van de regering te blokkeren.

De manier waarop een politicus reageert op institutionele regels heeft te maken met zijn drijfveren. Traditioneel wordt er in de economische literatuur vanuit gegaan dat politici alleen uit zijn op het geld of op de aandacht die verbonden is aan de politiek. Dit gaat wellicht op voor sommige maar niet noodzakelijkerwijs voor alle politici. Sommige willen wel iets voor de samenleving betekenen. Als volksvertegenwoordigers verschillen in waar ze om geven dan is selectie een belangrijk middel om de juiste mensen in de politiek te krijgen en te houden. Een belangrijke rol van verkiezingen is dan ook om incompetente en oneerlijke politici weg te sturen. Selectie kan op die manier het belangenconflict tussen kiezers en gekozenen verminderen. Selectie wordt bemoeilijkt door het feit dat kenmerken als competentie en eerlijkheid meestal niet direct zichtbaar zijn.

7.2 Overzicht

In hoofdstuk 2 staat de interactie tussen verschillende type politici centraal. Politici verschillen in de mate waarin ze om herverkiezing geven en verschillen in competentie. Bij verkiezingen proberen kiezers competentie politici te kiezen en incompetente weg te sturen. Doordat burgers zien of beleid gecontinueerd of teruggedraaid is leren ze iets over de competentie van de minister. Als een minister zijn eigen project stopzet dan laat je aan de kiezers zien dat het gevoerde beleid inefficiënt was. Dit verslechtert de reputatie van de minister als capabele bewindsman en verlaagt daarmee de kans dat hij in een volgend kabinet plaats kan nemen. Ministers die alleen gericht zijn op herverkiezing zullen daarom altijd hun beleid voortzetten, ook als het inefficiënt is. Eerlijke ministers zullen daarentegen hun fouten toegeven ook als dat de kans op herverkiezing verlaagt. De neiging om een fout te verbergen is sterker als herverkiezing aantrekkelijk is, bijvoorbeeld als de beloning voor ministers erg hoog is.

We laten in hoofdstuk 2 zien dat de neiging voor een minister om een fout toe te geven afhangt

van zijn verwachting over het gedrag van andere bewindslieden. Een minister zal minder snel zijn eigen falen toegeven als hij denkt dat andere ministers dit ook niet zullen doen. Dit komt omdat kiezers kijken naar hoe een politicus gepresteerd heeft in vergelijking met andere politici. De electorale consequenties van het toegeven van verkeerd beleid is veel groter in een omgeving waar het merendeel van de politici dit nooit zal doen. Een opportunistische cultuur versterkt dus de neiging van politici om zich opportunistisch te gedragen. Een manier om te voorkomen dat inefficiënt beleid wordt gecontinueerd is om ministers elkaar beleid te laten controleren. Een idealistische minister zal inefficiënt beleid van een andere minister proberen te blokkeren. Een nadeel is dat een minister die graag herverkozen wil worden de reputatie van een andere minister zal proberen te beschadigen. Als gevolg hiervan kan ook goed beleid teruggedraaid worden.

Hoofdstuk 3 kijkt naar het selecteren van kamerleden door partijen middels het samenstellen van de partijlijst. We vergelijken een situatie waar de leden van een partij de lijst mogen bepalen met een situatie waar de partijleider kan bepalen op welke plaats een kamerlid komt. Als de partijleider in de regering zit, bijvoorbeeld als minister of premier, dan is hij in de afgelopen tijd gecontroleerd door kamerleden van zijn eigen partij. De minister weet, mogelijkerwijs via zijn ambtenaren, of hij efficiënte of inefficiënte beleidsvoorstellingen bedenkt. De bewindsman heeft dan de neiging om kritische leden, die tegen zijn beleid hebben gestemd, te vervangen. Als het beleid efficiënt is dan weet de minister dat een kritisch kamerlid de verkeerde informatie heeft ontvangen. Hij leert dan dat dit kamerlid niet in staat is om goede van slechte projecten te onderscheiden. Om te voorkomen dat een goed project in de toekomst niet wordt uitgevoerd zal de minister het incompetente kamerlid willen vervangen.

Het is ook mogelijk dat de minister niet capabel genoeg is om efficiënte voorstellen te bedenken. In dat geval heeft een kritisch kamerlid de juiste informatie ontvangen. Hij is dan blijkbaar in staat

om beleid te evalueren. Een competent kamerlid zal in de toekomst waarschijnlijk ook ontdekken dat het voorstel van de minister inefficiënt is. Een incompetente minister zal dus slimme, maar kritische, kamerleden proberen te vervangen om zo zijn reputatie te beschermen. Analoog hieraan laten we zien dat de leider een kamerlid die het beleid ondersteunt niet zal vervangen. Dit kamerlid is waarschijnlijk slim als de leider goede voorstellen bedenkt en is niet capabel als de leider slechte voorstellen bedenkt. In beide gevallen wil de leider het kamerlid behouden om zo steun voor toekomstige voorstellen te verwerven.

Een centraal georganiseerde partij kan er dus toe leiden dat slimme, kritische, kamerleden worden vervangen, terwijl incompetente, loyale, leden mogen blijven zitten. In een decentraal georganiseerde partij hebben de leden van de partij de macht om de partijlijst samen te stellen. Partijleden zijn over het algemeen slecht geïnformeerd over de effecten van beleidsvoorstellingen en zien alleen de besluitvorming in het parlement. Om de kwaliteit van besluitvorming te waarborgen willen partijleden altijd een kamerlid vervangen. De kans op een verkeerde beslissing is lager als een minister door twee onafhankelijke kamerleden wordt gecontroleerd in plaats van twee keer door hetzelfde kamerlid. Vanuit het perspectief van de leden leidt een centrale partijstructuur dus tot een te sterke terughoudendheid in het vervangen van zittende kamerleden.

Hoofdstuk 4 probeert een verklaring te bieden voor de verscheidenheid in de samenstelling van commissies in het Amerikaanse Congres. Sommige commissies bestaan uit congresleden die een sterke voorkeur hebben voor het implementeren van projecten op het terrein van de commissie, ook als een dergelijk project inefficiënt is. Op andere beleidsterreinen is de samenstelling van de commissie meer een afspiegeling van het Congres. Een commissie is verantwoordelijk voor het aanleveren van informatie over de effecten van een beleidsvoorstel. De uiteindelijke besluitvorming over een voorstel vindt plaats in het Congres. We laten zien dat de variëteit in de samenstelling

van commissies een reactie kan zijn op problemen in de informatieverschaffing. Commissieleden moeten ertoe aangezet worden om te zoeken naar informatie, hun acties te coördineren, en om de gegevens die ze gevonden hebben eerlijk weer te geven.

Bij het samenstellen van een commissie zal er een afweging gemaakt worden tussen de verschillende informatieproblemen. Een commissielid die een sterke voorkeur heeft voor een bepaald project heeft de neiging om negatieve informatie over dat project te verbergen of om de gevolgen te rooskleurig voor te stellen. Manipulatie zal niet zo snel voorkomen als een commissie een representatieve afspiegeling vormt van het Congres. Immers de doelstelling van het commissielid komt dan overeen met de doelstelling van de uiteindelijke besluitvormer. Een tweede voordeel van een representatief samengestelde commissie is dat de coördinatie van informatieverschaffing optimaal is. Het voordeel van een commissielid met sterk afwijkende voorkeuren daarentegen is dat hij een sterke prikkel heeft om het Congres te overtuigen dat een bepaald project het publieke belang dient. Dit kan alleen door informatie te laten zien die controleerbaar is omdat niet-verifieerbare informatie niet vertrouwd wordt. De optimale samenstelling van een commissie hangt dus af van de kosten van informatieverschaffing, de waarde van betrouwbare informatie en de mogelijkheden tot manipulatie.

In het laatste hoofdstuk van dit proefschrift staat de informatieverschaffing door de verschillende ministeries centraal. Een typerende eigenschap van de overheid is dat het verdeeld is in departementen. Elk departement verdedigt in de eerste plaats zijn eigen beleidsterrein en niet zozeer het publieke belang. Dit systeem maakt het eenvoudig om elk ministerie af te rekenen op datgene wat ze op haar beleidsterrein bereikt heeft. Elk ministerie zal dan een sterke stimulans hebben om te gaan zoeken naar argumenten om de uitgaven voor zijn beleidsterrein te verhogen. Argumenten tegen extra verhoging van de uitgaven zullen vooral door het ministerie van financiën

geleverd worden.

In het laatste hoofdstuk proberen we een verklaring te geven waarom ministeries sequentieel naar informatie zoeken, zoals te zien is in het begrotingsproces. Als er tegelijkertijd naar argumenten voor en tegen het verhogen van het budget wordt gezocht zijn de kosten van informatievoorziening erg hoog. Dit komt omdat argumenten voor verhoging van het budget op een eerder moment gevonden kunnen worden dan argumenten tegen. Het ministerie dat gemotiveerd was om een verlaging van het budget te realiseren zal dan de neiging hebben om te stoppen met zoeken op het moment dat een ander ministerie overtuigend bewijs voor verhoging van de begroting heeft geleverd. Ministeries moeten dus gecompenseerd worden voor het risico dat het doel wat ze nastreven niet meer gerealiseerd zal worden omdat een ander ministerie gelijktijdig aan het zoeken was.

De kosten van informatieverschaffing zijn lager als er achter elkaar naar de verschillende argumenten wordt gezocht. De manier waarop een ministerie gemotiveerd wordt kan dan afhankelijk gemaakt worden van de informatie die eerder is geleverd. Stel bijvoorbeeld dat het ministerie van onderwijs met betrouwbare informatie komt dat er meer geld naar onderwijs moet. In dat geval zal er waardering voor het ministerie van financiën zijn als zij de begroting gelijk kan houden door de nadelen van meer geld voor het onderwijs te presenteren. Stel nu dat het ministerie van onderwijs geen overtuigend bewijs voor meer geld levert. Dan zal er juist waardering voor het ministerie van financiën zijn als die ervoor zorgt dat de totale uitgaven dalen.

7.3 Verder onderzoek

In dit proefschrift hebben we gekeken hoe politieke instituties het belangenconflict tussen kiezers en politici kunnen verhelpen. In veel situaties zijn politici zelf verantwoordelijk voor de inrichting

van de overheid. Dit maakt de kans kleiner dat institutionele verbeteringen worden doorgevoerd.

In hoofdstuk 3 laten we bijvoorbeeld zien dat de leider van een partij soms de neiging heeft om capabele kamerleden te verwijderen. Een verandering in de partijstructuur, zodanig dat partijleden meer invloed krijgen op de lijst, kan daarom leiden tot beter gekwalificeerde parlementariërs. De leider zal wellicht proberen zijn invloed aan te wenden om een dergelijke verandering tegen te gaan.

Dus is het belangrijk om te kijken naar de motivatie van politici om instituties te veranderen.

We hebben de interactie tussen verschillende politici bestudeerd en de wisselwerking tussen kiezers en politici bekeken. De relaties binnen het politieke stelsel worden ook beïnvloed door hoe volksvertegenwoordigers aangestuurd worden door de burgers. Zo zal een parlementariër zich sneller kritisch opstellen ten opzichte van de regering als de regering apart van het parlement wordt gekozen. Het kiesstelsel, wat de relatie tussen kiezers en gekozenen regelt, beïnvloedt dus de interactie tussen ministers en kamerleden. Verkiezingen kunnen ministers ertoe aanzetten om misstanden te verhullen. Het is dan in het maatschappelijke belang dat ambtenaren of kamerleden niet hun leider gehoorzamen, maar de misstanden aan het licht brengen. In toekomstig onderzoek is het daarom interessant om te kijken naar de mate waarin de interne organisatie van een partij of ministerie ruimte laat voor dergelijke klokkenluiders.

Een ander onderwerp van toekomstig onderzoek is het bestuderen van politieke besluitvormingsprocessen, in samenhang met de beslissing van burgers om de politiek in te gaan. In onze analyse hebben we gekeken naar het gedrag van een tevoren bepaalde groep politici. De karakteristieken van de volksvertegenwoordigers kunnen ook afhangen van de institutionele omgeving. Burgers kunnen verschillen in eerlijkheid, geschiktheid of in de mate waarin ze om de samenleving geven. Als gevolg hiervan zal de motivatie voor burgers om politiek actief te worden afhangen van de institutionele regels. Centraal georganiseerde partijen trekken misschien vooral opportunistische

mensen aan. Idealistische types zullen wellicht minder snel geneigd zijn om de politiek in te gaan als er veel opportunistische mensen werken. Instituties hebben dan niet alleen een direct effect op de kwaliteit van besluitvorming, zoals benadrukt in dit proefschrift, maar ook indirect via de selectie van politici.

Recentelijk is er in een aantal artikelen onderzoek gedaan naar de motivatie van burgers om de politiek in te gaan. In deze artikelen maakt iedere burger een afweging om wel of niet politiek actief te worden. Dit laat de rol van politieke partijen buiten beschouwing. Partijen lijken een belangrijke schakel tussen burgers en de politiek te zijn. Partijen selecteren en leiden burgers op tot politicus. Dit roept de vraag op hoe partijen hun vertegenwoordigers selecteren en motiveren. Worden de meest competente en eerlijke mensen geselecteerd voor het beroep van politicus? Is er sprake van verdringing van idealistische mensen door opportunistische leden? Wat is de invloed van de partijstructuur op de competitie binnen een partij? Politieke economen hebben zich tot nu toe vooral gericht op de interactie tussen partijen en niet gekeken naar de competitie binnen een partij. Het analyseren van de wisselwerking tussen leden van één partij lijkt een veelbelovende lijn voor toekomstig onderzoek. Dit onderzoek kan ons meer inzicht geven over het gedrag van onze afgevaardigden, en wellicht oplossingen bieden om dit gedrag te sturen.

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