# The Political Economics of Policy Centralization
# De Politieke Economie van Beleidscentralisatie

(met een samenvatting in het Nederlands)

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# Chapter 1

# Introduction

## 1.1 Motivation

Currently, centralization of policy making is at the forefront of the political debate. As a first example among many, at the time of writing the member states of the European Union after long and sometimes bitter debate have derailed the ratification process for the European Constitution. Some like the EU to be more federalist, others argue that it should return powers to the member states. For a second example, in the Netherlands the centralized nature of the political system is open to debate. Opponents to the current system of a single centralized proportional election argue that politicians should partly be elected on a regional basis, so as to give parties more incentives to take notice of the demands of the common people. In the US, the recent tropical storms have revived with vengeance the debate on the allocation of powers between the federal government and the individual states. Certainly, risk sharing between US states creates cost saving. However, in case of emergency, do rich Northerners care enough for poor Southerners?

With respect to the costs and benefits of centralization, many of the trade-offs are well-known. In his seminal contribution on fiscal federalism Oates (1972) argues that common policies create economies of scale and internalize spill-overs. These benefits come at the cost of uniformity of policies for jurisdictions with heterogeneous policy preferences. Clearly, this trade-off is

only applicable when the public good can not be differentiated across regions. A prominent example is defense spending, but it is hard to come up with many more examples of public goods that in theory can not be differentiated. Hence, when public goods can be adjusted to meet local preferences (roads, libraries, and the classical swimming pool), the trade-off as described by Oates does not exist. In that case centralized policy making would always be superior when compared to decentralized policy making.[1]

An important problem of centralized provision goods is that it may create adverse political incentives when policy makers are not social planners. Hence, the *execution* of policy is likely to generate socially inefficient outcomes. The motivation for this thesis is to contribute to the understanding of the nature of these policy making failures.

To give an example, cost-sharing of local public goods creates a common pool problem. Consider a dinner with friends. Everybody agrees that cost-sharing is most efficient, as it reduces check out time. However, we are well aware that cost-sharing creates an incentive to order more luxurious food, for the marginal cost of doing so are lower than when each pays for his own meal. Thus, the central trade-off is between the efficiency gains from saving on check out time on the one hand and overspending on the other hand.[2]

When public goods can be differentiated across regions, the question whether to centralize policy making boils down to a trade-off between the efficiency gains from centralization (economies of scale, spill-overs) on the one hand and the political incentive costs on the other hand. In general, citizens seem to be well aware of this trade-off. To take up the EU discussion in the Netherlands as introduced in the first paragraph, few people question that in theory the EU is better placed to perform a wider set of policy tasks. The main problem is whether the execution of these policies will be efficient. Critics in the Netherlands point to the lack of transparency of EU institutions, the presumed democratic deficit that gives policy makers too much discretion, and to the corruption associated with EU subsidies. All these are

[1] The claim extends to the centralization of regulation if differentiation between regions is possible.

[2] In a field experiment conducted in a restaurant, Gneezy et al. (2004) provide evidence that individuals spend considerably more when forced to split a common bill.

political failures.[3]

## 1.2 Aim and scope

The aim of this thesis is to get a better understanding of how centralization affects the efficiency of policy making. To analyze this, the chapters in this thesis deal with political incentive problems. The chapters have in common a set of assumptions on the institutional setting in which centralized policy making takes place. First, the centralized policy making setting is modeled as a legislature consisting of local representatives. For this reason, the models are most applicable to loose federations such as the EU, where there is no (strong role for a) federal executive. In addition, the political process is set up as an agency problem, where citizens within a member state of the federation act as principals to their political agent. In this set up, centralization affects the incentives for the principals. As I will treat preferences as given, this means that centralization alters the constraints on policy making, for example through cost-sharing.

Two elements of the models developed in this thesis are worth mentioning. The first – that may not be too restrictive for the taste of most economists – is that all actors (including voters) are fully rational and maximize their individual utility. Readers who believe that this assumption is too restrictive may consider the outcomes of the thesis as benchmark cases. In addition, all chapters assume perfect information, which indeed may seem restrictive to economists as well. Clearly, it is well worth exploring how imperfect information affects the results. In the concluding chapter, I discuss some papers that deal with centralization issues when some actors are imperfectly informed.

[3]The Eurobarometer biannually measures the sentiments of EU citizens on the functioning of the European Union. In its Spring 2005 survey, when asked to identify three priorities for the EU, 39 percent of respondents in the Netherlands called for better information on the decision making process, which is far more than the percentage of respondents choosing issues such as 'combatting poverty' and 'fostering peace and stability'. Other important choices were the 'improvement of democratic rights of individuals in the EU' and 'reorganization of EU institutions to make them more transparent'.

The chapters in this book are positive in the sense that, given the assumptions, they aim to uncover the mechanisms through which centralization may lead to failures in policy making. Wherever possible, I have formulated these mechanisms as hypotheses that can be falsified by empirical analysis. However, in this thesis I only make a limited attempt to confront theory with data. To defend this, it should be borne in mind that the object of the study (inefficiency in policy making) is difficult to observe. Certainly, there is much anecdotal evidence on political failure. However, hard systematic data are mostly missing. One could resort to studying the relation between centralization and policy *outcomes* such as overspending and corruption, but then one treats the political mechanism through which these come about as a black box.[4]

Even if empirical evidence on the effects of centralization is missing, when the assumptions are judged not to be overly restrictive, the models can be used for normative analysis. I will do so where appropriate. These recommendations will take the form of institutional arrangements. A follow-up question, beyond the scope of this book, is whether these institutional arrangements will be chosen by rational actors. In the concluding chapter, I will briefly discuss some work that deals with such endogenous political institutions.

## 1.3 Relation to the literature

In this thesis, I will use three agency set-ups to examine the effects of centralization: strategic delegation by the median voter, elections with probabilistic voting, and lobbying. In the following three subsections, I briefly discuss the key papers for these three settings and in particular pay attention to why agency problems lead to inefficient policy outcomes.[5] In addition, by dis-

[4] In the empirical part of chapter 6, I try to open the black box slightly by analyzing how electoral rules shape policy making.

[5] In this section, I only discuss a few selected papers in order to clarify the main conclusions of this thesis and relate them to other work. The introductions to each of the individual chapters contain more references to related literature. Moreover, recently some excellent books have been published that survey the literature in more detail. Mueller's

cussing different policy making settings, I will motivate why I use more than one agency set up.

### 1.3.1 Strategic delegation

Strategic delegation of policy making can best be discussed in relation to the median voter theorem. The median voter theorem states that policies in a direct democracy are in line with the preferences of the median voter. The intuition is that when the policy-space is one-dimensional and voters choose the policy alternative that is closest to their most preferred policy (which is called 'Euclidian' voting), the only policy proposal that obtains an overall majority against any other proposal is the one preferred by the median voter. As is well-known, the result that policy outcomes favor the median voter extends to Down's (1957) model of two-party electoral competition, which is a stylized version of representative democracy.

Besley and Coate (2003) introduce strategic delegation to show how an inefficiently high supply in public goods supply arises when two regions jointly decide on the production of these goods. In each region preferences for local public goods are heterogeneous and there is a citizen with median preferences who would win a decentralized election. When decision making is centralized, Besley and Coate show that the median voter has an incentive to strategically delegate policy making to a citizen with stronger preferences for public goods than her own. Strategic delegation serves as a credible commitment to a policy stance in centralized bargaining. Given the preferences of the policy maker in the other country, delegation to a citizen which stronger preferences for the public good increases the local supply of which the costs are shared with the other region. Hence, what drives the result is that centralization creates a common tax pool that can be tapped by misrepresenting local preferences.

(2003) textbook discusses the main theories in public choice. Recent contributions to the field of political economics are dealt with in Persson and Tabellini (2000). Drazen (2000) discusses many of these in relation to macroeconomic policy making. Grossman and Helpman (2001) focus on the role of special interest groups in the policy making process.

In which policy making settings will strategic delegation be relevant? Clearly, it is when member states (voters or their local policy maker) elect the agent who represents them at the centralized level. One crucial assumption is that appointed policy makers once in office are not constrained by their principals. Hence, in this model the policy stance of the delegate can not be contracted by the median voter, for the agent does not care for re-election or monetary rewards. Thus, the only parameter that is relevant for the principal are the policy preferences of the agent. In many international organizations, once appointed the agent has such freedom to follow her own preferences. Moreover, in some cases the rules of the centralized legislature explicitly state that the agents should not pursue the interests of their principals. This, for example, is the case for the European Commission. Hence, in settings where delegates have considerable power, the crucial stage for the median voter is to select a person with the right preferences.

### 1.3.2 Swing voters

Probabilistic voting theory states that in elections not all voters are equally likely to swing the ballot towards one of the candidates or parties. The reason is that some individuals have a strong ideological bias for one of the candidates or parties and thus are less responsive to policy proposals of other political parties or candidates for office. Dixit and Londregan (1996) develop a model where regions differ in their ideological bias towards one of two parties. Voters with a low ideological bias are more easily pulled towards the party that offers them financial benefits. Consequently, when parties effectively compete for swing votes in a centralized election, policies are biased towards regions that have a low ideological bias. Persson and Tabellini (1999) extend this analysis by arguing that a majoritarian electoral rule magnifies inefficiencies in local public goods supply when districts differ in the amount of swing voters. The reason is that when parties only have to win swing districts, this effectively eliminates opposition to excessive public goods supply from voters in electorally safe districts.

To illustrate the inefficiencies that may arise under probabilistic voting,

consider a country consisting of three regions where there is a Christian democratic party and a Socialist party. Suppose that the Christian party is strong in the country side and the socialists are strong in the industrialized coastal region. Strong means that in these two regions there is a strong ideological bias towards one of the parties. Further, there is a city in the middle that has no bias towards one of the parties. In that case, both parties commit to low supply in the coastal and rural area, and both will promise to deliver a high supply for the city. However the parties do not commit to zero supply in the coastal and rural area, as this would give the other party the opportunity to win votes for the national assembly in these regions. Overall, when taxes are the same for all citizens, the rural and costal regions will be net losers with inefficiently low supply of public goods and the middle region will be a net winner with inefficiently high supply.[6]

Following Persson and Tabellini (1999), what would happen when the centralized legislature has members who are selected in regional elections? Suppose that the party leadership designs the policy platforms and the legislature implements the policy of the winning party. In that case, as there is a strong bias in preferences, the Christian democratic party wins the seat in the countryside and the socialists win the seat in the coastal region. Hence, effectively there is only electoral competition between the two parties in the swing district. But then both parties commit to supply no public goods at all to the coastal and to the rural area, as this would reduce their chance of winning votes in the swing city region. Consequently, regional representation in a centralized legislature increases the inefficiencies in local public goods supply when parties are organized nationally.

It is appropriate to use the probabilistic voting model when there is representative democracy and a nation-wide election. Such centralized elections are absent in most international organizations, including the EU. Hence, probabilistic voting models are best used when analyzing issues of centralization within nation states and strong federations.

[6]Note that decentralized policy making will be politically efficient, as in that case the two parties will have to please the local median voter.

### 1.3.3 Lobbying

Another important deviation from the median voter theorem occurs when some citizens have an incentive to form a lobby to influence policy making. As a prominent example, Olson (1965) argues that small groups of citizens with similar preferences may overcome the free-riding problem to organize into a pressure group. He argues that policy is biased in favor of such small and well-organized groups.[7]

To study how lobbying affects policy choice, many papers use the Grossman and Helpman (1994) common agency set up. In this model, in the first stage each lobby offers a contract to a policy maker, where payment is contingent on the policy maker's action. In the second stage, the policy maker implements a policy that maximizes his own utility. Grossman and Helpman assume that the policy maker maximizes an objective function that has as arguments social welfare and contributions by lobbies. Because the utility of lobbies is part of social welfare and these groups provide contributions to the political agent, policy will be biased in favor of organized groups.

Building on the Grossman-Helpman model, Persson and Tabellini (1994) argue that the common pool effect of centralization may induce the member states to engage in lobbying. In their model, the member states lobby a single policy maker in the center to supply public goods to their citizens. In that case, lobbying may cause overspending on local public goods. Bardhan and Mookherjee (2000) extend this model to investigate the relative capture of the center versus that of local government by developing a lobby model that incorporates electoral competition between two parties for swing votes. They show that, as electoral competition between parties for swing votes is stronger at the centralized level, this weakens the incentives to use policy favors for special interest groups as a means to generate funds for attracting uninformed voters.

Lobbying can be important in a pre-election and in a post-election setting.

[7] Becker (1983) is the first to model policy formation as a fight among special interest groups. He shows that policy is biased in favor of small and efficiently organized groups. However, he adds that competition among lobbies may also benefit society, for it provides incentives to use efficient instruments for redistribution.

In the election campaign, parties may need funds to communicate their policy positions to the electorate. To generate funds, the party leadership faces a trade-off between on the one hand pleasing the electorate at large and on the other hand pleasing the lobbies. In a post-electoral setting, the incumbent may also care for reelection so that he faces the same trade-off as parties in a pre-election stage. In addition, the acceptance of funds can also be motivated by a desire for private consumption of the incumbent.

A loose interpretation of the Grossman-Helpman model is that there is an implicit exchange between policy makers and lobby groups: policy makers and lobby groups simply exchange something that is of value to both of them and is costly to produce. For example, the policy maker needs information on a policy domain that only a lobby group can supply. To provide this information, the lobby must incur research and organization costs. If the lobby provides the information, the policy maker is willing to bias legislation in its favor.[8]

## 1.4 A short overview of the chapters

In this thesis policy making in the center is modeled as a political process where individual member states are engaged in various political tactics to obtain a larger slice of the cake, so as to shift the costs of local public goods to other jurisdictions. The main purpose of chapter 2, coauthored with my supervisor Robert Dur, is to extend and generalize the Besley and Coate (2003) model. In this chapter we argue that the variation in policy outcomes under centralization across several domains can be explained by the cost structure of common policies. When costs are shared, the Besley and Coate story applies and we observe overspending, for delegates are policy lovers compared to the median voter. By contrast, when there are unshared cost at the local level of centralized policies that citizens try to avoid – the 'not in my backyard' principle – median voters strategically delegate policy making to a politician who values local public goods less than the median voter herself. As

[8]There now is a large literature on informational lobbying. See the paper by Potters and van Winden (1992) and the survey of the literature in Grossman and Helpman (2001).

a result, there is underspending on local public goods. Hence, a combination of the common pool incentive to obtain local public goods for low cost (which causes delegation to 'lovers') and the free-riding effect where citizens try to avoid unshared costs (which results in delegation to 'conservatives') explains the variance of common spending across policy domains at the centralized level.

Chapter 3, that draws on a paper with Colin Jennings, deals with policy rivalry. In this chapter, citizens care for the relative supply of public goods compared to other regions. We argue that in a decentralized policy making setting, the median voter delegates to a policy maker with weaker policy preferences to those of her own, so as to reduce the spending on public goods in the other country. By contrast, when the regions coordinate public goods supply, this incentive disappears and the median voters delegate to public goods lovers. The model in chapter 3 may well explain the failure of policy coordination in situations where groups in society are antagonistic towards each other, such as in the conflict in Northern Ireland.

In chapter 4, I analyze why we fail to observe a race to the bottom in environmental policy making in developed countries. I argue that when citizens care much for the environment, they have an incentive to shift production to the other country by increasing environmental protection at home. They do so by appointing relatively green politicians. However, for poor countries where the median voter cares little for the environment compared to the profits of the home firm, I argue that strategic delegation results in a more severe race to the bottom.

Chapter 5 studies how centralization alters lobbying behavior. In contrast to earlier work in this area, I show that centralization may reduce lobbying expenditures. I argue that centralization provides stronger incentives for local policy makers to supply public goods to domestic interest groups. For this reason, the policy maker becomes an ally of national special interest groups, who anticipate this and, hence, offer a smaller contribution. In this chapter, I also discuss the effects of enlargement of unions on lobbying and consider the incentives of centralization on lobby formation.

Chapter 6 shifts the attention to electoral competition for swing voters. In

this chapter two parties compete for the majority in a centralized legislature. The instrument to gain votes is to announce a tariff structure for three regions that each produces a geographically distinct product. First, I show that when jurisdictions are unitarian states, all citizens would opt for free trade. Then, I demonstrate that centralized policy making results in protection for at least one of the three products. Further, along the lines of Persson and Tabellini (1999), I then discuss the effects of different electoral rules, where I derive the hypothesis that countries with a majoritarian electoral rule have higher protection. I provide some empirical evidence in favor of this hypothesis. Chapter 7 draws up the main conclusions of the thesis and speculates on the future of the field.

# Chapter 2

# Why Does Centralization Fail to Internalize Policy Externalities?

Co-author: Robert Dur[1]

## 2.1 Introduction

Centralization of political decision making often fails to produce the desired results. For instance, it is frequently argued that decision making within the European Union results in overspending and overregulation in some policy areas, while too low spending and too little regulation persist in others (Alesina and Wacziarg 1999, Alesina et al. 2005). Even more puzzling, in policy domains where it is hard to maintain that cooperation among the member states of the EU brings large benefits, integration has progressed impressively. For instance, the externalities on other countries that may not be taken into account under decentralized decision making - the *raison d'être* of centralization- seem relatively small in regional development policies, agricultural policy, and social funds (Bertola et al. 2001). In contrast, the EU

[1]This chapter is a slightly adapted version of an article published in *Public Choice*, March 2005, Vol. 122(3/4), pp. 395-416

fails to make progress in areas where the coordination of national policies would really help. This holds, for instance, for asylum policies and environmental policies. Why is there such an uneven balance in the results of centralization of decision making across policy domains?

Studies which try to explain failures of centralized decision making usually rely on noncooperative behavior of legislators in centralized decision making bodies. For instance, it is well-known that if cost of public goods are financed through a central budget, a common pool problem may arise. At a central level, representatives will push for high spending on public goods which particularly favour their jurisdiction because they only pay a part of the cost of public goods. When central decisions are taken by majority rule, minimum winning coalitions will form. Spending on local public goods in jurisdictions that belong to the coalition will be excessively high at the expense of the jurisdictions outside the coalition. From an *ex ante* point of view, policy outcomes are Pareto inefficient (see Persson and Tabellini 2000 chapter 7, for a survey of this literature).

Noncooperative approaches to the behavior of legislators have been criticized for several reasons. First, when the number of representatives is relatively small (which is the case in, e.g., EU decision making), it is likely that they will exploit the benefits of cooperation. Second, decisions in supranational bodies often require unanimity, thus forcing legislators to cooperate. In the EU, this holds for policies falling under the heading of the second and third pillar.

Recently, Besley and Coate (2003) show that even if agents in the central decision making body behave cooperatively, suboptimal policy decisions may result. They develop a model in which delegates from jurisdictions bargain over the amounts of public goods provided by the local governments. They show that overprovision of public goods may result from strategic delegation by jurisdictions. In their model, the rationale for centralized decision making is that local public goods have positive spillover effects on welfare in other regions. Decentralized decision making therefore results in underprovision of public goods. Centralized decision making completely resolves the externality problem provided that local policy makers delegate bargaining to agents

who have the same preferences for public goods as themselves. However, when the cost of public goods are shared through a common budget, policy makers have an incentive to delegate bargaining to 'public good lovers'. The delegation of a person with strong preferences for public goods serves to increase spending on local public goods at the expense of the common budget. Since in equilibrium all districts send public good lovers, strategic delegation results in overprovision of public goods.

In this chapter, we extend the analysis by Besley and Coate (2003) to explain why underprovision of public goods may persist under cooperative centralized decision making. Because our set up is very close to theirs, their paper and this chapter may serve as complements to explain why cooperation at a centralized level sometimes results in overspending, whereas in other times it results in underspending. We extend the model by allowing for cost which can not be shared among districts. Examples of policy domains where non-shareable cost are important include environmental policy (which impose indirect costs on local industries), asylum policies (where short term adjustment costs may fall on local communities) and multilateral efforts for peacekeeping (that may result in local casualties). We show that if a sufficiently large part of the cost of public goods can not be shared among regions, underprovision of public goods persists under centralized decision making because local policy makers delegate bargaining to 'conservatives'. Underprovision of public goods is strongest when spillover effects are moderate. We show that both in the absence of spillover effects and in the case of global public goods, centralized decision making produces the socially optimal amounts of public goods. Finally, we derive financing rules that eliminate strategic delegation by local policy makers and thus promote efficient public goods provision.

## 2.2 Related literature

A considerable body of literature on federalism shows why centralization may produce suboptimal policies. Many of the contributions are in the tradition of Oates (1972) decentralization theorem. An important assumption

in Oates' analysis is that centralization implies policy uniformity. Then, as Oates shows, the optimal political design of jurisdictions entails a trade-off between the benefits of centralization of policy making (e.g. economies of scale and internalization of externalities) and the costs of policy uniformity (a neglect of the diversity in preferences for public goods). In Oates' analysis, policies are set by a social planner. More recently, attention has shifted to the political processes that govern policy choices and the incentives to centralize policy making (Alesina and Spolaore 1997, Bolton and Roland 1997, Ellingsen 1998, Alesina 2001a, 2001b, Goyal and Staal 2004). When policies are set according to the wishes of a majority of voters in the federation, regions which have minority preferences may be worse off under centralized decision making. This may give regions an incentive not to join a federation even when potential efficiency gains are large. Recently, Gradstein (2000) argues that a commitment to an egalitarian bargaining rule may be needed to extract the full benefits of centralization and to guarantee the political sustainability of centralized decision making.

Political-economic studies in the Oates' tradition are well suited to explain the cost of centralization in policy domains where public goods can not be differentiated according to the preferences of localities. However, in many cases it is possible to decide centrally on geographically differentiated levels of public goods in line with the diverse regional preferences and cultures. This opens up to redistribution games among regions to gather in a larger share of central spending. In Besley and Coate (2003), regions seek to attract a larger share of central spending by delegating bargaining to public good lovers. In Persson and Tabellini (1994) local policy makers use contributions to persuade the central legislator to allocate public spending towards their region. As all regions non-cooperatively make these contributions, in equilibrium the central legislator supplies too many local public goods. Cheikbossian (2000) points out that supply decisions on public goods are often taken at the local level. If these goods are financed through a central budget, voters in each region have an incentive to appoint a public good lover as their local policy maker.

In all these studies, centralization of political decision making results

in overprovision of public goods. The main contribution of this chapter is to examine under what conditions underprovision of public goods may persist under centralized cooperative political decision making. Two other recent papers have dealt with this issue (Segendorff 1998, and Brueckner 2000). As in this chapter, underspending emerges because local policy makers delegate bargaining to conservatives, but for different reasons. Segendorff (1998) assumes that the preferences of the delegates affect policy outcomes even in the case of a breakdown in negotiations. Then, delegating bargaining to a conservative agent serves as a threat to the delegate from the foreign region, and hence changes the bargaining outcome in favour of the domestic policy maker. Brueckner (2000) allows for bargaining over side-payments in addition to policies. He shows that to attract side-payments, local policy makers delegate policy making authority to agents who favour the status quo of low spending on public goods. In contrast to these studies and to the study of Besley and Coate, this chapter identifies the characteristics of policy domains in which underspending or overspending is likely to occur.

## 2.3 The model

The model revolves around political decision making on public goods provision in two regions. Regions are identical and labelled $i = 1, 2$. Public goods provision in one region has positive spillover effects on the utility of individuals in the other region. The production of one unit of public goods in a region entails a per capita tax cost of $p$. For convenience, taxes are non-distortionary. In addition, each unit of public goods produced in a region has indirect per capita utility cost $c$ for all citizens in the region. For simplicity, we assume that indirect cost are linear in public goods production. The difference between the tax cost $p$ and the indirect cost $c$ is that tax cost can be shared between the regions through a common central budget while indirect cost can not.

Individuals in each region differ in their preferences for public goods relative to private goods. The utility function of individual $j$ in region $i$ is given

by:

$$U_i^j = \lambda_i^j \left[b(g_i) + \kappa b(g_{-i})\right] + y - t_i - cg_i \tag{2.1}$$

where $g_i$ is the amount of public goods provided in region $i$, $y$ is gross per capita income, and $t_i$ is the per capita tax in region $i$.[2] Thus, $y - t_i$ is per capita consumption of private goods in region $i$. When public goods are financed locally, the per capita tax $t_i$ equals $pg_i$. When tax cost are shared among the regions through a common budget, $t_i = \frac{p}{2}(g_i + g_{-i})$. In Section 7, we examine financing through a common budget with more sophisticated sharing rules. As taxes are assumed to be nondistortionary, we will henceforth omit the gross per capita income $y$. The function $b(\cdot)$ is concave and increasing. The parameter $\lambda_i^j \geq 0$ accounts for differences in preferences for public goods relative to private consumption among individuals in a region. Individuals in each region are symmetrically distributed over the interval $\left[\underline{\lambda}, \overline{\lambda}\right]$. The larger is an individual's $\lambda$, the stronger her preference for public goods. The parameter $0 \leq \kappa \leq 1$ measures spillover effects. If $\kappa = 0$, spillover effects are absent: individuals in region $i$ do not care for public goods provision in region $-i$. The larger is $\kappa$, the larger is the spillover effect. If $\kappa = 1$, individuals care equally for the public goods produced in their own region as they do for the public goods produced in the other region. Then, the public goods may be called 'global' public goods.

The assumption of separability of local public goods in the utility function (2.1) may be considered restrictive. In the Appendix, we examine an alternative specification where local public goods are strategic substitutes.

## 2.4 The social optimum

Before we consider political decision making on public goods, we first derive the socially optimal amounts of public goods. The social optimum serves as a benchmark against which to evaluate the outcomes of political decision mak-

[2] Our set up differs slightly from that of Besley and Coate (2003) in the treatment of spillovers. The utility from public goods in their model is $\lambda_i^j \left[(1-\kappa)\ln g_i + \kappa \ln g_{-i}\right]$, implying that the size of spillovers $\kappa$ affects the trade-off between the domestic public good $g_i$ and private consumption. This is not the case in our model.

ing under different institutional structures. We define the social optimum as the outcome which maximizes the unweighted sum of utilities of all individuals in both regions. Since individuals are symmetrically distributed over the interval $\left[\underline{\lambda}, \overline{\lambda}\right]$, and with population size normalized to one, social welfare is equal to the sum of the utilities of the median voters in both regions. Hence, the socially optimal amounts of public goods are found by maximizing:

$$\begin{aligned} V^s &= \lambda_1^m[b(g_1) + \kappa b(g_2)] - (p+c)\, g_1 \\ &\quad + \lambda_2^m[b(g_2) + \kappa b(g_1)] - (p+c)\, g_2 \\ &= \lambda^m(1+\kappa)[b(g_1) + b(g_2)] - (p+c)\,(g_1+g_2) \end{aligned} \tag{2.2}$$

where $\lambda_1^m$ and $\lambda_2^m$ are the median voter's values of $\lambda$ in region 1 and 2, respectively, which are the same since regions are identical. Socially optimal public goods provision is described by the following first-order conditions:

$$\begin{aligned} \lambda^m(1+\kappa)b'(g_1) - p - c &= 0 \\ \lambda^m(1+\kappa)b'(g_2) - p - c &= 0 \end{aligned} \tag{2.3}$$

It is clear from (2.3) that the socially optimal amounts of $g_1$ and $g_2$ increase in the intensity of the median voters' preferences for public goods $\lambda^m$, increase in spillovers $\kappa$, and decrease in the cost of public goods $(p+c)$.

## 2.5 Decentralized decision making

Under decentralized decision making, each region decides independently on the provision of public goods. Public goods are financed locally. Hence, the per capita tax $t_i$ equals $pg_i$. We assume that in each region the policy maker's preferences coincide with the preferences of the median voter.[3] Hence, the policy maker chooses $g_i$ to maximize (2.1) where $\lambda_i^j = \lambda_i^m =$ the median $\lambda$ in region $i$. The policy maker in region $i$ takes $g_{-i}$ as given when deciding on $g_i$.

[3]If local public goods are strategic substitutes, voters have an incentive for strategic delegation, see the Appendix. As a result, underprovision is even more severe than in the case described in the main text.

Optimal public goods provision in each region under decentralized decision making is described by the first-order condition:

$$\lambda_i^m b'(g_i) - p - c = 0 \tag{2.4}$$

As in the social optimum, public goods provision under decentralized decision making increases in the intensity of the median voter's preferences for public goods and decreases in the costs. In contrast to the social optimum, the amount of public goods is independent of the size of the spillover effect $\kappa$. Comparing (2.3) with (2.4), it follows that for $\kappa > 0$ decentralized decision making results in underprovision of public goods. The intuition is clear. Since the policy makers do not take into account the positive spillover effect of public goods on the utility of the citizens in the foreign region, the supply of public goods is too low.

## 2.6 Centralized decision making with sincere delegation

To resolve the problem of underprovision of public goods, the two regions may decide to install a central government or a supra-national decision making body to decide on local public goods provision. We assume that centralized decision making is organized as follows. Each region appoints an agent to the central decision making body. The agents from the two regions bargain over the levels of $g_1$ and $g_2$. The tax costs of public goods, $p(g_1 + g_2)$, are financed through a common central budget. Hence, the per capita tax in each region is $t_i = \frac{p}{2}(g_i + g_{-i})$. The indirect costs, $cg_1$ and $cg_2$, are borne locally.

Assume for the moment that policy makers delegate bargaining at the central level to agents with the same preferences as their own. We refer to this case as 'sincere delegation', as policy makers make no effort to misrepresent local preferences for public goods. Following Besley and Coate (2003), we assume that the bargaining outcome is given by the maximum of the sum of

utilities of the agents at the bargaining table:[4]

$$\begin{aligned} V^c &= \lambda_1^m[b(g_1)+\kappa b(g_2)] - \frac{p}{2}(g_1+g_2) - cg_1 \\ &\quad +\lambda_2^m[b(g_2)+\kappa b(g_1)] - \frac{p}{2}(g_1+g_2) - cg_2 \\ &= \lambda^m(1+\kappa)[b(g_1)+b(g_2)] - (p+c)(g_1+g_2) \end{aligned} \tag{2.5}$$

Notice that $V^c$ is identical to the social welfare function $V^s$ given by (2.2). Hence, centralized decision making with sincere delegation produces the socially optimal levels of public goods described by (2.3). Centralization of political decision making thus completely resolves the externality problem, provided that delegation is sincere. Recall that the social optimum maximizes the sum of the utilities of the median voters in the two regions. Since regions are identical, it follows that both median voters are better off under centralized decision making with sincere delegation compared to decentralized decision making.

## 2.7 Centralized decision making with strategic delegation

In this section, we relax the assumption that delegation is sincere. We show that policy makers have an incentive to misrepresent their policy preferences at the central level. As a result, under centralized political decision making underspending may persist or overspending may arise.

To clarify the policy makers' motives for misrepresenting their policy preferences, we first derive the amounts of public goods that would be set if one of the policy makers had complete control over central policy.[5] Given that the direct cost of public goods $p$ are financed through a common budget

[4] Alternatively, we could assume that the bargaining outcome is described by the Nash bargaining function. This would give policy makers additional incentives to misrepresent their policy preferences, particularly when the preferences of the delegates affect the policy makers' outside options, as in Segendorff (1998), or when delegates also bargain about side-payments, see Brueckner (2000).

[5] This case is close to Besley and Coate (2003)'s analysis of centralised decision making with a noncooperative legislature.

while indirect cost $c$ are borne locally, the objective function of the policy maker from region $i$ is:

$$V_i^m = \lambda_i^m[b(g_i) + \kappa b(g_{-i})] - \frac{p}{2}(g_i + g_{-i}) - cg_i \tag{2.6}$$

The optimal levels of $g_i$ and $g_{-i}$ are described by:

$$\begin{aligned} \lambda_i^m b'(g_i) - \frac{p}{2} - c &= 0 \\ \lambda_i^m \kappa b'(g_{-i}) - \frac{p}{2} &= 0 \end{aligned} \tag{2.7}$$

Comparing (2.7) with (2.3), it is clear that even though centralization increases both policy makers' welfare, individually optimal provision of public goods generally diverges from the amounts arising under centralized decision making with sincere delegation. This conflict of interest gives policy makers an incentive to distort the central decision. Let us consider two special cases.

First, if indirect costs are zero, $c = 0$, all of the costs of public goods are financed through a common budget. Then, unless $\kappa = 1$, the supply of domestic public goods $g_i$ under centralized decision making is too low from the perspective of the policy maker, while the supply of foreign public goods $g_{-i}$ is too high. This is the common-pool problem: common financing drives a wedge between the benefits and cost of local public goods. While the benefit of an increase in public goods provision in one of the regions is largely region-specific, the cost is spread over the two regions. Common financing therefore gives an incentive to both policy makers to push for a *higher* supply of domestic public goods and *lower* supply of foreign public goods. The only exception is when public goods are 'global' public goods, $\kappa = 1$. Then, benefits and cost of public goods are perfectly in line given that all cost are shared.

Second, if tax costs are zero, $p = 0$, all of the cost are borne locally. Then, unless $\kappa = 0$, centralized decision making results in too high a level of domestic public goods and too low a level of foreign public goods from the perspective of each policy maker. Clearly, since all cost are borne locally, the policy maker wants to free ride on an infinite amount of foreign public goods.

The policy maker wants to provide only a moderate amount of domestic public goods, viz. the same level that arises under decentralized decision making (compare (2.7) with (2.4)). Indirect cost thus give incentives to push for *lower* domestic public good supply and for *higher* foreign public good supply. Given that $p = 0$, the only case in which a policy maker does not have an incentive to move public goods provision away from the social optimum is when spillovers are absent, $\kappa = 0$, i.e. when the supply of public goods under centralized decision making coincides with that under decentralized decision making.

To bring the central decision on public goods provision closer to the policy maker's individual optimum, the policy maker may delegate bargaining at the central level to an agent with preferences different from her own. We assume that policy makers select the agents simultaneously and independently from each other.[6] Agents are selected from the regions' populations. Recall that individuals in each region differ only in their relative preference for public goods, given by the parameter $\lambda$. We assume that citizens' preferences are sufficiently varied so that an interior solution to the policy maker's selection problem is ensured.

As in the previous section, the bargaining outcome is given by the maximum of the sum of utilities of the agents at the bargaining table:

$$V^c = \lambda_1^d[b(g_1) + \kappa b(g_2)] + \lambda_2^d[b(g_2) + \kappa b(g_1)] - (p + c)(g_1 + g_2) \tag{2.8}$$

where $\lambda_i^d$ is the preference parameter of the agent appointed by region $i$'s policy maker. Maximizing (2.8) to $g_1$ and $g_2$ results in:

$$\begin{aligned} \left[\lambda_1^d + \lambda_2^d\kappa\right] b'(g_1) - p - c &= 0 \\ [\lambda_2^d + \lambda_1^d\kappa]b'(g_2) - p - c &= 0 \end{aligned} \tag{2.9}$$

[6] Clearly, the inefficiencies that arise from strategic delegation may be avoided by coordinating the delegation decision. If both policy makers commit to sincere delegation, the central bargain will produce the social welfare maximising level of local public goods. In practice, however, it seems difficult to commit to such an agreement, as *ex ante* the preferences of the domestic delegate (and, possibly, even those of the domestic policy maker) are difficult to assess for foreign policy makers.

The comparative statics are obtained by applying the implicit function theorem to (2.9):

$$\begin{aligned} \frac{dg_1}{d\lambda_1^d} &= \frac{b'(g_1)}{-[\lambda_1^d + \lambda_2^d\kappa]b''(g_1)} \text{ , } \frac{dg_2}{d\lambda_1^d} = \frac{\kappa b'(g_2)}{-[\lambda_2^d + \lambda_1^d\kappa]b''(g_2)} \text{ , } \\ \frac{dg_2}{d\lambda_2^d} &= \frac{b'(g_2)}{-[\lambda_2^d + \lambda_1^d\kappa]b''(g_2)} \text{ , and } \frac{dg_1}{d\lambda_2^d} = \frac{\kappa b'(g_1)}{-[\lambda_1^d + \lambda_2^d\kappa]b''(g_1)} \end{aligned} \tag{2.10}$$

which are all positive. Hence, delegating bargaining to an agent with stronger preferences for public goods results in an increase in both the domestic and the foreign public good. The increase in domestic public goods provision is larger than the increase in foreign public goods, unless public goods are global public goods ($\kappa = 1$). It is also clear that the effect of policy maker $i$'s delegation decision on the bargaining outcome depends on the other policy maker's delegation decision.

Each policy maker selects a delegate $\lambda_i^d$ so as to maximize $V_i^m$ given by (2.6). Since selection takes place simultaneously and independently, each policy maker takes as given the preferences of the delegate from the other region. In the Nash-equilibrium, region 1's policy maker's selection decision is optimal given the selection decision of region 2's policy maker, and vice versa. Equilibrium is described by the following first-order conditions:

$$\begin{aligned} \lambda_1^m \left[\frac{dg_1}{d\lambda_1^d} b'(g_1) + \frac{dg_2}{d\lambda_1^d}\kappa b'(g_2)\right] - \left[\frac{dg_1}{d\lambda_1^d} + \frac{dg_2}{d\lambda_1^d}\right]\frac{p}{2} - \frac{dg_1}{d\lambda_1^d}c &= 0 \\ \lambda_2^m \left[\frac{dg_2}{d\lambda_2^d} b'(g_2) + \frac{dg_1}{d\lambda_2^d}\kappa b'(g_1)\right] - \left[\frac{dg_2}{d\lambda_2^d} + \frac{dg_1}{d\lambda_2^d}\right]\frac{p}{2} - \frac{dg_2}{d\lambda_2^d}c &= 0 \end{aligned} \tag{2.11}$$

Substituting (2.9) and (2.10) into (2.11), and imposing symmetry in equilibrium yields:

$$\lambda_i^d = \left[\frac{2(1+\kappa^2)(c+p)}{(1+\kappa)^2 p + (1+\kappa)2c}\right]\lambda_i^m \tag{2.12}$$

Clearly, it is generally not in the policy maker's interest to delegate bargaining to an agent with the same policy preferences as her own ($\lambda_i^d = \lambda_i^m$). The delegation decision depends crucially on the level of direct and indirect cost

and the size of the spillover effect.

As a benchmark, consider the Besley and Coate (2003) case in which all cost are shared among the districts through a common budget ($p > 0$, $c = 0$). Equation (2.12) then reduces to:

$$\lambda_i^d = \left[\frac{2(1+\kappa^2)}{(1+\kappa)^2}\right] \lambda_i^m \tag{2.13}$$

The term in large brackets is always greater than one unless $\kappa = 1$. Hence, the policy maker has an incentive to delegate bargaining to a 'public good lover'. The reason is a common pool problem. Since all cost of public goods are financed through a common budget, while benefits are – for $\kappa < 1$ – at least to some extent region-specific, policy makers have an incentive to push for higher domestic public goods supply and for lower foreign public goods supply. The delegation of a public good lover has two effects. First, it results in an increase in the domestic public goods provision. This raises the utility of the local policy maker. Second, it results in an increase of foreign public goods provision. This lowers the utility of the local policy maker. However, for $\kappa < 1$, domestic public goods provision increases by more than foreign public goods provision (see (2.10)). Starting from the equilibrium with sincere delegation, both policy makers have an incentive to send an agent who cares more for public goods than they do themselves. In the symmetric Nash-equilibrium, both policy makers send a public good lover. As a result, there is overprovision of public goods. This follows from comparing (2.3) with (2.9), with $\lambda_1^d = \lambda_2^d$ given by (2.13). Overprovision is largest when $\kappa = 0$. Then, $\lambda_i^d = 2\lambda_i^m$. The common pool problem is most severe in that case because sending an agent with stronger preferences for public goods does not raise foreign public good supply. The social optimum is immune to strategic delegation only when public goods are global public goods ($\kappa = 1$). As we already argued above, when $\kappa = 1$ and $c = 0$, benefits and cost of public goods are perfectly in line. Hence, there is no incentive to misrepresent policy preferences at the central level.

In the other extreme case, $c > 0$, $p = 0$, none of the cost of public goods

are shared through a common budget. Equation (2.12) then reduces to:

$$\lambda_i^d = \frac{(1+\kappa^2)}{(1+\kappa)}\lambda_i^m \tag{2.14}$$

Hence, sincere delegation ($\lambda_i^d = \lambda_i^m$) is optimal only if $\kappa = 0$ and $\kappa = 1$. When $0 < \kappa < 1$, the policy maker delegates bargaining to a 'conservative' agent, i.e. someone who cares less for public goods than she does. Starting from $\kappa = 0$, optimal 'conservativeness' first increases in $\kappa$ ($\frac{d\lambda_i^d}{d\kappa} < 0$ for $0 < \kappa < \sqrt{2} - 1$) and then decreases in $\kappa$ ($\frac{d\lambda_i^d}{d\kappa} > 0$ for $\sqrt{2} - 1 < \kappa < 1$). As we argued above, policy makers have an incentive to move the outcome of centralized decision making away from the social optimum. If all of the cost of domestic public goods are borne domestically, policy makers have an incentive to distort the central decision towards lower domestic public good supply and towards higher foreign public good supply. Intuitively, the externality problem inherent to decentralized decision making persists under centralized decision making. While regions fully bear the cost of domestic public good supply, they only reap a part of the social benefits. The negative gap between local benefits and local cost of domestic public goods increases in the size of the spillover effect $\kappa$. This is the reason why optimal conservativeness increases in $\kappa$ for low values of $\kappa$. When $\kappa$ becomes sufficiently large, an other effect, working in the opposite direction, starts dominating and optimal conservativeness decreases in $\kappa$. This is the effect of conservativeness on foreign public good supply. By delegating bargaining at the central level to a more conservative agent, both domestic and foreign public good supply decrease (see (2.10)). The decrease in foreign public good supply is a cost to the policy maker because she free rides on foreign public goods provision. This cost is larger, the larger is the spillover effect $\kappa$. In the extreme case of $\kappa = 1$, policy makers delegate bargaining to agents with the same preferences as their own, even though each policy maker has an incentive to push for lower domestic public good supply and for higher foreign public good supply. The reason is that sending a more conservative agent reduces domestic and foreign supply by equal amounts when $\kappa = 1$; see (2.10).[7]

[7]When local public goods are strategic substitutes, optimal conservativeness increases

In the general case where both $p > 0$ and $c > 0$, described by (2.12), it depends on the magnitude of the cost parameters and the spillover effect whether policy makers have an incentive to delegate bargaining to public good lovers or to conservatives. The larger are indirect cost relative to direct cost, the more conservative are the preferences of the delegates. The effect of the size of spillovers on the delegation decision depends on the relative importance of direct and indirect cost. This is due to the ambiguous effect of $\kappa$ on optimal delegate's preferences in the case $c$ is large, see the discussion above. For various combinations of parameter values, the term in brackets in (2.12) is one. Hence, policy makers delegate bargaining to agents with the same policy preferences as their own and the social optimum is attained. This is the case if:

$$\frac{c}{p} = \frac{1-\kappa}{2\kappa} \tag{2.15}$$

If the left hand side of (2.15) is smaller than the right hand side, policy makers appoint public good lovers, resulting in overspending. If the left hand side of (2.15) is larger than the right hand side, conservatives are appointed, resulting in underprovision of public goods.

By comparing equation (2.4) to (2.9) with $\lambda_1^d = \lambda_2^d$ given by (2.12), we derive the effect of centralization of decision making on the amounts of public goods. The level of $g_i$ is higher under centralized decision making if:

$$\frac{2(1+\kappa^2)(c+p)}{(1+\kappa)p+2c} > 1 \Leftrightarrow 2\kappa^2(p+c) + (1-\kappa)p > 0 \tag{2.16}$$

which holds unless both $\kappa$ and $p$ are zero. If both $\kappa$ and $p$ are equal to zero, centralization of decision making does not affect public goods supply because i) there are no externalities to internalize and ii) there is no common pool problem. Depending on the values of $c$, $p$ and $\kappa$, two types of strategic delegation may occur. In the case of the delegation of public good lovers, both the internalization of externalities as well as the strategic delegation effect

monotonically in $\kappa$, as sending a more conservative delegate *increases* foreign public goods supply; see the Appendix.

push up the level of public goods as compared to the decentral equilibrium. In the case of the delegation of conservatives, the effects work in opposite directions. The internalization of externalities pushes up the level of public goods, whereas the strategic delegation mitigates this effect. However, for all $\kappa > 0$, the former effect outweighs the latter, thereby increasing the level of public good supply.

Centralization improves social welfare in each region if the increase in benefits from higher levels of public goods are larger than the increase in costs. Recognize that *given symmetry* the welfare of each individual median voter is at a maximum at the social optimum. Although each policy maker has an incentive to delegate strategically to alter the distribution of public goods in favour of her region, they do not achieve this goal because both delegate strategically. In equilibrium, welfare in both regions is lower than in the social optimum. To evaluate the effects of centralization on social welfare in each district, we substitute the levels of public goods arising under centralized and decentralized decision making, respectively, into (2.2). It follows that centralization increases social welfare if:

$$\lambda_i^m(1+\kappa)[b(g_i^c) - b(g_i^d)] - (p+c)\,(g_i^c - g_i^d) > 0 \tag{2.17}$$

where the superscript $c$ denotes centralized decisions and $d$ denotes decentralized decisions. Again, there are two cases. If regions delegate bargaining to public goods lovers, the supply of public goods will be higher than the social optimum. As is shown by Besley and Coate (2003), for high levels of $\kappa$ centralization likely improves welfare. The reason is that the benefits from internalizing the externalities are large, whereas the distortion from strategic delegation is small. The opposite is true for low levels of $\kappa$. Therefore, if regions delegate bargaining to public goods lovers, centralization is only welfare improving in policy domains that have large externalities. If regions delegate bargaining to conservatives, under centralized decision making the supply of public goods is lower than in the social optimum, but higher compared to decentralized decision making. Therefore, even though regions delegate bargaining to conservatives, centralization improves the welfare of

each region.

## 2.8 Optimal financing rules

The previous section showed that when a large part of the total cost of public goods are shared through a common budget, overprovision of public goods results (except for the case $\kappa = 1$); underprovision occurs when a large part of the cost are borne locally (except for $\kappa = 0$ and $\kappa = 1$). In this section, we derive financing rules that eliminate the incentives for strategic delegation. When underprovision of public goods persists under centralized decision making, an (additional) central subsidy scheme which introduces (or magnifies) a positive budget externality remedies the strategic delegation of conservatives. In the case of overprovision of public goods, an additional central tax scheme restrains the policy makers from delegating public good lovers.[8]

Consider the introduction of a central subsidy $s > 0$, or — in case $s < 0$ — tax, on $g_1$ and $g_2$. We assume that the revenues of a tax are fully refunded to the regions and that each region receives half of this fund. In case of a subsidy, each of the regions pays half of the cost of the scheme. The objective function of the delegate of region $i$ is:

$$U_i^d = \lambda_i^d[b(g_i) + \kappa b(g_{-i})] - \frac{p}{2}(g_i + g_{-i}) - cg_i + \frac{s}{2}(g_i - g_{-i}) \tag{2.18}$$

where the last term is the difference between region $i$'s subsidy revenues ($sg_i$) and the region's contribution to the subsidy fund ($\frac{s(g_i+g_{-i})}{2}$).

As in the previous sections, the bargaining outcome is given by the maximum of the sum of the utilities of the delegates. As is clear from (2.18), this sum is independent of the level of the subsidy $s$. Hence, the subsidy scheme does not affect the outcome of the bargaining by the delegates, *given* their

[8]Similarly, one could adjust the share of the tax cost $p$ that is financed through the central budget in order to eliminate strategic delegation. Because we want to allow for the case $p = 0$, we introduce an additional tax/subsidy scheme. At the end of this section, we derive which part of the total cost of public goods must be shared so as to guarentee socially optimal public goods supply, using our results for the optimal tax/subsidy scheme.

preferences. The subsidy scheme does, however, affect the policy makers' delegation decisions. The objective function of the policy maker in region $i$ is:

$$U_i^m = \lambda_i^m \left[ b\left(g_i\right) + \kappa b\left(g_{-i}\right) \right] - \frac{p}{2}(g_i + g_{-i}) - cg_i + \frac{s}{2}(g_i - g_{-i}) \tag{2.19}$$

Clearly, from the perspective of the policy maker in region $i$, a subsidy (tax) introduces an additional benefit (cost) of units of $g_i$ and an additional cost (benefit) of units of $g_{-i}$. Equilibrium is described by the following first-order conditions:

$$\begin{aligned} 0 &= \lambda_1^m \left[ b'(g_1) \frac{dg_1}{d\lambda_1^d} + \kappa b'(g_2) \frac{dg_2}{d\lambda_1^d} \right] - \left[ \frac{dg_1}{d\lambda_1^d} + \frac{dg_2}{d\lambda_1^d} \right] \frac{p}{2} - \frac{dg_1}{d\lambda_1^d} c \\ &\quad + \left[ \frac{dg_1}{d\lambda_1^d} - \frac{dg_2}{d\lambda_1^d} \right] \frac{s}{2} \\ 0 &= \lambda_2^m \left[ b'(g_2) \frac{dg_2}{d\lambda_2^d} + \kappa b'(g_1) \frac{dg_1}{d\lambda_2^d} \right] - \left[ \frac{dg_2}{d\lambda_2^d} + \frac{dg_1}{d\lambda_2^d} \right] \frac{p}{2} - \frac{dg_2}{d\lambda_2^d} c \\ &\quad + \left[ \frac{dg_2}{d\lambda_2^d} - \frac{dg_1}{d\lambda_2^d} \right] \frac{s}{2} \end{aligned} \tag{2.20}$$

Substituting (2.9) and (2.10) into (2.20),[9] and imposing symmetry in equilibrium gives:

$$\lambda_i^d = \frac{2(1+\kappa^2)\left(p+c\right)}{p(1+\kappa)^2 + 2c(1+\kappa) - s(1-\kappa^2)} \lambda_i^m \tag{2.21}$$

Clearly, the larger is $s$, the larger is the optimal value of $\lambda_i^d$. A subsidy creates a positive budget externality from domestic public goods supply. This induces policy makers to delegate bargaining to less conservative agents so as to increase domestic public goods supply. The only exception is when $\kappa = 1$. Then, the levels of domestic and foreign public goods are equal, irrespective of the preferences of the delegates (see equation (2.9)). Hence, in that case,

[9] Recall that the bargaining outcome is independent of the tax/subsidy scheme. Hence, we can use (2.9) and (2.10) to simplify (2.20).

the tax/subsidy scheme does not affect the budgets of the local governments and, hence, the delegation decision.

Denote $s^*$ as the optimal subsidy, that is, the subsidy that results in sincere delegation by both policy makers ($\lambda_i^d = \lambda_i^m$). The optimal subsidy (tax) is:

$$s^* = -\frac{p(1-\kappa) - 2c\kappa}{1+\kappa} \tag{2.22}$$

for any $\kappa \neq 1$.[10] The optimal subsidy increases in $c$ and $\kappa$ and decreases in $p$.

To evaluate the properties of $s^*$, consider the situation where all costs of public goods are financed through a common budget ($p > 0$, $c = 0$). In this case, (2.22) reduces to:

$$s^* = -\frac{p(1-\kappa)}{(1+\kappa)} \leq 0 \tag{2.23}$$

Hence, in the absence of indirect cost and with $\kappa \neq 1$, a central tax ($s^* < 0$) is needed to eliminate the strategic delegation of public good lovers. The optimal tax decreases in the level of spillovers. When spillovers are absent, the optimal tax ($s^* = -p$) implies that none of the cost of public goods are actually shared. Centralized decision making with an optimal subsidy then results in the same public goods supply as under decentralized decision making, which is socially optimal in the absence of spillover effects. Common financing of all cost ($s^* = 0$) is only optimal in case of global public goods ($\kappa = 1$).

In the other extreme case where all of the cost of public goods are borne domestically ($c > 0$, $p = 0$), (2.22) equals:

$$s^* = \frac{2c\kappa}{1+\kappa} \geq 0 \tag{2.24}$$

Hence, for $\kappa > 0$, a subsidy is needed to induce policy makers to refrain from delegating bargaining to a conservative agent. The subsidy increases in the size of spillovers. This may come as a surprise since, starting from

[10] Obviously, there does not exist an optimal level of $s$ for $\kappa = 1$ because the tax/subsidy scheme does not affect the delegation decision in that case. This is of no concern because delegation is always sincere if $\kappa = 1$, see equation (2.12) in the previous section.

$\kappa = 0$, optimal conservativeness of the delegate first increases in $\kappa$ and, from $\kappa = \sqrt{2}-1$, decreases in $\kappa$ (see Section 7). The reason is that the effectiveness of the subsidy in changing the policy makers' delegation decision reduces in $\kappa$. When $\kappa$ is small, sending a less conservative agent has a relatively large effect on the supply of the domestic public good and a relatively small effect on the supply of the foreign public good. The net additional receipts from the subsidy scheme are therefore large when $\kappa$ is low. When $\kappa$ approaches unity, sending a less conservative agent increases domestic and foreign public good supply by almost the same amount, rendering the subsidy scheme close to budgetary neutral for each region. Hence, a large subsidy per unit of public good is needed to offset a small distortion in the policy maker's delegation decision. When local public goods closely resemble global public goods, the optimal subsidy approaches the total cost of public good supply ($s^* \to c$). Hence, as for the case $p > 0$, $c = 0$, we conclude that sharing all of the cost of public goods through a central budget is only optimal in case of global public goods.

Using (2.22), we can derive which part of the total cost of public goods must be shared to guarantee socially optimal public good supply:

$$\frac{(p + s^*)\, g_i}{(p + c)\, g_i} = \frac{2\kappa}{1 + \kappa} \tag{2.25}$$

Hence, sharing none of the cost is optimal only in the absence of spillovers, while common financing of all cost is only optimal in case of global public goods.

The optimum financing rule described by (2.25) may not only be socially optimal, but also politically feasible. When deciding on the financing rule, local policy makers recognize that equal amounts of public goods result for each region.[11] They also recognize that over- or underspending emerges when financing differs from the optimal financing rule. The policy makers will therefore decide to implement the optimum financing rule.[12]

[11] This will not be the case when the median voters in the regions differ in their preferences for public goods. Then, policy makers will try to manipulate decision making on the financing rule in order to bring the central decision closer to their preferences.

[12] Introducing separation of powers in the budgetary process may also contribute to

Sharing only a part of the cost of policies decided on at central level is widely observed in practice. For instance, EU grants for local projects out of the Regional Development Fund have to be matched by equal grants from national governments, the so-called co-financing system. As DelRossi and Inman (1999) show in an empirical study on US legislators' demand for local public goods, co-financing significantly reduces the legislators' demand for centrally financed projects. Bonuses to compensate for local indirect costs are less frequently observed. One reason may be that non-shareable costs are difficult to quantify *ex ante* and are probably hard to verify *ex post*. Hence, it may be politically difficult to agree on them before decision making on the amounts of public goods starts.

## 2.9 Concluding remarks

This chapter provided an explanation for why in some policy domains cooperative centralized decision making on local public goods leads to overspending, whereas in other areas public spending on local public goods is too low. We argued that if costs of local public goods are shared among participating regions through a common budget, the delegation of public goods lovers leads to oversupply. If a sufficiently large part of the costs are non-shareable, the delegation of conservatives results in underspending. Lastly, we derived cost sharing rules which eliminate the incentives to delegate bargaining at the central level to agents with preferences different from the domestic policy maker's preferences.

Our analysis can be extended in several important ways. One is to incorporate checks and balances. Chari et al. (1997) examine the role of a president as a check on overspending. They allow for 'split ticket' voting on the preferences of the delegates and the president. In the constitutional

efficient provision of public goods. Chari et al. (1997) build a model where voters in each state delegate spending-prone agents to congress, but appoint a fiscally conservative president so as to curtail excessive spending. In a model that mirrors decision making in the EU, Mazza and van Winden (2001) show that separation of powers, where the budget is set before the policy selection stage, reduces the incentives to lobby for local public goods and therefore the size of spending at a central level.

debate in the European Union, it is still an open issue whether institutional reform should move towards an elected head of the European Commission, who may serve as a check on the members of the Commission delegated by the member countries.

A second extension is to allow for interregional heterogeneity in preferences and/or differences in local costs of public goods. Differences in non-shareable costs across regions may add to our understanding of why it is so difficult to agree on common policies. For instance, the reluctance of the US to sign the Kyoto protocol may have more to do with the relatively high costs for growing US industries to comply with restrictive global emission standards, than with weak preferences of the US electorate for environmental protection.

Another interesting extension of the model would be to allow for more than two countries. This seems especially relevant in the light of the enlargement process in the EU. Member states that benefit heavily from policies that are commonly financed fear that enlargement may erode their privileged position, and reduce the possibility of deepening cooperation. Further, countries that have strong preferences for environmental protection fear that enlargement may lower the common standards in this domain. Therefore, enlargement may change the attitudes of local policy makers towards policy making in Brussels and may influence their delegation decision.

Our analysis has shed light on problems that arise with 'cooperative policy coordination', a phenomenon that has become more important over time. Increased interdependence creates incentives for policy coordination at a regional and global level, for instance in the case of environmental degradation or coping with large numbers of refugees. On most of these issues, policy makers cooperate in the international arena through policy coordination, not through cost sharing. Our model seems to be well placed to explain the inefficiencies that may arise in political decision making when countries decide to cooperate, but do not share.

## 2.10 Appendix

This Appendix studies the case where local public goods are strategic substitutes. Using the same notation as in the main text, the utility function is given by:

$$U_i^j = \lambda_i^j b(g_i + \kappa g_{-i}) + y - t_i - cg_i \tag{A1}$$

*The Social Optimum.* Socially optimal public goods provision is described by:

$$\begin{aligned} \lambda^m b'\left(g_1 + \kappa g_2\right) + \kappa\lambda^m b'\left(g_2 + \kappa g_1\right) - p - c &= 0 \\ \lambda^m b'\left(g_2 + \kappa g_1\right) + \kappa\lambda^m b'\left(g_1 + \kappa g_2\right) - p - c &= 0 \end{aligned} \tag{A2}$$

*Decentralized Decision Making.* When local public goods are strategic substitutes, voters have an incentive to delegate policy making to an agent with preferences different from their own. Given $g_{-i}$, policy maker $i$'s optimal public good supply is described by:

$$\lambda_i^p b'(g_i + \kappa g_{-i}) - p - c = 0 \tag{A3}$$

where $\lambda_i^p$ denotes the preferences of the policy maker in region $i$. Given the preferences of the policy maker in region $-i$, the median voter's optimal preferences of the policy maker in region $i$ are described by:

$$\frac{\partial U_i^m}{\partial \lambda_i^p} = \lambda_i^m \left[\frac{dg_i}{d\lambda_i^p} b'(g_i + \kappa g_{-i}) + \frac{dg_{-i}}{d\lambda_i^p}\kappa b'(g_i + \kappa g_{-i})\right] - \frac{dg_i}{d\lambda_i^p}(p + c) = 0 \tag{A4}$$

where, using (A3):

$$\begin{aligned} \frac{dg_i}{d\lambda_i^p} &= \frac{b'(g_i + \kappa g_{-i})}{-\lambda_i^p\left(1 - \kappa^2\right) b''(g_i + \kappa g_{-i})} > 0 \\ \frac{dg_{-i}}{d\lambda_i^p} &= -\kappa\frac{dg_i}{d\lambda_i^p} < 0 \end{aligned} \tag{A5}$$

Delegating policy making to an agent with stronger preferences for public goods increases domestic public goods supply, but reduces public goods sup-

ply in the foreign region. Substituting (A5) in (A4), and using (A3) to simplify, results in:

$$\lambda_i^p = (1-\kappa^2)\lambda_i^m \tag{A6}$$

For any $\kappa > 0$, the median voter delegates policy making to someone who cares less for public goods than she does. The reason is clear. Given the preferences of the foreign policy maker, delegating to a more conservative agent implies less domestic public goods, but this is partly compensated for by higher foreign public goods supply. If local public goods are near perfect substitutes ($\kappa$ approaches 1), a reduction in $g_i$ is almost completely compensated for by an increase in $g_{-i}$, resulting in delegation to an extremely conservative policy maker. Clearly, underprovision of public goods is more severe than in the case described in the main text as, in addition to the externality problem, voters appoint conservative policy makers when local public goods are strategic substitutes.

*Centralized Decision Making.* Public goods provision resulting from the bargain between the delegates from the two countries is described by:

$$\lambda_i^d b'(g_i + \kappa g_{-i}) + \kappa \lambda_{-i}^d b'(g_{-i} + \kappa g_i) - p - c = 0 \tag{A7}$$

Given the preferences of the foreign delegate, optimal preferences of the domestic delegate are given by:

$$\frac{\partial U_i^m}{\partial \lambda_i^d} = \lambda_i^m \left[ \frac{dg_i}{d\lambda_i^d} b'(g_i + \kappa g_{-i}) + \frac{dg_{-i}}{d\lambda_i^d} \kappa b'(g_i + \kappa g_{-i}) \right] - \frac{dg_i}{d\lambda_i^d} \left( \frac{p}{2} + c \right) - \frac{dg_{-i}}{d\lambda_i^d} \frac{p}{2} = 0 \tag{A8}$$

Using (A7) to find the values of $\frac{dg_i}{d\lambda_i^d}$ and $\frac{dg_{-i}}{d\lambda_i^d}$, and imposing symmetry in equilibrium, we obtain:

$$\lambda_i^d = \frac{2(1-\kappa^2)(c+p)}{(1-\kappa^2)p + (1+\kappa)2c} \lambda_i^m \tag{A9}$$

As in the main text, we find that the policy maker delegates bargaining to a public good lover when $c = 0$, while she delegates bargaining to a conservative when $p = 0$. If all of the cost are shared ($c = 0$), then $\lambda_i^d = 2\lambda_i^m$ for all $\kappa < 1$.

The intuition is clear. Compared to the bargaining outcome with sincere delegation, each policy maker desires higher domestic public goods supply and lower foreign public goods supply. Given the preferences of the other delegate, delegating to an agent with $\lambda_i^d = 2\lambda_i^m$ increases $g_i$ up to the policy maker's optimal level (a delegate with $\lambda_i^d > 2\lambda_i^m$ would oversupply $g_i$ even if all costs are shared) and reduces the level of $g_{-i}$. Hence, by delegating to an 'extreme lover' of public goods, the policy maker kills two birds with one stone. This is in contrast to the case in the main text, where delegating to a public good lover increases foreign public good supply as well.

If the cost of public goods provision are non-shareable ($p = 0$), for all $\kappa > 0$ there is conservative delegation, as in the main text. However, in contrast to the results in the main text, optimal conservativeness increases monotonically in $\kappa$. The intuition is that when public goods are strategic substitutes, sending a more conservative delegate *increases* the level of $g_{-i}$. In the limiting case where $\kappa$ approaches 1, policy makers delegate bargaining to agents who do not care for public goods at all, so as to 'force' a large increase in public goods provision in the other region. Since both policy makers do, no public goods are supplied, as under decentralized decision making, see (A6).

# Chapter 3

# Conspicuous Public Goods and Policy Rivalry

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## 3.1 Introduction

In the previous chapter, the focus was on public goods which have beneficial externalities on bordering regions. However, it is clear that there are many policies that impose costs on other regions. For example, lax environmental regulation may result in excess pollution that spills over to other regions. Stringent regulations to obtain asylum in one country may increase congestion for migration in other countries. Private security in rich neighborhoods may increase burglary in poorer areas.

With some additional analysis, the reader may have noticed that many of the results of the previous chapter also apply for negative externalities. The novelty of this chapter is that we focus on the psychological externalities that can be generated from conspicuous public goods consumption. In contrast to material spill-overs, when citizens care for status, the relative supply of public goods in their region when compared to other regions matters. We will argue that in such a setting centralization of policy making not only introduces an incentive for strategic delegation – as in Chapter 2 – but *reverses* the

incentives for strategic delegation when compared to decentralized policy making. The reason is that with decentralized policy making, the median voter in each group realizes that a leader with preferences equal to himself overproduces public goods and therefore will elect a leader with a preference for a lower level of public goods. Alternatively, in a centralized setting the median voter will realize that the overall production of public goods in the two countries will be restricted. For this reason, he votes for a leader with a preference for a higher level of local conspicuous public goods. In this way, the median voter will hope to gain at the expense of the other group. Hence, this chapter can explain why policy centralization in conflictual societies may not produce the desired results.

The psychological externalities that provide the main motivation for this chapter have given rise to a literature on the 'keeping up with the Joneses' (KUJ) effect of private goods. The notion that individuals value their consumption of private goods relative to others is the focus of the well-known book by Frank (1985) and applications have emerged in the finance literature (Abel 1990, Gali 1994, Campbell and Cochrane 1999). In the latter, relative consumption of snob goods serves to explain the equity premium puzzle by showing that persons take too high gambles in the financial markets. It is easy to envisage yuppies gambling on dot-com stocks to finance a newer BMW than their peers. Chang and Kogan (2002) allow for heterogeneous consumption preferences for stock market gambles. Dupor and Liu (2003) argue that, with regard to consumption externalities, 'keeping up with Joneses' should be distinguished from jealousy. The first effect occurs when consumption by others raises an individual's own marginal utility from the consumption of certain types of goods. Jealousy implies that humans simply envy other people's consumption.

If individuals could commit to lower spending on conspicuous consumption goods, this would increase social welfare. However, for individual consumption it is hard to see how, in the absence of government intervention, this may come about. In any case, if citizens could draw up a contract, they would restrain themselves and each other from spending too much on conspicuous goods by regulation or progressive taxation, as in Lommerud (1989)

and Konrad and Lommerud (1993). Clearly, there is a role for government to provide such a binding contract if the KUJ effect results in too high a level of conspicuous goods consumption (Ljungqvist and Uhlig 2000).[1]

In our case, where we analyze conspicuous public goods, a commitment devise in the form of the preferences of the policy maker is at hand. Voters may strategically select a leader who has preferences different from that of their own so as to bind their own hands. This mechanism of strategic delegation of policy making has been well known since Rogoff's conservative central banker (Rogoff 1985). Strategic delegation in an election setting was analyzed in Besley and Coate (1997). In Besley and Coate (2003) these authors show that strategic delegation of policy making authority in a centralized setting may result in perverse policy outcomes. The reason is that the median voter may delegate bargaining authority to a leader who cares more for public goods than she does herself. By doing so, the median voter commits to obtaining a higher share of the centralized funds that are spent on public goods. Dur and Roelfsema (2005) extend this analysis to allow for non-shareable cost in public goods provision. They argue that this may lead to the delegation of 'conservatives' to the centralized decision making body so as to avoid these costs, while at the same time benefitting from positive spill over effects of public goods produced in other jurisdictions.

To motivate our assumption that public goods consumption can be conspicuous and that it matters to voters, consider stories regarding grandiose public goods projects that serve the goal of making the nation feel proud (and the policy maker popular). Examples may include organizing the Olympics, the European soccer championship, or having the highest skyscraper in the world. Very often such projects cannot be justified on material cost-benefit analysis alone. For example, *The Economist* in an article 'Portugal's football-freaked election' describes how the rivalry between Lisbon and Oporto to build the best infrastructure for Euro2004 dominated the election campaign of the major political parties in 2002. After the event, in a contribution with

[1] This may already have been foreseen in the Bible by making the Sunday a mandatory work-free day, possibly to restrain individuals from working too hard to keep up appearances (Dupor and Liu 2003).

the suggestive subtitle 'What price euphoria?' *The Economist* writes "Even so, it seems a bit extravagant to blow €660m on new stadiums for a four-week tournament in a country that is just emerging from its deepest recession in three decades [...] Indeed, the economic arguments for hosting big sporting tournaments are largely spurious. The real case for Portugal taking on Euro 2004 is that sporting success seems to make people feel marvelously good."[2]

Our model applies most to conflictual societies engaged in political negotiation when voters care about the payoffs of the other group or region compared to those of their own. Our model predicts that when groups cooperate, voters elect more extreme policy makers, while they select a leader who shows restraint when they take decisions noncooperatively. Voting behavior of Protestants and Catholics in Northern Ireland are a case in point. Elections in Northern Ireland since the signing of the Belfast Agreement in 1998 have shown a movement towards the more extreme Democratic Unionist Party (DUP) and Sinn Fein and away from the more moderate Ulster Unionists (UUP) and Social Democratic and Labor Party (SDLP). Table 3-1 shows vote shares in Westminster elections since 1983 and demonstrates the point.[3]

Table 3-1: Election results for Northern Ireland, 1983-2005.

| | 1983 | 1987 | 1992 | 1997 | 2001 | 2005 |
|---|---|---|---|---|---|---|
| UUP | 34 | 37.8 | 34.5 | 32.7 | 26.8 | 17.7 |
| DUP | 20 | 11.7 | 13.1 | 13.6 | 22.5 | 33.7 |
| SDLP | 17.9 | 21.1 | 23.5 | 24.1 | 21 | 17.5 |
| Sinn Fein | 13.4 | 11.4 | 10 | 16.1 | 21.7 | 24.3 |
| Alliance | 8 | 10 | 8.7 | 8 | 3.6 | 3.9 |

Perhaps the electorate of Northern Ireland prefers to elect hard-line negotiators when they believe that there is little likelihood of a resumption of political violence, but are inclined to vote for moderates when conflict exists in an effort to secure peace. The irony of the Northern Ireland example is that before the Belfast Agreement the province was governed by direct rule from

[2]See 'Portugal's football-freaked election', March 14th 2002, and 'The effect of Euro2004 and the Olympics', July 1st 2004.

[3]Data from http://www.ark.ac.uk/elections.

Westminster. But now that legislation is in place for devolved government, the two communities have selected leaders who cannot agree upon sharing power, so Northern Ireland is, once again, governed directly from Westminster. This is precisely the sort of outcome that this chapter predicts. The movement from non-cooperative to cooperative environments may not bring as significant a change as one might expect.[4]

## 3.2 The model

Consider two countries indexed by $i$, each inhabited by citizens indexed by $j$. The typical citizen has a utility function of:

$$U^j(g_i, g_{-i}, p_i, \lambda^j) = y - cg_i + h(g_i, g_{-i}, \lambda^j) \tag{3.1}$$

where $g_i$ are the public goods in the home country, $g_{-i}$ are public goods in the foreign country, $y$ is income that is identical for all individuals, $c$ is the constant marginal production costs of a unit of $g_i$ (so that $y - cg_i$ is the consumption of private goods $p_i$), and $\lambda^j > 0$ is the preference parameter for public goods. For the $h$-function we assume the following derivative properties: $h_{g_i} > 0$, $h_{g_{-i}} < 0$. In the following, we focus on the case where public goods are strategic complements such that $h_{g_i g_{-i}} > 0$. This captures the 'keeping up with the Joneses' effect, as the marginal utility of public goods in country $i$ increases in the level of public goods in country $-i$. For simplicity, to capture these effects we propose a more specific utility function and make some additional assumptions on the distribution of policy preferences

[4]Bosnia is another example where support for nationalism exists despite the wishes of the international community (Burwitz 2002). Perhaps, in part, this can be explained by the existence of the political institutions formed at the 1995 Dayton Accord. Note also that the analysis here differs from that of Cukierman and Tommasi (1998) in their effort to explain why a Nixon goes to China. Their explanation focuses on the need for a hawk to implement a policy associated with a dove, in order to convince the electorate of the merit of the policy. In our paper, an agreement is already assumed to exist, there is no asymmetry of information and the choice of hardliners is made to gain at the expense of the other group.

and the range of the KUJ-effect. Consider the utility function:

$$V_i^j = y - cg_i + \lambda_i^j \log(g_i - \alpha g_{-i}) \tag{3.2}$$

A person with a high $\lambda$ cares more for the relative level of public goods when compared to the other region. We assume that the parameter $\lambda$ is uniformly distributed over the population with a median value of $\lambda^m$. From this assumption, it also follows that policies that maximize the sum of utilities of the median voters also maximize social welfare in the two countries. The parameter $\alpha$ measures the extent to which the public goods are strategic complements and is assumed to be identical for all citizens. We consider $0 < \alpha < 1$, which implies that higher public good provision in the foreign country raises the marginal utility from home production of public goods. This effect is stronger for higher values of $\alpha$. Hence, a useful interpretation of $\alpha$ is that foreign production creates the KUJ effect.[5] Further, producing one unit of $g_i$ involves a fixed marginal cost per unit $c$, that for simplicity in the following we normalize to unity.

## 3.3 Sincere delegation

Suppose that, as a starting point, in a decentralized political system the median voter $j = m$ is elected as policy maker. From the first-order condition for maximization of (3.2) it follows that:

$$\frac{\lambda_i^m}{g_i - \alpha g_{-i}} - 1 = 0 \qquad \Rightarrow \qquad g_i = \alpha g_{-i} + \lambda_i^m \tag{3.3}$$

In equilibrium, the optimal level of public goods is:

$$g_i = \frac{1}{1-\alpha^2}\lambda_i^m + \frac{\alpha}{1-\alpha^2}\lambda_{-i}^m \tag{3.4}$$

[5] This specification focusses on the relative supply of public goods only. Hence, jealousy, KUJ, and negative externalities are intrinsically wed. See Leibenstein (1950) and Dupor and Liu (2003) for discussion on how to separate these effects.

The first-order condition (3.3) and the decentralized supply (3.4) show two properties that will later prove useful in building intuition for the results. First, (3.3) implies that an increase of one unit of $g_{-i}$ raises the desired public goods by $\alpha$ that amount. Hence, for $\alpha < 1$ the median voter in $i$ does not demand full compensation for the increase in public goods in the other country.

This result carries over to (3.4). Stronger preferences of the median voter in home as well as in the foreign country increase equilibrium public goods supply in the home country. In equilibrium $dg_{-i}/d\lambda_i = \alpha dg_i/d\lambda_i$, hence, stronger preferences for the public good of the home policy maker increases public goods in the foreign country by a fraction $\alpha$ of the increase in the home country**.** The reason is that stronger preferences for the public good in the home country raises public goods supply. This, in turn, raises the marginal benefits of foreign public goods as perceived by the foreign median voter, and so raises foreign public goods supply.

Also note that, as $dg_i/d\lambda_i = 1/(1-\alpha^2) > 1$, stronger home preferences for public goods result in a more than proportional increase in equilibrium public goods supply. Recall that stronger preferences not only increase the marginal benefits from public goods supply directly, they also increase the desired public goods supply in the foreign country. This, in turn, raises the optimal level of home production. This effect also manifests itself in the foreign country, so that $dg_{-i}/d\lambda_i = \alpha/1-\alpha^2 > \alpha$. This means that, as the increase in public goods supply in home is higher than proportional to the increase in preferences, the increase in foreign public goods supply is also higher than the fraction $\alpha$ that results from (3.3). In the symmetric equilibrium ($\lambda_i^m = \lambda_{-i}^m$) equation (3.4) reduces to:

$$g_i = \frac{\lambda_i^m}{(1-\alpha)} \tag{3.5}$$

Clearly, the decentralized equilibrium level of public goods supply is increasing in the preferences $\lambda$ of the median voter and increasing in the level of $\alpha$.

When $0 < \alpha < 1$ there is oversupply of local public goods. To see this,

consider what will happen with centralized policy making and sincere delegation. We assume that when countries cooperate, the two policy makers with median preferences maximize their joint welfare $V_s = V_i^m + V_{-i}^m$. Following the assumption on the distribution of the preferences, maximizing $V_s$ implies also socially efficient production. The first-order conditions for $g_i$ and $g_{-i}$ are:

$$\frac{dV_s}{dg_i} = \frac{\lambda_i^m}{g_i - \alpha g_{-i}} - \alpha \frac{\lambda_{-i}}{g_{-i} - \alpha g_i} - 1 = 0 \tag{3.6}$$

$$\frac{dV_c}{dg_{-i}} = \frac{\lambda_{-i}^m}{g_{-i} - \alpha g_i} - \alpha \frac{\lambda_i^m}{g_i - \alpha g_{-i}} - 1 = 0 \tag{3.7}$$

After some manipulation we find that in equilibrium:

$$g_i = \frac{1}{1+\alpha}\lambda_i^m + \frac{\alpha}{1+\alpha}\lambda_{-i}^m \tag{3.8}$$

In the symmetric equilibrium ($\lambda_i^m = \lambda_{-i}^m$ and $g_i = g_{-i}$) equation (3.8) reduces to:

$$g_i = \lambda_i^m \tag{3.9}$$

Clearly, this is identical to the decentralized level of public goods provision when $\alpha = 0$, in which case there is no KUJ effect. In this last case, there is no 'national pride' argument for public goods and both centralized and decentralized provision of public goods is socially efficient.[6]

## 3.4 Strategic delegation

With respect to the policy making process, we follow Besley and Coate (2003) in that the median voter in the first stage of the game strategically delegates policy making to an agent. The point is that the median voter sees delegation as a strategic choice, as it may affect public goods supply in the other country. Delegation serves as a commitment to a policy stance that would not be credible when the median voter himself would be in office. The set up of the

[6] Although we do not offer a formal proof, if voters care about the relative tax levels between countries one may imagine that this would result in sub-optimally low provision of public goods.

policy making game is that in the first stage a policy maker is selected by the median voter taking account of how the preferences of this policy maker affect the policy outcome. Following Besley and Coate (2003) and most of the recent papers that use strategic delegation to analyze policy choice, we assume that the median voter can choose from a set of potential policy makers where the optimal candidate is interior to this set and is available for office.[7]

In the second stage the delegate in each district decides on the optimal level of local public goods. The crucial assumption is that policy makers once in office are free to choose the appropriate actions that maximize their individual 'intrinsic' utility from policy. This means that policy actions by the delegate are neither contractible by offering monetary rewards nor does the delegate care for re-election.

### 3.4.1 Decentralized decision making

Suppose that the median voter in $i$ has a continuum of candidates with $\lambda_i^d > 0$ at her disposal for delegation of policy making. Given the preferences of the delegate in country $j$, the optimal candidate in country $i$ is described by:

$$\frac{\partial V_i^m}{\partial \lambda_i^d} = \frac{dh(g_i, g_{-i}, \lambda_j)}{dg_i}\frac{\partial g_i}{\partial \lambda_i^d} + \frac{dh(g_i, g_{-i}, \lambda_j)}{dg_{-i}}\frac{\partial g_{-i}}{\partial \lambda_i^d} - \frac{\partial g_i}{\partial \lambda_i^d} = 0 \tag{3.10}$$

From (3.4) the median voter in $i$ anticipates that the equilibrium provision of public goods will be:

$$g_i = \frac{1}{1-\alpha^2}\lambda_i^d + \frac{\alpha}{1-\alpha^2}\lambda_{-i}^d \tag{3.11}$$

$$g_{-i} = \frac{1}{1-\alpha^2}\lambda_{-i}^d + \frac{\alpha}{1-\alpha^2}\lambda_i^d \tag{3.12}$$

Combining (3.10), (3.11), (3.12) and using (3.2) we obtain:

[7] In contrast to our paper and to Besley and Coate (2003), Besley and Coate (1997) consider endogenous entry of candidates.

$$\frac{\partial V_i^m}{\partial \lambda_i^d} = \frac{\lambda_i^m}{g_i - \alpha g_{-i}} \frac{1}{1-\alpha^2} - \frac{\alpha \lambda_i^m}{g_i - \alpha g_{-i}} \frac{\alpha}{1-\alpha^2} - \frac{1}{1-\alpha^2} = 0$$

From (3.3) we know that $g_i - \alpha g_{-i} = \lambda_i^d$ so that the optimal preferences of the delegate in country $i$ are described by:

$$\lambda_i^{d*} = \lambda_i^m \left(1 - \alpha^2\right) \tag{3.13}$$

Using (3.5), in the symmetric equilibrium public goods supply will be:

$$g_i = (1+\alpha)\lambda_i^m \tag{3.14}$$

This result carries an important intuition. As $0 < \alpha < 1$ , the median voter delegates to a policy maker who cares *less* for conspicuous public goods supply than she does herself. The reason is that by doing so, the median voter commits to lower public goods spending in the home country *and lower spending in the foreign country.* Hence, the benefits from lower tax costs in home plus the gain in utility from lower public goods in the foreign country are higher than the loss in utility from lower home public goods supply. When compared to the decentralized equilibrium without delegation in (3.5), the level of conspicuous public goods is lower in the presence of strategic delegation. However, decentralized public goods supply is too high when compared to the socially optimal level.

### 3.4.2 Centralized equilibrium

When policies are coordinated at the centralized level, we assume that the delegates maximize their joint welfare. However, the delegation decision itself is not coordinated. Again the median voter solves (3.10). Recall also that in equilibrium the delegates set policy according to (3.8). Therefore we find that in equilibrium:

$$\frac{\partial V_i^m}{\partial \lambda_i^d} = \lambda_i^m \left[ \frac{1}{g_i - \alpha g_{-i}} \left(\frac{1}{1+\alpha}\right) - \frac{\alpha}{g_i - \alpha g_{-i}} \left(\frac{\alpha}{1+\alpha}\right) \right] - \left(\frac{1}{1+\alpha}\right) = 0 \tag{3.15}$$

The first term within the square brackets shows the increase in welfare of increasing the preferences of the home delegate by raising public goods supply in the home country. The second term shows that delegating to a policy maker with a higher $\lambda$ increase foreign public goods by $\alpha/(1+\alpha)$, which in turn reduces welfare by $\alpha/(g_i - \alpha g_{-i})$ times that amount. The last term shows the increase in tax cost of increasing public goods supply in home. By imposing symmetry in equilibrium, from (3.8) we find that $g_i = g_{-i} = \lambda_i^d$, which gives the optimal preferences of the delegate of:

$$\lambda_i^{d*} = (1+\alpha)\lambda_i^m \tag{3.16}$$

In the symmetric equilibrium, public goods supply will be:

$$g_i = \lambda_i^m (1+\alpha) \tag{3.17}$$

The main result is that if $0 < \alpha < 1$, the median voter delegates leadership to a politician who cares more for public goods than she does herself. The intuition is as follows. The median voter anticipates that centralization will reduce public goods supply in home and foreign when compared to the decentralized equilibrium. Hence, the tax costs fall. Given this anticipated reduction in tax costs, and given the preferences of the policy maker in the foreign country, the median voter benefits from higher public goods supply in home. The means to do so are to commit to slightly higher spending in the home country by delegating to a leader who cares more for conspicuous public goods than she does herself. However, in doing so, the median voter in home anticipates that sending a more nationalistic leader induces the foreign policy maker to demand more public goods as well. This effects mitigates the incentives for strategic delegation. Overall, public goods supply will be higher than the socially optimal level.

Note also that because of the specific set up of the model, public goods supply with centralized decision making equals that of decentralized provision as presented in (3.14). The more general interpretation of this result is that the potential benefits of centralization are absorbed by the adverse delegation

effect. The intuition for this result is that, although policies are coordinated, the leadership selection is not. With decentralized decision making there are two strategic decisions: relative public goods supply and delegation of policy making. With centralization, the strategic decision shifts to the delegation stage only. However, at the margin, the incentives of the median voter for conspicuous public goods supply do not differ between decision making modes and, hence, it may happen that the equilibrium allocation of public goods remains unaltered if policies are centralized.

## 3.5 Concluding remarks

In a theoretical model we showed that when public goods are conspicuous by nature, decentralized decision making causes supply to be too high. Centralization of decision making potentially solves this problem. However, when we allow for endogenous leadership selection, the picture changes. In the decentralized case, voters may realize the externality and the resulting perverse symmetric outcome. Hence, they have an incentive to commit to lower spending by electing a more moderate leader than the median of their group. Consequently, overspending on conspicuous public goods will be lower. This delegation effect is reversed under centralized decision making. Voters anticipate that the externalities are internalized. Therefore, they have an incentive to select a more extreme leader to obtain more public goods than the other group. Hence, centralization and policy coordination may not solve the conspicuous public goods problem. By endogenizing leadership selection we showed that centralization may fail to improve social welfare.

The implications of this chapter with respect to the effectiveness of cooperation might be depressing at first sight. However, there may be options in the constitutional stage to resolve the problem. First, when policies are coordinated, in the constitutional stage it might be possible to impose spending limits on the production of conspicuous public goods. With uniform spending limits, the incentive to delegate strategically is reduced, so that in equilibrium voters may be more inclined to select leaders that have median preferences.

A second option is to ex ante impose policy uniformity. Our results cru-

cially depend on the assumption that centralized conspicuous public goods supply can be differentiated among groups. If there is no scope for differentiation, this takes away the incentive for strategic delegation.

A third related solution is to delegate to a single policy maker who does not originate from one of the countries. This last option implies that if public goods are conspicuous, it may be best to delegate to a centralized institution that has low regard for the jealous spirits of the citizens that they govern.

A novelty in this chapter is that decentralized policy making may trigger strategic delegation when there is policy rivalry. We have seen that strategic delegation reduces the inefficiencies from non-cooperative decision making. In the next chapter we analyze in more depth decentralized policy making in an area where the race to the bottom is prevalent: environmental policy making in oligopolistic product markets. As in this chapter, we will see that strategic delegation may mitigate a race to the bottom in environmental standards. However, depending on the preferences of the median voter, the opposite can also happen so that delegation results in even worse policy outcomes.

# Chapter 4

# Strategic Delegation of Environmental Policy Making

## Introduction

A common fear is that free trade erodes the environment. More trade means more production and the pollution that comes along with this causes the environment to degenerate. Moreover, it is argued that the reduction of barriers to trade provides governments with the incentive to impose laxer environmental regulation, so as to establish a cost advantage for domestic firms. Free trade may therefore lead to a 'race to the bottom' in taxes on pollution and emission standards.[1]

Although the potential threat of a race to the bottom may in theory be large, there is little empirical support that non-cooperative environmental policy making leads to lenient policies (Antweiler et al. 2001, Wang and Winters 2001). To explain this tension between theory and evidence, this chapter develops a political economy model to analyze environmental policy making. We show that non-cooperative policy making does not necessarily result in a steep race to the bottom in environmental taxes. Building on Besley and Coate (2003), we show that if the median voter cares sufficiently

[1]Surveys on the apparent tension between free trade and environmental protection are provided in Wilson (1996) and Esty (2001). See Copeland and Taylor (2004) for an extensive theoretical review of the literature.

for the environment and anticipates lenient policies, he has an incentive to strategically delegate policy making to a politician who cares more for the environment than himself. By doing so, he commits to a higher domestic environmental tax rate, which shifts polluting production to other regions. When the policy maker in the other region cares sufficiently for the environment as well, this production shift raises the tax rate abroad. Hence, by delegating policy making authority, the median voter obtains a cleaner environment and avoids part of the loss in market share.

In addition, we show that if the median voters care little for the environment they delegate policy making to a politician who cares even less for the environment than they do themselves. The reason is that commitment to a low tax rate (high subsidy) is observed by the policy maker in the other region. If this policy maker cares much for profits as well, in equilibrium he chooses a higher tax rate (lower subsidy) so as to mitigate the fall in the price on the world market. Hence, this chapter is able to explain why there may be a race to the bottom among poor regions, together with a race to the top in rich regions – phenomena that are observed in practice, see the empirical papers discussed below.

There is a considerable body of literature on the political economics of environmental policy making. The seminal papers in this field use the Brander and Spencer (1985) strategic trade insights to shows that non-cooperative policy making with domestic social planners results in too low environmental taxes (e.g. Barrett 1994, Kennedy 1994, and Ulph 1996). In these papers, countries are engaged in environmental 'beggar thy neighbor' games in which, in the end, no firm gains market share, while at the same time the environment deteriorates. As the policy maker in these papers is a social planner, cooperation would lead to socially optimal environmental policies. The main contribution to the theoretical literature of this chapter is that, by introducing an electoral process as proxied by strategic delegation, our model shows why in some cases non-cooperative decision making produces surprisingly good results.

Hence, the main motivation for this chapter is to provide a theoretical explanation for the many recent empirical studies that fail to find evidence for

a race to the bottom when environmental policies are set non-cooperatively. In addition to the papers mentioned earlier, Hoel (1991) analyzes unilateral actions of countries in setting environmental taxes and concludes that, even in a non-cooperative environment, some countries go to great lengths to preserve the environment. As an example, he notes that Norway strongly reduced CFC-emissions in the years before the Montreal-agreement. Murdoch and Sandler (1997) argue that even though the Montreal Protocol on CFC reduction provided for a cooperative negotiating framework, the resulting reductions for many countries are no different than those that would have appeared in a non-cooperative Nash equilibrium. As a further example, List and Gerking (2000) show that environmental quality in the US did not decline under the Reagan presidency. This is remarkable because Reagan's new federalism shifted environmental policy making back to the state level. In this non-cooperative environment, one might expect environmental quality to decline. Moreover, the authors show that in the non-cooperative policy making setting of the 1980s environmental quality did in fact improve. For other federations, Olewiler (2005) finds no evidence that there is a race to the bottom in environmental policy in Canada. For the EU, in the absence of strong coordination of environmental policy (Jeppersen 2002) free trade has not led to a worsening of the environment.

Fredriksson and Millimet (2002) provide evidence that the response of individual US states to changes in environmental regulation of their neighbors is asymmetric. They show that states follow their neighbors in raising standards if these standards are already stringent. Thus, in the North-East and West of the US non-cooperative policy making leads to high levels of environmental protection. This confirms our finding that in rich states, where the median voter has strong preferences for environmental quality, non-cooperative policy making may lead to stronger environmental protection. In other areas, like the relatively poor Mid-West and South, this effect does not show up.

## 4.1 The model

Consider two countries that have one firm each. These firms are the only ones that sell a homogenous product $z = x + y$ in the world market, where $x$ is the production of the home firm and $y$ that of the foreign firm. Assume that domestic consumption is sufficiently small when compared to world consumption, so that we can ignore the effect of government policy on domestic consumers. In the world market, the two firms are engaged in Cournot competition. Inverse linear world demand is denoted by $P(x + y)$ so that before tax profits of the home firm are $\pi = P(x+y)x - cx$, where $c$ are the constant marginal cost of production.

With respect to the timing of policy making, we model a three-stage game. In stage 3 firms maximize profits given the dominant strategy of the other firm and given the policies in the home and the foreign country. In stage 2, a policy maker decides on the optimal policy, given the policy in the other country. The policy maker is restricted to a tax per unit of production $t$ – in case of a subsidy $t$ is negative. Finally, in stage 1 the median voters decide on the policy preferences of their policy maker.

The home firm maximizes the profit function $\pi = P(x + y)x - cx - tx$ with respect to $x$. The first- and second-order condition for maximum profits are:[2]

$$\pi_x = P_x x + P - c - t = 0 \tag{4.1a}$$

$$\pi_{xx} = 2P_x < 0 \tag{4.1b}$$

By totally differentiating the first-order conditions for both firms, we find

[2] Throughout the paper subscripts denote partial derivatives.

that:

$$\frac{dx}{dt} = \frac{2}{3P_x} < 0 \tag{4.2a}$$

$$\frac{dy}{dt} = -\frac{1}{3P_x} > 0 \tag{4.2b}$$

$$\frac{dy}{dt} = -\frac{1}{2}\frac{dx}{dt} \tag{4.2c}$$

The last result also gives the optimal response of the foreign firm $dy/dx = -1/2$.[3]

In stage 2, the policy maker decides on the optimal tax/subsidy rate. Each citizen $j$ has a utility function in which the arguments are the before tax profits of the home firm $\pi^n$ and the environmental damage costs $D^j = \lambda^j [D(x) + \kappa D(y)]$. These damage costs are convex in $x$ and $y$. The parameter $\kappa$ measures the degree of pollution spill-overs from production in the other country. Further, $D^j$ is increasing in the preferences for the environment, captured by the parameter $\lambda^j$: a citizen with a higher $\lambda$ cares more for the environment relative to firm profits.

The utility of the citizen who has become the policy maker in the first stage $j = p$ is:

$$V^p = \pi^n - \lambda^p [D(x) + \kappa D(y)] \tag{4.3}$$

Making use of the linear demand curve and the results for optimal firm behavior in stage 3, the first- and second order conditions for the optimal tax set by the home policy maker are:

$$\frac{\partial V^p}{\partial t} = \left[\frac{1}{2}P_x x + P - c - \lambda^p \left(D_x - \frac{1}{2}\kappa D_y\right)\right]\frac{dx}{dt} = 0 \tag{4.4}$$

$$\frac{\partial V^p}{\partial t \partial t} = \left[P_x - \lambda^p (D_{xx} + \frac{1}{4}\kappa D_{yy}\right]\left(\frac{dx}{dt}\right)^2 < 0 \tag{4.5}$$

The trade-off for the policy maker is apparent: given the tax level in the other country, higher home taxes reduce profits. On the other hand, higher taxes

[3]This means that reaction curves are downward sloping in $(x, y)$-space. In case the policy maker increases the tax rate, the home firm reaction curve shifts in. In the new equilibrium the increase in the home tax rate reduces $x$ and increases $y$.

reduce pollution. In addition, note that even when there are perfect spill overs ($\kappa = 1$), (4.2c) ensures that an increase in the home tax rate reduces pollution. The reason is that an increase in the home tax rate reduces $x$ by more than it increases $y$.

By using the implicit function theorem, from the first-order condition (4.4) for both policy makers and by imposing symmetry in equilibrium ($\lambda^p = \lambda^{p*}$ and $x = y$) it follows that:

$$\frac{dt}{d\lambda^p} = \frac{V_{tt}^p \left[(1 - \frac{1}{2}\kappa)D_z\right] \frac{dx}{dt}}{V_{tt}^2 - V_{tt^*}^2} > 0 \tag{4.6a}$$

$$\frac{dt^*}{d\lambda^p} = \frac{-V_{t^*t}^{p*} \left[(1 - \frac{1}{2}\kappa)D_z\right] \frac{dx}{dt}}{V_{tt}^2 - V_{tt^*}^2} \lesseqgtr 0 \tag{4.6b}$$

where an asterisk denotes variables in the foreign country. In both equations, the denominator is positive by assumption. Clearly (4.6a) is positive because $V_{tt} < 0$ and because $(1 - \frac{1}{2}\kappa)D_z \frac{dx}{dt} < 0$.

The overall sign of (4.6b) depends on the sign of $V_{tt^*}^p$ and is the crux to the argument developed in this chapter. The reason for strategic delegation is that changing the preferences of the policy maker affects the equilibrium policies in the other country. If $V_{t^*t}^{p*} > 0$, then taxes in the other region are higher when the home policy maker cares more for the environment. The reverse is true when $V_{t^*t}^{p*} < 0$. By using (4.4) and recognizing that $dx/dt < 0$ it follows that:

$$V_{t^*t}^{p*} = \left[-\frac{1}{2}P_z - \lambda^{p*}(1 - \kappa)D_{zz}\right] \frac{dy}{dt^*} \frac{dy}{dt} \tag{4.7}$$

Given that $P_z$ and the term outside the brackets are negative, $V_{tt^*}^p$ is larger than zero when $\lambda^{p*}$ is sufficiently high. The intuition is that in the symmetric equilibrium, stronger preferences of the home policy maker for the environment raise the equilibrium home tax rate, and therefore lower the production of the home firm and increase equilibrium output of the firm in the other region. If the policy maker in the other region cares sufficiently for the resulting pollution, he will want to dampen this effect by setting a higher environmental tax rate himself.

The opposite happens when the policy makers care little for the environment so that the term in brackets is larger than zero. Again, stronger preferences of the policy maker increase the tax rate and reduce the production of the firm. In turn, this leads to a higher price on the world market, which raises the marginal profits of the foreign firm. When the policy maker in the other region cares much for these profits, he imposes a lower environmental tax (a higher subsidy).

Further, note that when pollution is global ($\kappa = 1$), then $V_{t^*t}^{p*}$ is always negative. The reason is that by raising the price level on the world market, a higher tax rate always reduces the incentives to tax pollution in the other region. From the environmental perspective, at the margin the policy makers are indifferent where additional production takes place, so that only marginal profits count.

## 4.2 Strategic delegation

In the first stage of the game, the median voter in each country selects a candidate to be the policy maker. Following Besley and Coate (2003) the median voter chooses from a set of possible candidates for which we simply assume that the optimal candidate is among them. When selecting a candidate for office, the median voter is concerned with two issues. First, once in office the policy maker selects the tax rate that maximizes her own utility. Clearly, the median voter then has an incentive to select a policy maker who has preferences for the environment that are close to those of her own. Second, as can be seen in (4.6b), the preferences of the policy maker affect the policy choice in the other country. Denoting by $j = m$ the median voter, the first-order condition that describes the preferences of the optimal candidate is:

$$\frac{\partial V^m}{\partial \lambda^p} = \frac{dt}{d\lambda^p}\left[\frac{d\pi^n}{dt} - \lambda^m(D_x\frac{dx}{dt} + \kappa D_y\frac{dy}{dt})\right] + \frac{dt^*}{d\lambda^p}\frac{dV^m}{dt^*} = 0 \qquad (4.8)$$

This condition describes the trade-off that the median voter faces. The first term shows the non-strategic effect of delegation. Selecting a person with a

stronger preference for the environment reduces net profits and improves the environment. As delegation shifts the tax rate away from the one preferred by the median voter, this entails a cost to him. The second term shows the strategic effect of the delegation: selecting a person with stronger preferences for the environment affects the tax rate in the other country.

From the first-order condition (4.4) of the policy maker in stage 2 it follows that in equilibrium $\partial\pi^n/\partial t = \lambda^p(D_x - \frac{1}{2}\kappa D_y)(dx/dt)$. Substituting this in (4.8), gives in the symmetric equilibrium:

$$\frac{dt}{d\lambda^p}\left[(\lambda^p - \lambda^m)(1 - \frac{1}{2}\kappa)D_z\frac{dx}{dt}\right] + \frac{dt^*}{d\lambda^p}\frac{\partial V^m}{\partial t^*} = 0 \tag{4.9}$$

The first term is the non-strategic effect of delegation. Delegation to a person with stronger preferences for the environment raises the home tax rate. Hence, when $\lambda^p > \lambda^m$, appointing a person who cares more for the environment incurs a cost, for environmental policy will be too restrictive for the taste of the median voter. The second term is positive ($dt^*/d\lambda^p > 0$) when the foreign policy maker cares much for the environment and is negative when he does not ($dt^*/d\lambda^p < 0$). In the two subsection below we discuss both cases.[4]

### 4.2.1 The political race to the bottom

When $dt^*/d\lambda^p$ is smaller than zero, the first-order condition (4.9) is satisfied only when the term in square brackets is larger than zero. Noting that $dx/dt < 0$, this is only true when $\lambda^p < \lambda^m$: the median voters delegate to policy makers who care less for the environment than themselves. In the symmetric equilibrium both median voters have the same incentive. Hence, strategic delegation enhances the race to the bottom in environmental policy making.

[4]In addition, we restrict the analysis to the case where $\partial V^m/\partial t^* > 0$, so that the utility of the median voter increases when the foreign country increases the tax rate. Certainly, there may be extreme voters who care that much for the local environment compared to firm profits that this condition is violated. When spill-overs are small, for these voters an increase in the foreign tax rate may reduce their welfare because it raises the production of the home firm. However, we rule out that this is true for the median voter.

The intuition for this result is as follows. The median voter is aware that delegation to a person who cares less for the environment than himself will result in a suboptimally high level of local pollution. However, delegation serves as a commitment to a lower tax rate. As this commitment is observed by the policy maker in the other region before he sets the tax rate, this creates an incentive for him to set a higher tax rate given the optimal strategies of the firms. The reason is that the policy maker in the other region anticipates a reduction in the net profits in the world market. As he cares much for these profits, this reduces his incentives to subsidize the foreign firm, so as to not lower the price on the world market.

### 4.2.2 The political race to the top

The opposite result arises when the median voters care much for the environment relative to firm profits. In this case, in (4.9) the term $dt^*/d\lambda^p$ is positive: an increase in the preferences of the home policy maker will raise the tax rate in the foreign country. Hence, the first-order condition is satisfied when $\lambda^p > \lambda^m$: the median voter delegates to a policy maker who cares more for the environment than he does himself. In the symmetric equilibrium, both median voters delegate to environmental 'lovers'.[5]

When the median voter delegates to a person who cares more for the environment than he does himself, he is aware that the tax rate will be suboptimally high and profits too low to his taste. However, the benefits of delegation are that the commitment to a higher tax rate is observed by the foreign policy maker. Hence, this foreign policy maker anticipates a higher output by his firm. As he strongly dislikes the pollution that comes along with higher production, this increases the equilibrium foreign tax rate. Consequently, though taxes are suboptimally low because of the strategic trade argument, the political process of delegation mitigates the race to the bottom.

To speculate which regions will experience a political race to the top, the

[5]The term 'race to the top' refers to Vogel (1995), who argues that regulating markets may increase the incentives for exporters to raise environmental standards.

environmental Kuznets-curve suggests that when countries become richer, the environment may improve as citizens care more for clean air and water relative to profits (see e.g. Esty 2001). Hence, in our model the lambda of the median voter may increase with the income level of regions and countries. We would thus expect a political race to the top in rich countries, and a race to the bottom in poor countries. This is in line with the empirical findings of Fredriksson and Millimet (2002), who show that for the US there is a race to the top for regions with high incomes and no such effect for regions with low incomes.

## 4.3 Concluding Remarks

We have argued that strategic voting may explain the sometimes surprisingly good results of non-cooperative environmental policy making. This chapter could be extended in several interesting ways. First, additional competitors in the world market and entry could be incorporated. As a conjecture, we may expect that more countries and firms reduces the incentives for strategic delegation, for it's effect on foreign policy makers is smaller. In addition, we have focused on symmetric equilibria. However, countries differ in their level of economic development, comparative advantages, and industry structure and, hence, have heterogeneous preferences for environmental protection. Finally, some insights of this chapter may be applicable in other policy domains where the theoretical argument for a race to the bottom seems apparent, like tax competition and the coordination of migration issues.

# Chapter 5

# Legislative Bargaining and Lobbying in Federations

## 5.1 Introduction

How does centralization of policy making affect lobbying for local public goods? So far, the theoretical literature on policy centralization has revealed two opposing effects. On the one hand, cost sharing of public goods among jurisdictions creates a common pool problem, which causes lobbying. Consequently, centralization may result in overprovision of local public goods (Persson and Tabellini 1994, Mazza and van Winden 2001). By contrast, other papers (Melo et al. 1993, Bardhan and Mookherjee 2000) argue that centralization increases the number of contesting lobby groups, which reduces the political cloud of each of them. Hence, centralization raises the marginal cost of obtaining policy favors, which dilutes the incentives to lobby.

A key assumption in most of the literature is that political centralization entails handing over decision making power to a single policy maker in the center (Persson and Tabellini 1994, Mazza and van Winden 2001), or that previously locally organized political parties merge across borders and then compete in a centralized election (Bardhan and Mookherjee 2000). However, both these centralized policy making settings do in practice not seem to fit well the institutional design of most federations; federal policies are typically

formulated by a committee consisting of regional delegates who are elected or appointed locally. A case in point is policy making in the European Union.

To shed more light on the effects of policy centralization in federations, this chapter presents a model where a committee of regional representatives decides on the provision of local public goods. We consider a two-stage Grossman and Helpman (1994) policy-making game, where in the first stage regional lobbies offer contributions to a local policy maker. In the second stage a committee of these local policy makers decides on public goods provision. A main result is that the common pool effect associated with centralization reduces lobbying expenditures. The intuition is that cost-sharing causes the local policy makers to become an ally of regional interest groups. Anticipating this, these interest groups are able to offer their policy maker a lower contribution in return for policy favors when compared to decentralized policy making. In addition, we endogenize lobby formation along the lines of Mitra (1999). We argue that centralization causes the number of lobbies to increase as the cost of lobbying falls. Hence, our model predicts that centralization will reduce lobby expenditures for each group and increases the number of lobbies.

There is a well established literature that studies the interaction between lobbying and legislative bargaining among politicians. This literature, however, does not explicitly deal with issues of centralization.[1] To name a few papers, in the spirit of Shepsle and Weingast (1981), Helpman and Persson (2001) introduce an agenda setter to derive legislative equilibria. One of their results is that lobbying efforts are concentrated on this agenda setter. Likewise, Grossman and Helpman (2001) show that majority voting causes lobbies to focus on the pivotal legislator. By contrast to the papers that stress financial contributions, Bennedsen and Feldmann (2002) consider information provision by lobby groups. In their paper, effort by lobbies signals the interest intensity of the policy maker, which increases her chances of being included in a coalition.

A few papers explicitly deal with issues concerning the effects of cen-

[1] Various models of lobbying and legislative bargaining are surveyed in Grossman and Helpman (2001) and Persson and Tabellini (2000).

tralization on lobbying. In contrast to this chapter, these authors assume that centralized policy making is conducted by a single politician, so that in these papers there is no legislative bargaining. Redoano (2003) uses the citizen-candidate set-up by Besley and Coate (2001) to analyze the effects of centralization on lobbying in a representative democracy. In addition, she allows for endogenous lobby formation. One of her results is that centralization may increase the number and size of lobbies, since heterogeneous preferences in a federation make lobbying more necessary. Bordignon et al. (2003) analyze lobbying for public goods by a local and a foreign firm in two jurisdictions. Centralization of policy making internalizes the negative spillover effects of subsidizing the local firm. Among other things, they show that when merging markets enhances competition, this increases the incentives to lobby for local public goods.

The main motivation for introducing committee decision making as the post-centralization policy making setting is to analyze lobbying in the European Union. In the political science literature on European integration, for long the 'functionalist' approach has dominated (e.g. Haas 1958, 1964 and Lindberg and Scheingold 1970). According to this approach, the member states were envisioned to move towards 'ever closer union', which in the process would create truly European policy makers. By contrast, more recent 'intergovernmentalist' theorizing emphasizes that EU policies reflect power struggles between the member states (Moravcsik 1991). In this view there is no single European decision maker who dominates the political process.

In this chapter the policy outcome maximizes the joint welfare of the national policy makers. Clearly, the assumption that the joint surplus of all countries is maximized can be motivated by unanimity decision making. One may object that in the EU most policies that deal with local public goods have qualified majority voting. However, many experienced policy observers including Messerlin (2001) argue that consensus also is implicitly the rule in policy domains where there is qualified majority voting. The main reason is that member states anticipate that outvoting in qualified majority domains may cause a veto in unanimity domains. Arregui (2004) analyzes this issue empirically and shows that many EU policies reflect a cooperative outcome.

A more descriptive account of the cooperative nature of decision making in the European Council of Ministers is provided by Beyers and Dierickx (1998) and Beyers (1998).

To motivate further the assumption that lobbies predominantly approach national policy makers, case-studies show that in the EU this indeed is the case (see among others Lanzalaco 1993, Spence 1993, Van Schendelen 1993, 1998). For example, Mazey and Richardson (1993, p.211) note "...the growing importance of EC regulation has in many cases reinforced the dependency which exists at the national level between groups and 'their' ministries, since the latter are effectively *intermediaries* between groups and the EC in the final stages of Community decision-making"[original italics]. Spence (1993) in his account of the role of the British civil service in Brussels goes a step further and calls national officials 'lobbied lobbyists'. With respect to the largest public spending domain in the EU, Pappi and Henning (1999) analyze networks in the Common Agricultural Policy (CAP) – by many regarded as a supranational policy domain *pur-sang* – and conclude that national farmer's organizations spend by far the most resources on influencing domestic policy makers acting in Brussels.

## 5.2 Decentralized policy making

We consider $m$ identical countries indexed by $i$, each populated by $n$ groups indexed by $j$. To start, by assumption $k$ of these groups are organized and belong to the set $\Lambda$, that is $k \in \Lambda$. The other $n-k$ groups are not organized. We assume that each group is small, so that functions of $k$ can be differentiated. In the following we normalize $n$ to 1, so that $k$ can be read as the share of groups in society that is organized.

In each country a policy maker decides on the provision of local public goods $g^j$ to group $j$. A group may be thought of as a region or a city, for which we assume that citizens have equal preferences. The utility from consuming public goods is described by a utility function $b(g)$ with properties $b_g > 0$, $b_{gg} < 0$, and $b(0) = 0$. In addition, there are no spill-overs from local public goods in other regions. The average and marginal cost of producing

a unit of $g^j$ in terms of forgone private goods consumption is normalized to one. Production of local public goods is financed by a lump sum tax $t$ that is equal for all citizens. Hence, utility of group $j$ is given by:

$$V^j = b(g^j) + y - t \tag{5.1}$$

were $y$ denotes income, so that the term $y - t$ represents the utility from private goods consumption. Given the concavity of $b(g)$ it follows that the socially optimal level of local public goods to group $j$ satisfies the first-order condition:

$$b_g(g^j) = 1 \tag{5.2}$$

The equation above shows that in the social optimum the marginal benefits of local public goods to group $j$ (LHS) equal the marginal cost to society (RHS). In the following, (5.2) serves as an efficiency benchmark against which to evaluate the political economy outcomes.

In our economy, organized groups have the option to offer a contribution schedule to the policy maker. The policy maker is assumed to maximize his own welfare $V^p$ that is a weighted sum of social welfare $V^s$ and the sum of political contributions $\sum C^{j\in\Lambda}(g^j, t)$ by the groups that are organized:

$$V^p = V^s + \alpha \sum_{j=1}^{k} C_i^j(g^j, t) \tag{5.3}$$

The parameter $\alpha$ measures the relative preference of the policy maker for the sum of contributions that she receives from the organized groups.

Solving the game backward, the second stage equilibrium describes the optimal provision of local public goods to each group $j$. To find this optimal level, we need to specify how the contributions are affected by changes in the allocation of local public goods. Following Bernheim and Whinston (1986) and Grossman and Helpman (1994), we avoid multiple equilibria by requiring contribution schedules to be 'thruthful', that is, these schedules are assumed to reflect the marginal welfare gain (or loss) to group $j$ from a change in the public goods allocation. The allocation affects each group through it's own level of public good $g^j$ and the tax $t$ it has to

pay, where $t = \theta \left[ k g^{j \in \Lambda} + (1-k) g^{j \notin \Lambda} \right]$ and $\theta = 1/n$ is the identical population share of each group. A truthful contribution schedule is defined as $C^j(g^j, t) = Max(0, V^j(g^j, t) - \gamma^j)$, where $\gamma^j$ is a scalar so that $V^j(g^j, t) - \gamma^j$ is the lump sum contribution to the policy maker. As we focus on positive contributions in equilibrium, in the neighborhood of such an equilibrium contributions take the form $C^{j*} = V^{j*} - \gamma^{j*}$. By making use of (5.1), truthful contribution schedules have properties:

$$\frac{\partial C^j(g^j, t)}{\partial g^j} = \frac{\partial V_i^j}{\partial g^j} = b_g - \theta > 0 \tag{5.4a}$$

$$\frac{\partial C^j(g^j, t)}{\partial g^{i \neq j}} = \frac{\partial V_i^j}{\partial g^{i \neq j}} = -\theta \tag{5.4b}$$

Using this, maximizing the policy maker's objective function (5.3) is the same as maximizing

$$V_i^p = (1+\alpha) \sum_{j=1}^{k} V_i^{j \in \Lambda} + \sum_{j=k}^{n} V_i^{j \notin \Lambda}$$

In that case, the politically optimal local public goods supply satisfies the first-order condition:

$$b_g(g^{j \in \Lambda *}) = 1 - \frac{\alpha(1-k)}{1+\alpha} \tag{5.5}$$

$$b_g(g^{j \notin \Lambda *}) = 1 + k\alpha \tag{5.6}$$

When we compare (5.5) to the socially optimal allocation in (5.2), it is easy to see that there is overprovision of local public goods to organized groups when $k < 1$. In addition, when $k > 0$ the supply to unorganized groups is lower than the efficient level. Further, note that when all groups in society are organized ($k = 1$), the allocation of public goods is socially efficient. The intuition is that when all citizens are organized, increasing the public goods supply to group $j$ raises the contributions of that group just as much as it reduces the combined contributions of all other groups. Hence, the policy maker has no incentive to raise the supply of public goods to group $j$ above the efficient level. By totally differentiating the first-order conditions (5.5)

and (5.6) we have that:

$$\frac{dg_d^{j\in\Lambda*}}{dk} = \frac{\alpha}{(1+\alpha)b_{gg}} < 0 \tag{5.7a}$$

$$\frac{dg_d^{j\notin\Lambda*}}{dk} = \frac{\alpha}{b_{gg}} < 0 \tag{5.7b}$$

so that public goods supply to both organized and unorganized groups declines when an additional group enters the lobbying game.

In the first stage, the contribution of each lobby binds the policy maker's participation constraint in the relation to that group, given the contribution schedules of the other groups. Suppose that one of the groups with size $\Delta k$ were to decide whether to offer contributions to the policy maker. When this group contributes, in equilibrium the policy maker will obtain a utility level:

$$V^{p*} = \alpha(k+\Delta k)[V^{j\in\Lambda*} - \gamma^{j*}] + V^{s*} \tag{5.8}$$

In the equation above, the first term on the RHS are total contributions and the second term the level of social welfare. The contribution of the group must make the policy maker indifferent between (5.8) and the utility level that results when the group does not make a contribution:

$$V^{p*a} = \alpha(k)[V^{j\in\Lambda*a} - \gamma^{j*}] + V^{s*a} \tag{5.9}$$

where the superscript $a$ denote the situation where the group abstains from lobbying. Writing the equality, solving for $\gamma^{j*}$, noting that $\Delta k$ is very small so that we may differentiate $V^j$ to $k$, and then substituting $\gamma^{j*}$ in $C^{j*} = V^{j*} - \gamma^{j*}$ gives

$$C^{j*} = -\left[\frac{1+\alpha}{\alpha}kV_k^{j\in\Lambda*} + \frac{1}{\alpha}(1-k)V_k^{j\notin\Lambda*}\right] \tag{5.10}$$

This result shows that in equilibrium contributions reflect the weighted loss of welfare for the organized and the unorganized groups that results from the entry of the new group. To simplify this further, by using (5.1) and the envelope theorem (as the supply of public goods results from the maximized utility function of the policy maker), it follows that for each group $V_k^{j\in\Lambda*} =$

$V_k^{j\notin\Lambda *} = -\theta(g^{j\in\Lambda} - g^{j\notin\Lambda})$. Substitution then gives:

$$C^{j*} = \frac{1+k\alpha}{\alpha}\Delta T$$

where $\Delta T = (g^{j\in\Lambda} - g^{j\notin\Lambda})$ is the tax increase that results from entry of an additional lobby group.

## 5.3 The effect of centralization on the size of lobbies

Following the set up in the previous section, we assume that there is a legislature consisting of $m$ delegates that aims to maximize the sum of utility of the regions and the contributions to the policy makers:

$$V^{joint} = \sum_{i=1}^{m} V_i + \sum_{i=1}^{m}\sum_{j=1}^{k} C_i^j(g^j, t) \tag{5.11}$$

In the literature on the political economics of centralization (see e.g. Lockwood 2005), two motivations are given for this objective function. First, when side-payments are possible, it is in the interest of the legislature to maximize the joint surplus. Second, when all legislators are veto players, the committee will have an interest in maximizing the utility of each of it's members, given the utility of the other members.

With centralized policy making, the costs of public goods supply to groups in region $i$ are shared with the citizens in the other regions, which from the perspective of the organized groups changes the marginal tax costs to their members. Truthful contribution schedules of these organized groups have the properties:

$$\frac{\partial c^j(g^j,t)}{\partial g^j} = \frac{\partial V^j}{\partial g^j} = b_g - \frac{\theta}{m} > 0 \tag{5.12a}$$

$$\frac{\partial c^j(g^j,t)}{\partial g^{i\neq j}} = \frac{\partial V^j}{\partial g^{i\neq j}} = -\frac{\theta}{m} < 0 \tag{5.12b}$$

When we compare these contribution schedules to the decentralized case, the net marginal benefits of own public goods are larger, for the tax cost are shared with citizens in the other regions. Because of this, lobbies offer a more 'aggressive' truthful contribution schedule in which the rewards for an additional unit of public goods when compared to decentralized policy making are higher. By contrast, now that tax cost are shared, each lobby cares less for additional public good provision to each individual other group.

Using the truthful contribution schedules, the first-order conditions for the politically optimal supply in the second stage satisfies:

$$b_g^{j\in\Lambda} = 1 - \frac{\alpha(1 - \frac{1}{m}\sum_{i=1}^{m} k_i)}{(1+\alpha)} \tag{5.13}$$

$$b_g^{j\notin\Lambda} = 1 + \alpha\frac{1}{m}\sum_{i=1}^{m} k_i \tag{5.14}$$

Clearly, comparing this result to (5.5) and (5.6) shows that with symmetry ($\sum_{i=1}^{m} k_i = mk_i$) centralization does not alter the equilibrium supply of local public goods. The intuition is that, as centralization does not alter the *share* of organized groups in society, the marginal political opportunity cost of providing a unit of $g^j$ by the legislature equals that of a national policy maker.

In addition, when in one of the countries a larger share of society is organized in lobbies, centralization increases public goods supply in that country and reduces it in the other countries. Recall that in equilibrium all organized groups receive the same amount of public goods. Hence, when a country joins a federation in which a low fraction of citizens is organized in lobbies, this increases the share of unorganized citizens that can be exploited.[2]

Returning to the symmetric country case, making use of the truthfulness condition and using the same procedure as in the previous section, equilib-

[2]This result can also be found in Brou and Ruta (2003). However, they consider centralization with a single policy maker.

rium contributions with centralized policy making are:

$$C^{j*} = -\frac{1}{m}\left[\frac{1+\alpha}{\alpha}kV_k^{j\in\Lambda*} + \frac{1}{\alpha}(1-k)V_k^{j\notin\Lambda*}\right] \tag{5.15}$$

When we compare this result to (5.10) we find that equilibrium contributions with centralized policy making are a fraction $1/m$ of the contributions under decentralized policy making. The intuition is as follows. With centralized policy making, lobbies anticipate that the local policy maker will gain less from increased contributions from other local lobbies when it retreats from the lobby game. In addition, the increase in social welfare also is lower when the group retreats from the lobbying game. The reason is that when the share of organized groups in the other countries remains unchanged, defection of a group reduces the tax costs for lobbies and unorganized groups only by a fraction $1/m$ when compared to decentralized policy making. Hence, in the first stage of the game, each lobby realizes that the local policy maker gains less from it's defection. Concluding, because the tax costs of public goods are shared with citizens in other countries, centralization provides the opportunity for each lobby to reduce it's equilibrium contributions so as to still make the policy maker indifferent between accepting and not accepting the group's offer. For this reason, the policy maker will be willing to supply a higher public goods level to an organized group for a lower contribution and becomes an 'ally' in the struggle for directing centralized funds to the country.

Note that lobby contributions are declining in the number of countries $m$. The reason is that more countries means less power for the regional policy maker to change the tax cost to it's citizens. Each lobby group anticipates this by reducing it's contribution. This finding is close to one of the main results in the literature on checks and balances that says that increasing competition among policy makers reduces the rents from office (see for example Persson, Roland, and Tabellini 1997). More subtle, from the point of view of each lobby, centralization reduces the power of the other regional lobbies in shaping public policies. Regional public goods supply is now 'checked' through the legislative process in the center by lobbies in the other coun-

tries.[3]

Moreover, this result implies that enlarging existing unions reduces lobby expenditures. The reason is that enlargement weakens the political power of policy makers already within the union and of those in the new member states. In equilibrium this is anticipated by each lobby, which reduces contributions needed to make the policy maker accept the offer by the group.

Lastly, when $m$ jurisdictions delegate policy making to a single policy maker in the center, as in Persson and Tabellini (1994) and Mazza and van Winden (2001), in our model there will be no effect of policy centralization on lobby expenditures. With a single policy maker, the centralized objective function again is equal to that with committee decision making (5.11): the single policy maker maximizes the weighted sum of social welfare and contributions from all groups. Each group's contribution schedule offered to the single policy maker in the center is truthful and, hence, at the margin has the same shape as the one offered to the domestic policy maker under decentralized policy making. Hence, the equilibrium supply of public goods with a single policy maker equals that of decentralized policy making and that of committee policy making.

However, with a single policy maker, the size of contributions that each lobby makes equals that of decentralized policy making and is therefore higher than with decision making by a committee of regional policy makers. To derive this result, with $m$ countries, a lobby group must make the policy maker in the center indifferent between

$$V^{p*}(k) = \alpha(mk + \Delta k)[V^{j\in\Lambda*d} - \gamma^{j*}] + V^{s*}$$

and

$$V^{p*a} = \alpha(mk)[V^{j\in\Lambda*} - \gamma^{j*}] + V^{s*a}$$

[3]In a trade policy setting, Grossman and Helpman (1995) obtain a somewhat similar result. In their paper, coordination of trade policy pits domestic lobbies against foreign lobbies. The effect is that this increases the economic efficiency of trade policy. However, they do not consider the effects on lobbying expenditures but on trade policy outcomes.

Using $C^{j*} = V^{j*} - \gamma^{j*}$ it follows that

$$C^{j*} = -\left[\frac{1+\alpha}{\alpha} mkV_k^{j\in\Lambda*} + \frac{1}{\alpha}(1-k)mV_k^{j\notin\Lambda*}\right] \tag{5.16}$$

where $V_k^j = -\theta/m(g^{j\in\Lambda} - g^{j\notin\Lambda})$. Clearly, with $m$ jurisdictions the policy maker will be less concerned about the tax effects on other groups because the tax base is higher. However, the change in public goods supply affects more groups and, hence, their welfare and contributions. In the linear setting of this model, these effects cancel out so that contributions are the same in centralized and decentralized policy making case. Our result differs from that of Persson and Tabellini (1994) and Mazza and van Winden (2001), as in these two papers centralization *induces* a common pool problem at the centralized level, which *creates* the incentive to lobby. In our chapter, the incentive to lobby is already present in the decentralized policy making case. As the fraction of organized groups does not change due to centralization, a single policy maker in the center does not alter the equilibrium level of contributions.

## 5.4 The effect of centralization on the number of lobbies

The previous section has shown that centralization reduces the cost of lobbying. So far we have treated the number of organized groups as exogenous, but clearly, when lobbying cost depend on the level of decision making, centralization alters the incentives to organize. Following Mitra (1999), this section extends the analysis by determining the number of lobbies endogenously.

Consider policy formation as a three stage game. The lobbying and policy making stage are identical to the two stages in the previous sections, but now they are preceded by a first stage in which members of a group decide to become engaged in lobbying. The equilibrium in this stage describes which share of the groups becomes organized. To avoid multiple equilibria, we introduce heterogeneity among groups. A natural way to do this is to

assume that fixed organization cost $f^j$ differ between groups. Let the groups in country $i$ be ranked in ascending order of these fixed costs, such that $f^1 < f^2 .. < f^n$, which means that, for a continuum of groups, $f_n > 0$. Members of a group engage in lobbying when the pay-off is larger than when the group remains unorganized. In the decentralized case, for group $j$ this condition is fulfilled if

$$V^{j\in\Lambda *} - C^{j*} - f^j > V^{j\notin\Lambda *} \tag{5.17}$$

It should be noted that the equilibrium values are affected by the number of groups that are organized. Given that $f_n > 0$, to find the interior solution we first show that the net benefits from becoming organized $NB(k) = V^{j\in\Lambda} - V^{j\notin\Lambda} - C^{j*}$ are decreasing in the number of lobby groups ($NB_k \leq 0$) within the relevant interval. Differentiating the equilibrium contributions (5.15) with respect to $k$ while treating the second-order derivatives as very small ($V^j_{kk} \approx 0$) and combining that with (5.17) gives:

$$\frac{dNB}{dk} = \frac{(m+1)\alpha + 1}{m\alpha} V_k^{j\in\Lambda} - \frac{m\alpha + 1}{m\alpha} V_k^{j\notin\Lambda} \tag{5.18}$$

Using the envelope theorem so that in equilibrium $V_k^{j\in\Lambda} = V_k^{j\notin\Lambda}$ (the tax increase that results from entry is equal for organized and unorganized groups) gives $dNB/dk = V_k^j/m < 0$. The intuition for this result is that entry of an additional group group affects the tax costs for organized and unorganized groups equally. However, when more groups are organized, the costs of persuading the policy maker to increase the public goods supply to a group when its switches from unorganized to organized is higher, since more groups punish the policy maker with lower contributions for the resulting tax increase.

The next step is to analyze how centralization affects the equilibrium number of groups that organizes. When there are $m$ countries, for the group that is indifferent between organizing and not organizing in each country it must hold that:

$$V^{j\in\Lambda} - V^{j\notin\Lambda} - C^{j*} - f^j = 0$$

By totally differentiating this and noting that $C_m^{j*} < 0$, we find that:

$$\frac{dk}{dm} = \frac{C_m^{j*}}{NB_k - f_k} > 0 \tag{5.19}$$

Hence, the share of groups in each country that is organized in a lobby increases when more countries join a federation.[4] The reason is that in larger federations the contributions that each of the lobbies needs to pay to his policy maker is lower while the gross benefits from organizing are unaltered. This increases the net benefits from lobbying, which in turn increases the equilibrium number of groups that becomes organized.

## 5.5 Concluding remarks

In this chapter we have studied the effects of policy centralization on lobbying. A main objective has been to contribute to the discussion on the effects of centralization of policy making in the European Union. With respect to spending on local public goods, the overall conclusion is that in the symmetric country case centralization does not alter public goods supply. How does this stand up to the EU experience? Among others, Vaubel (1994a, 1994b) shows that budgetary redistribution did increase in the first years of the establishment of the EU. However, this is often attributed to the initial economic bargain of establishing the EU itself. In this view, Germany gained from market integration, whereas France was 'compensated' for this by a large share of the Common Agricultural Policy funds and Italy and Greece through the Cohesion funds. Harrop (2004) shows that after these initial years, structural spending in the EU has remained constant as a share of GDP. Even stronger, Wildasin (1990) argues that the initial increase in centralized spending by the EU may have crowded out national spending, leaving total spending unaltered.

When analyzing the political effects of enlargement, we have argued that

[4] We assume that the fixed costs of lobbying are constant across institutional states. This may not be realistic in practice, as it is often argued that centralization raises the fixed cost of lobbying. This obviously reduces the incentive to form a lobby.

adding new member states may reduce lobby expenditures for each group and, hence, increase efficiency. However, the fall in costs may trigger new groups to organize, which may reduce overall efficiency in public goods supply. A major concern with respect to enlargement of the EU not discussed in the chapter is the loss of efficiency of the legislative process when policies are formulated on an intergovernmental basis. The reason is that taking up more members increases the transaction costs of policy making, for consensus among the member states is more difficult to achieve. However, Steunenberg (2001) notes that when taking up countries in Central Europe, these risks are limited, for policy preferences of these new member states are not further from the core than those of the present member states. In addition, when new member states are relatively poor, funds will shift, leaving present member states worse-off. Kandogan (2000) argues that this creates incentives for present members to change voting rules, so as to prevent new members from obtaining more public goods in the future. Heinemann (2003) shows that this is just what happened in the Treaty of Nice.

This chapter also adds insights to the political economics literature that studies how centralization affects the prevalence of corruption of policy makers (e.g. Bardhan and Mookherjee 2000). As informally argued by Prud'homme (1994), local policy makers are more exposed to powerful local lobbies. Hence, in the Madisonian tradition, centralization dilutes these local interest, and so reduces corruption. However, an argument against this stance is that centralization makes individual policy makers less accountable, which increases the prevalence of corruption. This last position is supported by Fisman and Gatti (2002), who in a cross-country study show that centralization is associated with higher levels of corruption. Possibly for this reason, in the current debate on institutional reform in developing countries, there seems to be a tendency in favor in promoting decentralized policy making.

This chapter contributes to this debate by separating the effects of centralization on lobbying. On the one hand, in our model centralization increases the willingness of local policy makers to lend an ear to special interest groups. Hence, one may argue that centralization increases the effectiveness of lobbying as the objectives of local policy makers become more intertwined with

those of their special interest groups. On the other hand, as special interest groups commit smaller funds to lobbying, one may conclude that the inefficiencies from rent seeking are less severe with centralized policy making. Further, as centralization reduces lobby costs, more groups in society will become engaged in lobbying, therefore increasing the role of special interests in society. However, the increased competition among these organized groups increases the efficiency in supply to each of them.

# Chapter 6

# Electoral Rules and Trade Protection

## 6.1 Introduction

By now it is well known that trade protection is foremost a political phenomenon. As there are few economic explanations for the persistence of tariffs and quota, nor for the recent rise in anti-dumping measures, most researchers have focussed on political factors to explain the barriers to international trade. The political economics literature provides many possible answers to the question why policy makers resort to trade protection, see Rodrik (1995) for a survey of the literature. However, in answering that question, one important element seems to be underexposed: can political economics explain why trade policies differ so much across countries?

This chapter addresses that question. We argue that differences in political institutions partly explain the variation in trade policy across countries. In a theoretical model we show under which conditions a majoritarian electoral system generates a higher level of protection when compared to a proportional system. In the empirical part we show that differences in electoral rules have significant power to explain the variation in trade protection across countries.

In the theoretical part of this chapter we model trade policy making by

a country in which each of three districts produces a geographically specific product. For example, one can think of steel production in the US that is clustered in the Mid-West, and wine production in the EU that is concentrated in the Mediterranean countries.[1] At the heart of our approach is the probabilistic voting model where districts differ in the number of swing voters, as developed by Dixit and Londregan (1996). We show that the equilibrium tariff schedule in a proportional election reflects the number of swing voters in each district compared to the national average. Announcing a higher tariff on a product induces swing voters to support the party in the district where this tariff increases the return to a specific factor. However, a higher tariff in one region loses votes in the other districts because of higher consumer prices. In a majoritarian system, legislators are selected in local elections. Following Persson and Tabellini (1999), we assume that each party has a safe district and concentrates campaign efforts on winning the swing district. When compared to a proportional system, we show that in a majoritarian election each party announces a higher tariff on the product that originates from the swing district. In addition, the average level of protection is higher with a majoritarian electoral rule, for swing voters in electorally unimportant districts do not form a counterforce to trade protection.

In the empirical part of the chapter we show that countries that have a majoritarian system indeed have a higher level of trade protection. We think this is a new result in the empirical literature, see the papers discussed below. Due to data limitations, other papers have concentrated on OECD countries.[2] Because recently the scope of trade protection data has increased, we are able to examine the relation between electoral rules and protection for a broader set of countries.

[1] Krugman (1991) documents clustering for the US and Brulhart (1998, 2001) analyzes spatial industry concentration patterns in the EU. Traistaru and Martincus (2003) show that economic integration in the Mercosur area has led to geographical clustering of industries across its member states.

[2] Moreover, these papers treat the trade policy of the EU countries as individually determined, possibly to increase the number of observations. We question the validity of this choice, as EU trade policy is uniform for all member states.

## 6.2 Related Literature

A few theoretical papers present models that have close connections to ours. Mayer (1984) argues that in capital-abundant economies protection can be explained by the median voter theorem, for median endowments are relatively labor intensive compared to the economy as a whole. Yang (1995) examines the case where trade policy is shaped by electoral competition when two parties compete for swing votes. In his set up, citizens differ in their endowment of capital, where individuals who have a higher capital endowment also have a higher income. As responsiveness to trade policies declines with income, citizens with low capital endowment are more likely to shift the election result. As in Yamazaki (2004), we argue that if industries are clustered geographically, protection serves as a local public good to a geographical specific factor of production. Compared to that paper, our innovation is that we analyze the effects of political institutions on trade policy when electoral districts differ in their trade policy objective.

It is clear that our study is much inspired by the recent progress in comparative political economy that analyzes how electoral rules affect the spending on local public goods. Persson and Tabellini (1999) show that a majoritarian system leads to high spending on local public goods (roads, swimming pools) and low spending on universal public goods (health care, social security). Milesi-Ferretti et al. (2002) offer an alternative model that focuses on the trade-off between geographical and social constituencies when citizens strategically delegate policy making. In their model a proportional system is biased towards social constituencies and a majoritarian system is biased towards geographical constituencies. Based on Milesi-Ferretti et al. (2002), Grossman and Helpman (2006) also argue that there is a protectionist bias in majoritarian systems. In contrast to our model their protectionist bias in majoritarian political systems is mainly driven by post-electoral bargaining among regionally elected politicians. However, qualitatively they come to the same predictions for empirical testing.

With respect to the empirical evidence on the political economy of trade policy, many studies show that for individual countries there is ample evi-

dence that political incentives explain the variation in protection across industries, see Gawande and Krishna (2003) for a survey. However, there are only very few papers that examine whether political economy considerations can explain the variation in protection across countries.[3] Using data from 24 OECD countries (including the EU-countries) Rogowski (1987) shows that there is a negative correlation between trade protection and majoritarian electoral rules. Mansfield and Busch (1995) analyze non-tariff barriers for 14 OECD countries in two years. They show that non-tariff barriers are increasing in the number of districts and that a majoritarian system is associated with a lower level of protection. In addition to the limited number of observations in these two studies, the focus on OECD countries creates some additional problems. For the OECD sample in Mansfield and Busch (1995), the distinction between majoritarian and proportional systems implies splitting the sample in Anglo-Saxon countries and those in continental western Europe. Our empirical results differ from these findings because we use a larger data set that includes many non-OECD countries.[4] For this larger set of countries we find opposite results when compared to the empirical studies discussed above.

## 6.3 The economic model

Consider a country consisting of three districts $i = 1, 2, 3$. Districts have equal population size with mass unity and there is no migration between districts. Each district produces a good $X_i$ for which it uses labor and a district-specific capital, and it produces and exports a numeraire good $X_0$ for which it uses labor alone, where one unit of labor makes one unit of the numeraire good. As the domestic and world market prices of the numeraire good are normalized to one, the economy-wide wage rate is unity as well. All goods are produced under perfect competition.

[3] Recently, Dutt and Mitra (2002, 2005) have combined the median voter model and the Stolper-Samuelson theorem. They show that countries that have left-wing governments and a high capital-labor ratio have high tariffs. However, they do not consider differences in electoral rules.

[4] However, compared to the other studies, we exclude countries that belong to the EU.

Based on a standard quasi-linear utility function $U = c_0 + \sum U(c_i)$, the typical citizen receives indirect utility from the following sources. First, indirect utility from consumption is $E + \sum_i S_i(p_i)$, where $E$ are expenditures and $S_i(p_i)$ is the consumer surplus of good $X_i$ for the whole country. As we assume a linear demand curve, this means that $dS(p_i)/\ dp_i = -X_i^d(p_i) < 0$, where $X_i^d(p_i)$ is the demand for good $i$. Second, citizens produce the regional specific product for which they as a group receive labor income $L_i$ and the return to the specific capital.[5] The revenue of the district specific capital is $\Pi(p_i)$, with $d\Pi(p_i)/dp_i = X_i^s(p_i) > 0$, where $X_i^s(p_i)$ is the equilibrium supply of good $i$ that follows from cost minimization by regional firms. Third, we normalize all world market prices to one and assume specific tariffs so that the domestic price of good $X_i$ is one plus the tariff rate ($p_i = 1 + \tau_i$). Tariff revenue $\sum_i \tau_i M_i\ (\tau_i)$ on imports $M_i = X_i^d(\tau_i) - X_i^s(\tau_i)$ is distributed equally lump sum over the citizens. In the following we assume that $\tau_i \geq 0$, so that there are no import subsidies. To summarize, the sum of utility in a district is:

$$V_i = L_i + \Pi_i(\tau_i) + \frac{1}{3}\left[\sum_{i=1}^{3} S_i(\tau_i) + \sum_{i=1}^{3} \tau_i M_i(\tau_i)\right] \tag{6.1}$$

The change in welfare of a citizen in district $i$ from a change in the tariff structure is:[6]

$$\frac{\partial v_i}{\partial \tau_i} = X_i^s(\tau_i) - \frac{1}{3}\left[X_i(\tau_i) - \tau_i M_i'(\tau_i)\right] = 0 \tag{6.2a}$$

$$\frac{\partial v_i}{\partial \tau_{-i}} = -\frac{1}{3} X_{-i}^s(\tau_k) + \frac{1}{3}\tau_{-i} M_{-i}'(\tau_{-i}) = 0 \tag{6.2b}$$

where $M_i' < 0$ and the subscript $-i$ denotes all products other than $i$. The equations above show that on the one hand an individual at the margin benefits from an increase in the return to the district specific capital. On the

[5] We assume that district specific capital is embodied in individuals living within the district and can not be traded on a national or international market. Although this may seem a restrictive assumption, allowing for the case where citizens in a district hold a higher share than citizens outside the region of the district specific capital does not qualitatively change the results.

[6] $d\left[\tau_i M(\tau_i)\right]/d\tau_i = M_i + \tau_i M_i'$. In addition, market clearing requires $X_i^d(\tau_i) = X_i^s(\tau_i) + M_i(\tau_i)$, so that $dS(\tau_i)/d\tau_i = -X_i^d(\tau_i) = -X_i^s(\tau_i) - M_i(\tau_i)$.

other hand, he has one-third share in the decline in the national consumer surplus and in the reduction in trade tax revenue (that falls because of a decline in imports) that follow a tariff increase. It follows that the optimum tariff rates for a citizen in district $i$ are:

$$\tau_i^* = \frac{2X_i^s(\tau_i^*)}{-M_i'(\tau_i^*)} > 0 \tag{6.3a}$$

$$\tau_{-i}^* = -\frac{X_{-i}^s(\tau_k^*)}{-M_{-i}'(\tau_k^*)} < 0 \tag{6.3b}$$

A citizen prefers a positive tariff on the product that originates from her district. By contrast, citizens prefer import subsidies on products that originate from other districts. By summing over individuals in the country, the socially optimal tariff rate on product $X_i$ maximizes:

$$V^S(\tau_i) = \Pi_i(\tau_i) + S_i(\tau_i) + \tau_i M_i \tag{6.4}$$

The first-order condition for optimal social welfare is:

$$\frac{dV^S(\tau_i)}{d\tau_i} = \tau_i M_i' = 0 \tag{6.5}$$

Clearly, with positive import demand this condition is satisfied only if $\tau_i = 0$. This has the following implications. First, if the policy maker could use non-distortionary taxation and is able to target public spending lump sum to individuals and regions, she would set all tariffs to zero. If alternative redistribution instruments are distortionary, tariffs will be used complementary to these other instruments. Second, when districts set their own trade policy, each citizen would opt for free trade. By contrast, centralization allows the districts to 'extend' a tariff on the home product to the imports of the two other regions. This increases the rents to the specific factor without a fall in the consumer surplus of the same size.

## 6.4 The political economy model

The main prediction of this section will be that electoral rules matter for trade policy outcomes. First, we will introduce the general political model. Then we will consider two electoral rules, where we draw on the model provided in Persson and Tabellini (2000) for local public goods.

Suppose that the formation of a national trade policy is in the hands of a single centralized legislature that decides by majority voting. Two parties $P = L, R$ compete in an election for seats in the centralized legislature. In the campaign, the two parties simultaneously announce trade policy platforms $\Gamma^L$ and $\Gamma^R$ (the tariff rates on the three products) to maximize the probability of winning the election, given the policy offered by the other party. Individual $j$ in district $i$ votes for party $R$ if:

$$v_i^j(\Gamma^R) > v_i^j(\Gamma^L) + \sigma_i^j + \delta \tag{6.6}$$

where $v_i^j(\Gamma^P)$ are the benefits that a citizen receives from the tariff schedule offered by one of the parties. The parameter $\sigma_i^j$ captures the popularity bias for party $L$ (which may be negative) of this citizen. We assume that $\sigma_i$ has a uniform distribution $[-1/2\alpha_i + \sigma_i^m, \sigma_i^m + 1/2\alpha_i]$ that is common knowledge. Hence, districts may differ in their median ideology $\sigma_i^m$, and in the marginal density $\alpha_i$ of the distribution of this ideology. Clearly, the swing voter will have characteristics $\sigma_i^s = v_i(\Gamma^R) - v_i(\Gamma^L) - \delta$.

In addition, at the time of the election, there will be a nation-wide bias towards party $L$ that takes the value $\delta$. We assume that the expected value of $\delta$ is equal to zero and that $\delta$ is drawn from a uniform distribution over $\left[-\frac{1}{2}, \frac{1}{2}\right]$. This nation-wide preference is only revealed to the parties after they have announced their policy platforms. When it turns out that $\delta > 0$, the electorate has a bias towards party $L$. What is important is that $\delta$ is a random event at the moment that the parties commit to their trade policy. Hence, the vote share that such a platform will generate in each district is a random event as well, for neither of the parties knows on the basis of (6.6) who will be the swing voter.

Suppose that districts can be ranked according to their average bias towards party $L$ so that $\sigma_1^m < \sigma_2^m < \sigma_3^m$. Further, assume that $\alpha_2 > \alpha_1 = \alpha_3$, which implies that in district 2 voters are clustered more closely around the average ideological position and districts 1 and 3 have equal density. Stated differently, given the promise of the other party, a promise to increase the tariff in district 2 wins more votes than offering an identical tariff increase on goods from the other two districts. To simplify the analysis further let $\sigma_2^m \alpha_1 = 0$ so that median preferences in district 2 are zero, and $\sigma_1^m \alpha_1 + \sigma_3^m \alpha_3 = 0$ so that ex ante there is no national bias towards one of the parties.

The two parties maximize their expected vote share conditional on the to be revealed nation wide popularity $\delta$ with the goal of obtaining a majority in the legislature. Call $f(\sigma_i^j)$ the density function that transforms each type of voter $\sigma_i^j$ in the number of votes so that the vote share of party $R$ is $\pi_i^R = \int_{-1/2\alpha_i+\sigma_i^m}^{\sigma_i^s} f(\sigma_i^j) d\sigma_i^j = \left|\alpha_i \sigma_i^j\right|_{-1/2\alpha_i+\sigma_i^m}^{\sigma_i^s}$. From (6.6) we know the characteristics of the swing voter $\sigma_i^s$, so that the vote share of party $R$ in district $i$ is:

$$\pi_i^R = \alpha_i \left[v_i(\Gamma^R) - v_i(\Gamma^L) - \sigma_i^m - \delta\right] + \frac{1}{2} \tag{6.7}$$

The term in brackets describes the swing voter in district $i$, whose characteristics depend on the random event $\delta$. Hence, the vote share itself is a random event, which creates uncertainty when the parties announce their platform. Further, the expected vote share is a smooth function of the difference between the announced policy platforms. The reason is that voters are heterogenous in their preference for the parties and an increase in welfare promised by one of the parties to the voters in $i$ only induces a subset of them to vote for that party. Notice that $\pi_i^L = 1 - \pi_i^R$ so that when choosing the optimal trade policy vector $\Gamma^P$ the parties face the same optimization problem. Hence, a unique Nash-equilibrium will have parties converging to the same policy platform.

The change in the vote share in district $i$ from an increase in the tariff

rate on the product from that district is:

$$\frac{d\pi_i^P}{dt_i} = \alpha_i \frac{dv_i(\Gamma^P)}{dt_i}$$

Fairly intuitively, this shows that a change in the tariff schedule has more effect on the number of votes in a district with a high marginal density $\alpha_i$. As citizens within a region are identical in their trade policy preferences, the change in the vote share for each group can be inferred from (6.1).

To sum up the timing of events: in stage one the parties announce their policy platforms with the sole objective to win the election; in stage two nature reveals the nation-wide popularity bias $\delta$; in stage three elections are held and one of the parties wins a majority; in stage four the winning party implements the policy to which it has committed in stage one. Clearly, stages two and four are of little interest, as we assume that the realization of $\delta$ is a random event and that there is no commitment problem. In stage three, electoral rules determine how one of the parties obtains a majority. Hence, in the following, we are mainly concerned with finding out how the trade policies that parties announce in stage one are affected by the electoral rule in stage three.

### 6.4.1 Proportional elections

In a proportional representation system, the two parties compete for the majority vote share in a national election. The composition of the legislature after the election reflects the nation wide aggregate vote share of each party, and the party with the largest vote share is allowed to implement trade policy. Hence, the objective of party $R$ is to obtain at least 50 percent of the total number of votes. This transforms into a probability of winning:

$$p^P = \underset{\delta}{Prob}\left[\frac{1}{3}\sum_i \pi_i^P > \frac{1}{2}\right]$$

Using the definition of the vote share from (6.7) and the assumption that $\sum_i \alpha_i \sigma_i^m = 0$, it follows that:

$$p^R = \frac{1}{2} + \frac{1}{3\overline{\alpha}} \sum_i \alpha_i \left[ v_i(\Gamma^R) - v_i(\Gamma^L) \right] \tag{6.8}$$

where $\overline{\alpha} = \sum_i \alpha_i / 3$ is the average density.[7] Recall that an increase of the tariff on $X_i$ wins votes in the district where that good is produced and loses votes in the other two districts. Maximizing (6.8) yields after simplifying using (6.2a) and (6.2b)

$$\alpha_i X_i(\tau_i) - \overline{\alpha} \left[ X_i(\tau_i) - \tau_i M_i'(\tau_i) \right] = 0 \tag{6.9}$$

The first term on the left hand side shows the marginal gain in votes when party $R$ offers a higher tariff on good $X_i$. This increase reflects the marginal increase in the income of the specific factor in that district. The second term shows the marginal loss in the vote share. All voters, including those in the district $i$ dislike tariffs as consumers. Hence, these losses are weighted by the average density $\overline{\alpha}$. It follows that the optimal tariff on $X_i$ offered by party $R$ in a proportional election is:

$$\tau_i^{prop} = \left( \frac{\alpha_i}{\overline{\alpha}} - 1 \right) \frac{X_i(\tau_i)}{-M'(\tau_i)} \tag{6.10}$$

Since district 2 has a higher than average density ($\frac{\alpha_i}{\overline{\alpha}} > 1$), it obtains a positive tariff. The two other products have a zero tariff.[8] Given that the tariff offers of the parties are identical, the nation-wide preference $\delta$ determines the election outcome. Hence, in equilibrium both parties win with equal probability.

[7] To obtain this result note that the probability that party $R$ wins the election is $p^R = \text{Prob}\left[\sum_i \alpha_i \left[ v_i(\Gamma^R) - v_i(\Gamma^L) \right] > 3\overline{\alpha}\delta\right]$. Recalling that the lower bound for $\delta$ is uniformly distributed on the interval $\left[-\frac{1}{2}, \frac{1}{2}\right]$ equation (6.8) follows.

[8] We have assumed that both districts have a lower than average density. However the results below for average tariffs extend to the case where one of the two low density districts in fact has a higher than average density.

### 6.4.2 Majoritarian elections

In a majoritarian electoral system citizens in each district elect a delegate to represent them in the centralized legislature. In the regional election, each party nominates one candidate. The candidate who obtains more than 50 percent of the vote in a district wins the seat in the legislature. Following Persson and Tabellini (2000), suppose that, due to a strong average ideological preference, party $R$ always wins district 1 and party $L$ always wins district 3. Hence, to win a majority in the legislature, the two parties compete for the swing district 2 only. Clearly, both parties propose zero tariffs on the products from the uncontested districts. The reason is that imposing positive tariffs on the products from these two districts loses votes in the swing district. Consequently, parties maximize their chance of winning by maximizing the probability of winning in district 2:

$$P^R = \underset{\delta}{Prob}\left[\pi_2^R > \frac{1}{2}\right] = \frac{1}{2} + v_2(\Gamma^R) - v_2(\Gamma^L) \tag{6.11}$$

From the first-order condition it follows that the optimal tariff on the product from the swing districts is:

$$\tau_2^{maj} = 2\frac{X_i(\tau_i)}{-M'(\tau_i)} \tag{6.12}$$

which is the first-best policy for district 2. When we compare this tariff to that under proportional representation in (6.10), we see that a majoritarian electoral system results in a higher tariff rate for district 2 if $\alpha_2/\overline{\alpha} - 1 < 2$ which is true for a positive density in district 1 and 2. The reason is that with a majoritarian election the cost incurred by voters in districts 1 and 3 do not enter in the calculations of the parties. Hence, the marginal cost of inducing voters in district 2 to vote for the party candidate is lower, which results in a higher equilibrium tariff.

In addition, as in our model districts 1 and 3 do not obtain a tariff on their product in both electoral systems, the *average* rate of protection is higher in a majoritarian system than in a proportional system. This result

extends to the case where more than one district receives protection under a proportional rule. When a second district also has an above average density, its voters count more heavily as consumers for the product from the district with the highest density (as it drives up the average density). Hence, a higher density in one of the other districts increases the tariff for that district but reduces the tariff in the other districts.[9]

### 6.4.3 Checks and balances

So far, we have assumed that policy is solely determined by the party that obtains a majority in the legislature. However, the argument that such an electoral system would degenerate in a pork battle between districts is well known and dates back to at least the *Federalist Papers* that already discussed many of the political economy problems related to setting up the US Constitution. For this reason, some countries have introduced presidentialism to offset the adverse effects of majoritarian politics, with the US as a most notable example. For the US, Baldwin (1985) shows that the trade policy objectives of the president are substantially more pro trade than that of Congress.[10]

In our model, the reason why presidentialism would reduce protection in majoritarian systems is quite apparent. As presidential campaigns are typically two candidate proportional elections, these candidates may run on platforms that offer lower protection to the swing districts, so as not to lose

[9] To show this result more formally, by using the equilibrium tariff rates in both regimes, the statement that majoritarian rules produce higher average tariff rates is untrue for a country of three district specific products only when:

$$\frac{\left(\frac{\alpha_1}{\overline{\alpha}} - 1\right) + \left(\frac{\alpha_2}{\overline{\alpha}} - 1\right)}{3} > \frac{2}{3}$$

Using the definition $\overline{\alpha} = (\alpha_1 + \alpha_2 + \alpha_3)/3$ this transforms into

$$\frac{\alpha_1 + \alpha_2}{\alpha_1 + \alpha_2 + \alpha_3} > \frac{4}{3}$$

which is never true.

[10] See Destler (1992) for a detailed analysis of the role of the US President in shaping trade policy. Clearly the ability of a president to shape policy depends on the powers delegated to him.

votes in the other regions. The trade policy would then depend on the power distribution between the legislature and the president. Hence, in a strong presidential majoritarian system, there is no reason to expect trade policy to differ significantly from a proportional system. Moreover, when voters act strategically as in Chari et al. (1997) or Besley and Coate (2003), they may anticipate the protectionist tendency in the legislature. In that case, presidential candidates have a stronger incentive to commit to a free trade stance.

Even if a country has a proportional electoral system, a president could reduce the level of protection. This result may arise when the geographical bias for presidential candidates is smaller than that for parties. In the extreme case, when the districts have only a very small difference in ideological bias when it comes to presidential elections, this would result in both candidates running on a free trade platform.

Concluding, when presidents have strong executive powers in determining trade policy, there is no reason to expect a significant protectionist tendency in majoritarian political systems. For the empirical part of the chapter, the prediction is that purely majoritarian systems have the highest level of protection, followed my majoritarian systems with a president. However, for strong presidential systems, it is unclear whether the latter system would be more protectionist than a proportional system.

## 6.5 Empirical results

Given the outcome of the theoretical model we are interested in the empirical relation between electoral rules and trade policy. Our sample consists of 62 countries, of which 26 have a majoritarian system.[11] For the political economy binary variables on majoritarian systems ($Maj$) and presidentialism ($Pres$) we have used the database that accompanies Persson and Tabellini (2003). In the data, when we classify $Maj = 0$ this means that a country is classified as a proportional system ($Pro$) and when $Pres$=0 this means a

[11] The dataset and the full data description can be obtained at the website for the Thesis at www.igitur.uu.nl.

parliamentary system (*Par*). We have left out countries that belong to the EU, for these have a common trade policy. One of the consequences of this is that we have only a limited number of OECD countries, of which most have a majoritarian electoral system. For the trade policy data our source is Welch and Wacziarg (2003) for average tariff rates (Tariff) and for Openness (OPEN), which is an updated version of the well-known binary Sachs and Warner score. In addition, we use the Heritage Foundation Index for trade policy (HFD) for the year 1999. HFD is ordered between 1 and 5, where 1 indicates a free trade and 5 a protectionist regime.[12]

Table 6-1: Correlations between political variables and trade protection.

| | Tariff Rate | Openness | HFD Score |
|---|---|---|---|
| *Maj* | 0.33 | 0.21 | 0.06 |
| *Pres* | 0.08 | 0.04 | 0.19 |
| *MajPar* | 0.27 | 0.19 | 0.08 |
| *MajPres* | 0.17 | 0.10 | 0.04 |
| *ProPres* | -0.02 | -0.03 | 0.18 |
| *ProPar* | -0.35 | -0.21 | -0.28 |

A first glance at the data is already quite revealing. Table 6-1 shows the correlation between the constitutional variables and trade policy indices. As is apparent, there is a strong positive correlation between majoritarian systems and the tariff level. In addition, when we subdivide into the four possible combinations of electoral rules and presidentialism, majoritarian systems without a president (*MajPar*) has the highest positive correlation with tariffs, whereas proportional systems with and without a president (*ProPres* and *Propar*) have low tariffs. In general, these correlations extend to the other indices of trade policy.

Table 6-2 shows the OLS and instrumental variables (IV) results for the average tariff rate. Column (1) confirms that majoritarian electoral systems have higher average tariff rates. The effect is economically meaningful, for

[12]The average tariff rate of our sample is 12 percent. OPEN includes measures for tariffs, non-tariff barriers, black market premium and export marketing boards. Of the 62 countries (also) 26 have a closed regime. For the HFD score the mean is 2.9.

Table 6-2: Results of regression analysis to explain the tariff rate.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Maj* | 5.19 | 3.13 | 6.66 | 4.64 | - | - |
| | (1.63)** | (1.80) | (2.76)* | (2.90) | | |
| *Pres* | -0.22 | -1.58 | 3.76 | 0.51 | - | - |
| | (1.64) | (1.89) | (3.53) | (5.84) | | |
| *MajPar* | - | - | - | - | 8.41 | 6.43 |
| | | | | | (2.10)** | (2.56)* |
| *MajPres* | - | - | - | - | 3.99 | 1.75 |
| | | | | | (2.58) | (2.85) |
| *ProPres* | - | - | - | - | 2.12 | 1.71 |
| | | | | | (1.91) | (2.69) |
| Regional Dummies | no | yes | no | yes | no | yes |
| Method | OLS | OLS | IV | IV | OLS | OLS |
| Adjusted R-squared | 0.32 | 0.36 | 0.24 | 0.30 | 0.37 | 0.38 |
| Observations | 62 | 62 | 62 | 62 | 62 | 62 |

Note: Standard errors in parentheses. Significance indicated at 1 percent (**) and 5 percent (*). Both regressions include a constant and control for income per capita, population size and the OECD dummy. Regional dummies are for Latin America, South East Asia and Africa. Instruments in the two IV regressions are indicators for the date of the constitution and colonial origin.

it indicates that countries with a majoritarian system have on average a 5 percentage point higher tariff. The dummy for presidents is insignificant. However, we see that this result is not very robust for the inclusion of regional dummies. Following Persson and Tabellini (2003), it has been argued that electoral rules are not exogenous but depend very much on history.[13] Hence, to filter out the non-causal effects of electoral rules, in columns (3) and (4) we use instruments to correct for this. We see that instrumenting increases the size of the effect of constitutions. However, again the coefficient of electoral rules has low significance in the regression that includes regional dummies.

Columns (5) and (6) show that the positive correlation between majoritarian systems and tariff protection is mainly driven by countries that have a parliamentary majoritarian system. We also observe that there is no significant difference between proportional systems and presidential majoritarian

[13]See Persson and Tabellini (2003) chapter 2 for an in-depth discussion of the methodological issues.

Table 6-3: Probit analysis for Openness (Open) and ordered probit for Heritage Foundation score (HFD).

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Dependent | Open | Open | Open | HFD | HFD |
| *Maj* | 0.90 | 1.26 | - | 0.20 | - |
| | (0.45)* | (0.69) | | (0.30) | |
| *Pres* | -0.28 | 0.19 | - | 0.04 | - |
| | (0.43) | (0.97) | | (0.30) | |
| *MajPar* | - | - | 1.75 | - | 0.95 |
| | | | (0.72)* | | (0.42)* |
| *MajPres* | - | - | 0.23 | - | 0.10 |
| | | | (0.78) | | (0.50) |
| *Propres* | - | - | 0.16 | - | 0.57 |
| | | | (0.54) | | (0.37) |
| Method | Normal | IV | Normal | Ordered | Ordered |
| Observations | 60 | 54 | 60 | 62 | 62 |

Note: standard errors in parentheses. Significance indicated at 1 percent (**) and 5 percent (*). Column (2) treats *Maj* and *Pres* as endogenous regressors (IV), where instruments are the same as those in Table 6-1.

systems.

In the literature on trade protection, it is well acknowledged that tariff rates imperfectly describe trade protection. To account for this, we check for robustness of the results by using two broader indices of trade barriers. Columns (1) and (2) in Table 6-3 report the probit results for openness, where the second column treats the *Maj* and *Pres* as endogenous covariates. Again, majoritarian systems increase the chance that a country has a protectionist regime. Table 6-3 reports coefficients, however, we have also calculated that a majoritarian system increases the chance of having a closed trade regime by 33 percent. When we disaggregate further, we see that parliamentary majoritarian systems have high trade barriers. We have calculated that *MajPar* raises the chance of having a closed trade regime by 65 percent when compared to the control group. The results for the HFD-score are less conclusive. However, column (5) reveals that also for this index parliamentary majoritarian system are significantly more protectionist.

To conclude this section, we find ample support for our hypothesis that countries with a majoritarian electoral system have on average a higher levels

of trade protection. In addition, we find that this effect can for a large part be accounted for by countries that have a parliamentary majoritarian system.

## 6.6 Discussion

In this chapter we have argued that electoral rules matter for trade policy. In the theoretical part we showed that a majoritarian electoral rule generates higher trade protection when compared to proportional rule. The intuition is that in a proportional election there will be powerful forces against granting trade protection because all citizens matter compared to only those in the swing district with majoritarian rules. In the empirical part of the chapter we find support that parliamentary majoritarian electoral systems are correlated with higher trade protection.

Other explanations than the electoral strategies of parties modelled in this chapter may account for the positive correlation between a majoritarian electoral rule and protection. First, governments in majoritarian systems may simply use trade policy more than governments in proportional systems, for the latter resort to other means of income redistribution. The reason is that in a proportional system, political parties may want to transfer income to the median voter, for which trade policy is inefficient when compared to other instruments. To take up this point, our model could be extended to include general public goods that may be used for income redistribution. In relation to this, Rodrik (1998) finds that countries that are open to trade have higher government spending. His explanation is that free trade increases the need for social protection. We conjecture that a proportional electoral rule results in a large welfare state (see Persson and Tabellini (2003)) and low protection.

In addition, Bardhan and Mookherjee (2000) argue that lobbying by special interest groups may be more costly in a proportional system, for there are many counterforces that oppose favors to special interest groups. Moreover, Mitra (1999) argues that strong counterforces reduce the incentives for lobby formation, which in turn may result in a lower level of average protection.[14]

[14]See Mayer and Li (1994) for an early model on electoral competition, lobbying and

Further, the papers discussed in the introduction argue that for OECD countries majoritarian electoral systems are associated with lower trade protection. In our data we also find some evidence that the effect of the electoral rule is different for OECD countries when compared to the full sample. To speculate on an explanation for this difference, in OECD countries the Stolper-Samuelson effect of protection – i.e. that trade barriers protect labor – may be important. Clearly, the median voter effect then plays a larger role in proportional electoral systems than it does in majoritarian systems, since in the latter local interests are more important. Hence, for capital abundant OECD countries a proportional electoral system may provide more opportunities for labor to obtain protection.

trade policy formation .

# Chapter 7

# Summary and directions for future research

In this book, I have analyzed the political economy effects of policy centralization. In the Introduction to the thesis, I have argued that centralization of policy making involves a trade-off between on the one hand efficiency gains of pooling resources and internalizing externalities, and on the other hand the political incentive costs. For we already know much about the efficiency effects, I argue that to evaluate better at what layer of government to allocate decision making power, we have to study the political economy effects of that choice.

To link the chapters in this book to the existing literature, the Introduction provides an overview of the political economy models that are used in this thesis. First, I have discussed the median voter approach, which is extended to strategic delegation. I use the concept of strategic delegation in Chapters 2, 3 and 4. Second, to take account of the role of special interest groups, I have discussed the common agency model, used in Chapter 5. Lastly, probabilistic voting was introduced to analyze policy making in a representative democracy.

## 7.1 Main findings

Chapter 2, coauthored with my supervisor Robert Dur, sets off with an observation. At the centralized level of policy making, for example in the EU, there is overspending in some policy domains and underspending in others. By using strategic delegation of policy making, Besley and Coate (2003) argue that the common pool problem may induce the median voter in the member states to delegate policy making at the centralized level to a representative who is a lover of local public goods. We show that if a sufficiently large part of the cost of local public goods is not shared at the federal level, this causes the median voter in the regions to delegate to a politician who has weaker preferences for these public goods than herself. In this way, the median voter free-rides on the spill-over effects of policies in other regions at low local cost. As a result, in the symmetric equilibrium the centralized provision of local public goods is too low. Examples of such policy domains may include those concerned with the environment, policing heavy crime, and caring for asylum seekers.

In the remainder of Chapter 2, we argue that in the case of delegation to public goods lovers, co-financing of local public goods may reduce overspending. We argue that with co-financing the median voter discounts that delegation also increases spending by the local government, which reduces the incentive to appoint public goods lovers. For example, in the EU such rules exist for regional development funds, where national governments should match grants from Brussels. On the other hand, policies that entail non-shared cost should be subsidized at the federal level. This reduces the free-riding incentive for national policy makers to delegate to conservatives, as this would also reduce the flow of subsidies from the federal level.

Chapter 3 analyses psychological externalities (in the form of envy) that policy makers in one region or group may impose upon the citizens of neighboring regions or groups. As a result, decentralized provision of these 'conspicuous' public goods may be too high. Potentially, a centralized legislature may internalize these negative externalities. However, in a model with strategic delegation we argue that the median voter in each jurisdiction may

anticipate a reduction in local public goods supply and delegates to a policy maker who cares more for public goods than she does herself. This last effect mitigates the expected benefits of policy centralization.

The main message of this chapter is that centralization may dramatically change the outcome of the political process. When countries are engaged in policy competition, citizens anticipate socially inefficient outcomes. For this reason, they have an incentive to vote for moderates, so as to not steer up the conflict. By contrast, when policies are coordinated, we show that voters have an incentive to delegate policy making to hawks, so as to obtain the upper hand over rival groups. Hence, the potential benefits from centralization are mitigated by changes in the type of the selected policy maker.

In Chapter 4, I focus on environmental policy making. Here, policy makers can use tax instruments to influence pollution in an industry that is characterized by Cournot competition in the world market. In line with other studies, I find that decentralized policy making by social planners triggers a 'race to the bottom', for each policy maker has an incentive to increase the competitiveness of it's industry. Then, I show under which conditions this race to the bottom may be enhanced by political economy effects. I show that when the median voter cares little for the environment relative to firm profits, she selects a policy maker who cares even less for the environment than she does herself. By doing so, she commits to low taxes on pollution. This is beneficial, because when the foreign median voter also cares for profits, she sets a higher tax level, so as to avoid a large drop in the world market price.

In addition, I argue that when a median voter cares much for the environment, she has an incentive to delegate policy making to a person who cares more for the environment than she does herself. The intuition for this result is that delegation serves as a commitment to higher home pollution taxes. When the foreign policy maker also cares for the environment, this induces her to set higher taxes to avoid a large increase in the production of the foreign firm. As a result, the loss in profits of the domestic industry is compensated for by a cleaner local environment at a relatively small loss in international competitiveness.

The chapters on strategic delegation uncover two important political economy elements of centralization. First, in contrast to what is assumed by many, the political economy mechanisms in a decentralized policy making setting may actually be welfare enhancing. In addition, policy cooperation may disappoint because it is not able to overcome the coordination failure among local median voters of separate political jurisdictions. A way to solve this coordination problem may be to merge the political jurisdictions themselves.

Chapter 5 analyzes the effects of centralization on lobbying behavior. I argue that when policy is the outcome of legislative bargaining by delegates from the member states, lobbying expenditures may well decline. The reason is that, due to the common pool effect, national policy makers become allies of local special interest groups. As a result, these interest groups are able to reduce their payments to the local policy maker. In addition, by endogenizing lobby formation, I show that as influencing policy making becomes cheaper, more groups become engaged in lobbying.

Chapter 6 turns to electoral competition where two parties announce trade policies with the goal of winning a centralized election. In a country, each district produces a good, for which it uses locally specific capital. I argue that in this setting electoral rules matter for trade policy making. In the theoretical part of the chapter, I show that when countries have a majoritarian electoral system this results in a more protectionist trade policy when compared to countries that have a proportional system. In the empirical part of Chapter 6, I provide evidence that in a cross section of 62 countries this hypothesis is supported by the data.

## 7.2 What is missing?

To derive these results in theoretical models, I have used assumptions that may be judged restrictive. To start, I have analyzed the effects of policy centralization in a setting where there is perfect information on the preferences of citizens. However, there is a large literature that deals with the relation between centralization and information transmission. One traditional

argument against centralization (Oates 1972) is that when jurisdictions are heterogeneous, there may be imperfect information on local preferences for public goods at the federal level. More recently, it has been argued by various authors that voters are less informed about federal policies than they are on local policies.[1] In this case, centralization may reduce the information on the performance of policy makers, which in turn distorts their incentives to achieve the common good.

In addition, I have dealt with symmetric equilibria in which districts have an identical economic structure. A weak point of the thesis is that in practice problems of centralization typically arise when jurisdictions are heterogeneous. For example, small members may be preyed upon by large member.[2] However, deriving game-theoretical equilibria when agents are heterogeneous agents is notoriously difficult, worth future research.

When discussing decentralized versus centralized policy making, I have treated these institutional settings as exogenous. However, one may also study the question whether centralization will be chosen, and hence is an endogenous choice variable. In the models of this thesis this issue is dealt with only casually, as we implicitly assume that when the adverse political economy effects of policy centralization are not too large, jurisdictions may want to centralize policy making for efficiency reasons. However, the choice whether to centralize policy is also a political process, and should be treated as such. Still in a rather normative setting, Aghion et al. (2004) and Alesina and Spolaore (2003) make progress in this direction.

## 7.3 Directions for future research

To end this thesis, I become engaged in the hazardous activity of spending some words on where the large field of the political economics of federalism may and should be evolving. I start by noting that when studying policy centralization I have used standard political economy models. In turn, most of these standard models have been developed in microeconomics, more in

[1] See for a survey of this issue Lockwood (2005)

[2] See for an extensive discussion of these issues Alesina and Spolaore (2003).

particular in labor economics and industrial organization. I expect two developments to be particularly useful for the study of policy centralization. First, there are now many studies that take account of heterogeneity of the policy makers' ability (Caselli and Morelli 2004). In this setting citizens are imperfectly informed about the ability of policy makers and face the problem of selecting the most competent one. Hence, can one think of political processes in which centralization improves the information on candidate quality? One example may be that centralization sometimes improves benchmarking of local policy performance. In this way, centralization may increase yardstick competition (Besley and Case 1995). A case in point is fiscal policy in the EU, where the European Commission publishes regular reports which score the fiscal performance of countries. In addition, there has been a fruitful cooperation between economics and psychology to provide more insights in what motivates people. For example, good politician may in this case not be judged only on their policy making ability, but also on their motivation to hold office (see for more on this issue e.g. Beniers and Dur 2006).

For a second direction, currently there is renewed interest in the political economy of decentralization. The World Bank has even created a learning program for civil servants on why decentralization works. The main reason may be that nation building by the allied forces after the Second World War has created too few countries so that preferences of citizens are not aligned, to put it mildly. Alesina and Spolaore (2003) argue that recently these internal conflicts are pushed to the limit because of global free trade, for this reduces the economic benefits of the nation state relative to the political cost of preference diversity.

An important research direction is to find more empirical evidence on the political economy effects of centralization. In the subsequent chapters of this thesis, I have discussed some empirical studies, however, more is needed. One problem in the empirical literature is that centralization itself is endogenous, for especially rich countries choose to dissolve policy making powers to regions (Panizza 1999). To overcome this problem, it is worthwhile to study the effects within one country, such as Besley and Case (2003) and Baqir (2002) do for the US.

Lastly, although there seems a consensus that the negative political economy effects of centralization are important, the efficiency gains of centralization (economies of scale and the internalization of policy externalities) in some cases may still dominate. Hence, it can be worthwhile to develop a second-best theory of policy centralization. When, from a theoretical and empirical perspective, we know what works in policy centralization and what goes wrong, these insights then can be used to develop better centralized political institutions.

# Summary in Dutch

Dit proefschrift levert een bijdrage aan het begrip van de effecten van beleidscentralisatie. Een veelgehoorde basisafweging (bijvoorbeeld in de Europese Unie) is dat centralisatie het aan de ene kant mogelijk maakt beleid van regio's beter op elkaar af te stemmen en gebruik te maken van schaalvoordelen. Aan de andere kant heeft het vaak een gemeenschappelijk beleid tot gevolg. Maar, als dit beleid een compromis is van heterogene, regionale preferenties, dan is het bezien vanuit elke afzonderlijke regio suboptimaal.

Wanneer beleid gedifferentieerd kan worden tussen regio's, dan is er weinig reden te twijfelen dat centralisatie potentieel welvaartsbevorderend kan werken. Differentiatie is vaak mogelijk bij quasi-lokale publieke goederen en diensten. Echter, ook bij het realiseren van dergelijke projecten is centralisatie van besluitvorming wenselijk als er belangrijke spill-over effecten op andere regio's zijn. Maar in dat geval treedt een probleem op als de kosten van lokaal beleid worden gedeeld met andere regio's. Immers, kostendeling heeft tot gevolg dat inwoners en lokale bestuurders van een regio een prikkel hebben om, in vergelijking met decentrale financiering, een vergroting van lokale publieke goederen na te streven. De reden is dat de marginale kosten van projecten lager zijn dan wanneer deze decentraal gefinancierd zouden worden. Kortom, in het geval van differentieerbare lokale publieke goederen zijn de kosten van beleidscentralisatie vooral politiek: samenwerking tussen regio's verstoort de prikkel om te komen tot een efficiënt aanbod van lokale publieke voorzieningen.

Dit proefschrift heeft tot doel dergelijke politiek-economische effecten van beleidscentralisatie beter in kaart te brengen. Hiertoe maak ik gebruik van een drietal politiek-economische mechanismen die ik bespreek in hoofdstuk 1:

strategische delegatie, lobbyen en de stem-kanstheorie. Het model van strategische delegatie van Besley en Coate (2003) is vooral van belang in situaties waar een lokale beleidsmaker (met mediane preferenties) moet besluiten wie zij naar het centrale niveau zal sturen om te onderhandelen over beleid. Het lobbymodel van Grossman en Helpman (1994) is geschikt om beleid te analyseren waarbij een zittende beleidsmaker wordt beïnvloed door pressiegroepen. Het stem-kansmodel van Dixit en Londregan (1996) kan gebruikt worden in een situatie waar politieke partijen of kandidaten verwikkeld zijn in een verkiezingsstrijd. In de onderstaande bespreking van de hoofdstukken ga ik dieper in op deze mechanismen.

Besley en Coate (2003) laten zien dat in een federatie de stemmer met mediane preferenties in elke regio een motief heeft om haar preferentie voor federaal beleid verkeerd weer te geven. Om dit te doen, delegeren zij naar een grotere voorstander van lokale publieke goederen dan zijzelf. Immers, als publieke goederen worden gealloceerd op basis van de preferenties van de vertegenwoordigers van de regio's (bijvoorbeeld in een onderhandeling) dan vergroot dit het lokale aanbod. Omdat de mediane stemmers in alle regio's een dergelijk motief hebben, leidt centralisatie van beleid tot een toename van de uitgaven aan publieke goederen.

Hoofdstuk 2, geschreven met mijn co-promotor Robert Dur, breidt het model van Besley en Coate (2003) uit. Het hoofdstuk begint met een observatie: waarom is er veel activiteit op federaal niveau op beleidsterreinen waar we dat niet zouden verwachten? Dit terwijl we op andere beleidsterreinen waar samenwerking gewenst is weinig tot geen voortgang zien. Bijvoorbeeld, Alesina et al. (2003) laten zien dat de rol van de EU groot is op beleidsterreinen waar de spill-over effecten gering zijn, zoals het gemeenschappelijke landbouwbeleid en beleid voor regionale ontwikkeling. Daarentegen is er aanzienlijk minder Europese samenwerking op milieu- en veiligheidsgebied. Deze laatste terreinen worden juist gekenmerkt door een grote mate van interdependentie tussen lidstaten van de EU.

In hoofdstuk 2 betogen wij dat beleidsterreinen verschillen in de mate waarin kosten op centraal niveau door landen worden gedeeld. In ons model

kan een gedeelte van de kosten van lokale publieke goederen niet afgewenteld worden op inwoners van het andere land. Wij laten zien dat het Besley en Coate (2003)-effect overheerst als een groot gedeelte van de kosten gedeeld wordt. Echter, de noviteit van hoofdstuk 2 is dat als de niet-gedeelde kosten van beleid overheersen, de kiezer met mediane preferenties delegeert aan een politicus die minder geeft om de publieke goederen dan hijzelf. De reden is dat zij hierdoor wel kan meeliften op de spill-over effecten van beleid in andere landen, maar hier niet voor betaalt. Met ons model zijn we tevens in staat te verklaren waarom vooral beleidsterreinen met grote spill-over effecten minder ontwikkeld zijn op centraal niveau. Als er spill-over effecten zijn, dan zal centralisatie leiden tot beleidsintensivering. Dit is echter, gezien vanuit de regio, kostbaar omdat men meebetaalt aan de publieke goederen in andere regio's. Hierdoor ontstaat juist bij beleidsterreinen met grote spill-over effecten een sterke prikkel om zelf weinig te doen en mee te liften op het beleid van anderen. In het laatste gedeelte van het hoofdstuk suggereren wij een financieringsregel om efficiënte allocatie af te dwingen die rekening houdt met de politieke prikkels van de beleidsmakers in de lidstaten.

Ook als er sprake is van negatieve spill-overs kan er een prikkel zijn tot strategische delegatie. De reden is dat centralisatie een verlaging van lokale publieke goederen tot gevolg zal hebben. Om dit te vermijden wil de kiezer met mediane preferenties delegeren aan een beleidsmaker die meer geeft om publieke goederen dan hijzelf. In hoofdstuk 3, geschreven met Colin Jennings, wordt dit geanalyseerd aan de hand van publieke 'snobgoederen'. Deze publieke goederen hebben tot doel de rijkdom van een stad, land of regio uit te stralen. Musea, stadions en kerken kunnen een positief effect hebben op de welvaart van omliggende gebieden. Echter, het kan ook een negatieve invloed hebben op de eigenwaarde van kiezers in omliggende gebieden. Om kiezers tevreden te stellen zullen de bestuurders in de omliggende gebieden ook willen overgaan tot (exorbitante) uitgaven voor dergelijke voorzieningen. Een ander voorbeeld is de wapenwedloop, waarbij het nut van het extra aanschaffen van wapens mede wordt bepaald door hoeveel strijdmiddelen de vijand heeft. Ergo, dit hoofdstuk behandelt ook delegatie van beleid in landen waar sprake is van een (gewapend) conflict tussen bevolkingsgroepen.

In een dergelijke setting vergelijken wij strategische delegatie bij decentrale en bij centrale beleidsvorming. Bij decentrale beleidsvorming delegeert de mediane kiezer aan een politicus die minder geeft om lokale publieke goederen dan hijzelf. De intuïtie is dat op deze manier de mediane kiezer zich vastlegt op een lager niveau van publieke uitgaven. Dit heeft tot gevolg dat de beleidsmaker in het andere land voor een lager niveau van publieke goederen zal kiezen. Dit laatste effect heeft welvaartswinst tot gevolg.

Als beleid centraal wordt vormgegeven, dan slaat de delegatiebeslissing om. Door op centraal niveau te overleggen zullen beleidmakers in staat zijn de negatieve externe effecten te internaliseren en te kiezen voor een lager niveau van lokale publieke goederen. In dat geval heeft de mediane kiezer een prikkel te delegeren aan een politicus die meer geeft om lokale snobgoederen dan hijzelf. Gegeven de hoeveelheid publieke goederen in de andere regio zal dit de eigen voorzieningen doen toenemen, wat een statusbonus tot gevolg heeft. Kortom, delegatie van beleid kan verklaren waarom centralisatie van beleid vaak minder goed werkt dan verwacht.

Dit mechanisme kan ook worden gebruikt om te verklaren waarom er soms minder beleidsconcurrentie wordt waargenomen dan we zouden verwachten. Empirische studies laten zien dat dit bijvoorbeeld het geval is bij milieubeleid. In het model in hoofdstuk 4 heeft elk land een onderneming die op een markt van imperfecte concurrentie een goed produceert dat vervuiling met zich meebrengt. Een lagere milieuheffing verbetert de concurrentiepositie van de binnenlandse onderneming, maar laat ook de vervuiling toenemen.

In hoofdstuk 4 laat ik eerst zien dat, als de mediane kiezer zelf weinig geeft om het milieu, zij delegeert aan een politicus die nog minder om het milieu geeft dan zijzelf. Het mechanisme is als volgt. Gegeven de preferenties van de beleidsmaker in het andere land heeft delegatie tot gevolg dat de mediane kiezer zich committeert tot een lagere milieubelasting. Dit leidt ertoe dat de in het buitenland verwachte productie van de binnenlandse onderneming toeneemt. Hierdoor zal de buitenlandse onderneming een lager outputniveau kiezen. Echter, het belangrijkste effect betreft de keuze van de optimale milieuheffing door de buitenlandse beleidsmaker. Omdat de verwachte winst per eenheid product daalt als gevolg van een prijsdaling op de wereldmarkt,

zal het optimale niveau van de milieuheffing in het buitenland stijgen. In het symmetrische evenwicht delegeren beide mediane kiezers naar een politicus die minder om het milieu geeft dan zijzelf. Strategische delegatie versterkt in dit geval de 'race to the bottom'.

Dit resultaat is diametraal anders als de mediane kiezer veel geeft om het milieu. Ik laat zien dat de mediane kiezer in dat geval delegeert aan een politicus die meer geeft om het milieu dan hijzelf. De intuïtie is dat delegatie dient als een geloofwaardig committent dat het land een hoge milieubelasting zal vaststellen. Dit heeft tot gevolg dat de beleidsmaker in de andere regio ook een hogere milieuheffing zal invoeren om de productiestijging van zijn onderneming tegen te gaan. In het symmetrische evenwicht delegeren beide mediane kiezers beleid naar een politicus die meer geeft om het milieu dan zijzelf. Hierdoor is het 'race to the bottom' effect minder sterk dan verwacht zou worden als de mediane kiezer zelf het beleid zou vormgeven. Het model kan verklaren waarom men in rijke gebieden een 'race to the top' van normen en standaarden ziet, en in arme gebieden juist het omgekeerde.

Hoofdstuk 5 heeft als onderwerp de vraag hoe centralisatie het gedrag van pressiegroepen beïnvloedt. De structuur van het model in hoofdstuk 5 is gebaseerd op het gemeenschappelijke-agent model van Grossman en Helpman (1994). In dit model bieden pressiegroepen elk de beleidsmaker een contract, waarbij betaling (in termen van geld, inspanning of wellicht informatie) afhankelijk is gemaakt van de beleidskeuze van de politicus. Persson en Tabellini (1994) gebruiken dit model om te laten zien dat centralisatie van beleid tot een toename van overheidsuitgaven kan leiden. Zij betogen dat lidstaten de federale beleidsmaker bewerken om lokale publieke voorzieningen in hun land te verhogen. In het evenwicht lobbyen alle landen, wat leidt tot een inefficiënt hoog niveau van publieke uitgaven.

In hoofdstuk 5 laat ik eerst zien dat bij decentrale besluitvorming het beleid een bias vertoont ten gunste van individuen in de maatschappij die behoren tot een pressiegroep. In het geval dat lidstaten beleid vormgeven in een centraal comité dat bestaat uit afgevaardigden van de regio's, dan zullen de lobbyuitgaven dalen. De intuïtie voor dit resultaat is, dat de lokale politicus geïnteresseerd is in een toename van publieke goederen voor haar regio

als andere regio's meedelen in de kosten hiervan. Op deze versterking van de prikkel bij hun beleidsmaker wordt geanticipeerd door de pressiegroepen, die daardoor hun lobbyuitgaven kunnen verlagen.

Daarna wordt het model uitgebreid door de introductie van heterogene vaste organisatiekosten van lobbygroepformatie. Ik laat zien dat het aantrekkelijk wordt een lobbygroep te formeren als lokale beleidsmakers eenvoudiger te lobbyen zijn. Echter, door de toetreding van de lobby's neemt de concurrentie tussen lobbygroepen toe en daalt het niveau van publieke goederen dat elk van hen ontvangt. In het evenwicht zijn er door centralisatie meer lobbygroepen die elk minder ontvangen en betalen.

Hoofdstuk 6 behandelt hoe constitutionele regels de efficiëntie van centrale politieke besluitvorming beïnvloeden. Dixit en Londregan (1996) introduceren een stem-kansmodel waarin twee politieke partijen met elkaar concurreren om zwevende kiezers. In dit model verschillen regio's van elkaar met betrekking tot het aantal zwevende kiezers binnen hun grenzen. Zij laten zien dat beleid op centraal niveau dit verschil weerspiegelt: regio's met veel zwevende kiezers ontvangen veel publieke goederen. Persson and Tabellini (2000) gebruiken dit model om de effecten van constitutionele regels te analyseren. Zij laten zien dat er in een districtenstelsel een sterkere concentratie zal plaatsvinden van het aanbod van lokale publieke goederen in regio's waar de uitslag onzeker is.

In hoofdstuk 6 gebruik ik deze inzichten om de verschillen in het niveau van handelsprotectie tussen landen te verklaren. Ik veronderstel dat bedrijfstakken regionaal geclusterd zijn. Dit heeft tot gevolg dat handelsprotectie het karakter heeft van een lokaal publiek goed: de inwoners van een regio waarvan de bedrijfstak protectie krijgt zien het inkomen van hun bedrijfstakspecifieke kapitaal stijgen. Vervolgens laat ik zien dat decentrale besluitvorming leidt tot vrijhandel. Immers, tarieven op producten van andere regio's verlagen het consumentensurplus.

In een proportioneel kiesstelsel strijden partijen om de meerderheid in de volksvertegenwoordiging door zich vóór de verkiezingen vast te leggen op een structuur van handelsprotectie. Daarentegen, in een districtenstelsel wordt in elke regio een kandidaat gekozen. De kandidaat van de partij die de meerder-

heid van de stemmen krijgt in een district wint de zetel in de volksvertegenwoordiging. Bij landelijke verkiezingen heeft de partij die de meeste stemmen krijgt in de nationale verkiezingen het recht om de voorgenomen handelspolitiek te implementeren.

In het theoretische gedeelte van het hoofdstuk laat ik zien dat bij landelijke verkiezingen de bedrijfstakken in regio's met een geringe spreiding van ideologie een hoog tarief ontvangen. De reden is, dat in deze regio's handelspolitiek veel zwevende kiezers kan trekken. Bedrijfstakken in regio's met weinig zwevende kiezers betalen de prijs door middel van een lager consumentensurplus.

Bij een districtensysteem veronderstel ik dat sommige districten dermate zeker zijn voor één van de partijen, dat geen van hen een reden ziet om een dergelijke regio te beschermen met handelspolitiek. Immers, dit verlaagt het aantal stemmen in de regio's waar de electorale concurrentie sterk is, de zogenaamde 'swing-districts'. In dat geval is de protectie voor deze swing-districten hoger dan bij landelijke verkiezingen. De reden is dat er bij landelijke verkiezingen meer tegenkrachten zijn die protectie bemoeilijken.

In het empirische gedeelte van hoofdstuk 6 onderzoek ik de relatie tussen electorale systemen en handelsprotectie. In een dwarsdoorsnede van 62 landen laat ik zien dat landen met een districtenstelsel een hoger niveau van protectie hebben. Dit resultaat is robuust voor een scala aan indicatoren voor het niveau van protectie en voor een instrumentele analyse die rekening houdt met de endogeniteit van het electorale systeem.

Het laatste hoofdstuk vat de belangrijkste bevindingen samen en bespreekt de beperkingen van de door mij gekozen aanpak. De modelmatige methode om tot resultaten te komen heeft als consequentie dat men aannames moet doen. In dit laatste hoofdstuk bespreek ik de belangrijkste aannames (perfecte informatie en homogeniteit van landen) en verwijs daar naar literatuur die deze aannames heeft versoepeld. Daarna speculeer ik over de door mij verwachte en gewenste ontwikkeling van het vakgebied, waarbij ik aangeef dat ik vooral veel verwacht van het introduceren van heterogene capaciteiten en motivatie van politici en van empirisch onderzoek naar de effecten van beleidscentralisatie.

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