Special interest groups and endogenous policies - a review of common agency models

Kansantaloustiede
Maisterin tutkinnon tutkielma
Emilia Oljemark
2009

Kansantaloustieteen laitos
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Department of Economics

SPECIAL INTEREST GROUPS AND ENDOGENOUS POLICIES – A REVIEW OF COMMON AGENCY MODELS

Master's Thesis in Economics

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Spring term, 2009

Approved by the Head of the Economics Department ___/___ 200___ and awarded the grade_____

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HELSINKI SCHOOL OF ECONOMICS **ABSTRACT**

Department of Economics, master's thesis

Emilia Oljemark 17.3.2009

SPECIAL INTEREST GROUPS AND ENDOGENOUS POLICIES – A REVIEW OF COMMON AGENCY MODELS

The purpose of the study is on one hand to go through the different ways to model the political economy of policy formation, and on the other hand to take a critical look at the most commonly used model, namely that of Grossman and Helpman, in order to analyse how it performs in capturing the mechanics of policy formation in general sense.

The economics literature refers to a situation in which an agent takes an action that simultaneously affects several principals as a relationship of common agency. In such situations, the principals typically design payment schedules that give the agent an incentive to take their interests into account. Bernheim and Whinston (1986) have formalized this menu-auction game in a general framework. The contribution of Grossman and Helpman was to apply the menu-auction framework to model trade policy making. Later on, their common agency model has found several applications on other policy areas.

This study takes first a retrospective look at endogenous policy models by setting the Grossman-Helpman model as the starting point. The focus is then shifted to models that have emerged after the introduction of the Protection for Sale article. Two main questions arise: how does the Grossman-Helpman model relate to earlier research on endogenous policies, and how has the common agency tradition evolved in the theoretical literature during the past decade? The study is conducted in the form of a literature review with an emphasis on theoretical research literature.

As a result of the survey, it can be concluded that the Grossman-Helpman model offers a rich and flexible way to model endogenous policies. In comparison to earlier research, it does not suffer from black boxes which, in contrast, are the burden of tariff-formation and political support models. However, the Grossman-Helpman model is far from being a complete picture of real world interactions in the political arena. The common agency literature that builds on the Grossman-Helpman model includes studies with for instance endogenous lobby formation, asymmetric information, and hierarchical governments. Each of these offers several modelling possibilities and new insights of the political game. Some other augmented versions of the basic model, such as dynamic settings, multiple agents, non-quasilinear preferences and the inclusion of a foreign government, are also briefly revised. Issues that still lack a proper treatment in common agency models include for instance the multiplicity of influencing channels, the role of feelings and emotions, the importance of credibility and reputation as well as the specificities of different political regimes.

Key words: Trade policy, Political economy, Lobbying, Special interest, Common agency, Menu auction, Endogenous policy

HELSINKI SCHOOL OF ECONOMICS **TIIVISTELMÄ**

Kansantaloustieteen laitos, Pro gradu-tutkielma

Emilia Oljemark 17.3.2009

ETURYHMÄT JA POLITIIKAN ENDOGEENISYYS – KATSAUS YHTEISEN AGENTIN MALLEIHIN

Tutkimuksen tarkoitus on toisaalta kartoittaa tapoja mallintaa politiikan muodostusta poliittisten päättäjien ja eturyhmien välillä, ja toisaalta arvioida kriittisesti näiden mallien, etenkin laajiten käytetyn Grossman-Helpman-mallin sopivuutta politiikan muodostuksen mallintamiseen ja todellisuuden kuvaamiseen.

Taloustieteellisessä kirjallisuudessa tilannetta, jossa agentti tekee päätöksen joka vaikuttaa samanaikaisesti useaan päämieheen kutsutaan yleisesti yhteisen agentin ongelmaksi. Tällaisissa tilanteissa päämiehet tyypillisesti tarjoavat agentille rahallisia tarjouksia, joiden tarkoituksena on houkutella agentti huomioimaan eturyhmän intressit päätöksenteossa. Bernheim ja Whinston (1986) ovat mallintaneet tämän menu auction-pelin formaalisti yleisellä tasolla. Grossmanin ja Helpmanin panos yhteisen agentin kirjallisuuteen oli hyödyntää menu auction-kehikkoa kauppapolitiikan muodostuksen mallintamiseen. Heidän yhteisen agentin malliaan on myöhemmin hyödynnetty kauppapolitiikan lisäksi monilla muillakin politiikan aloilla.

Tässä tutkimuksessa päähuomio on siinä, miten politiikan muodostusta, ns. poliittista peliä, on mallinnettu. Työssä luodaan sekä historiaa että nykypäivää luotaava katsaus politiikan muodostuksen mallintamiseen ottamalla lähtökohdaksi Grossman-Helpman-malli. Kaksi keskeistä kysymystä nousee esiin: miten Grossman-Helpman-malli peilautuu aikaisempien endogeenisen politiikan mallien kanssa, ja miten Grossmanin ja Helpmanin aloittama yhteisen agentin tutkimussuuntaus poliittisessa taloustieteessä on kehittynyt teoreettisessa kirjallisuudessa viimeksi kuluneen vuosikymmenen aikana? Tutkimustapana on käytetty kirjallisuuskatsausta keskittyen teoreettiseen lähdekirjallisuuteen.

Katsauksen tuloksena voidaan sanoa Grossman-Helpman-mallin tarjoavan rikkaan ja joustavan tavan mallintaa politiikan endogeenisyyttä. Verrattuna aikaisempaan tutkimukseen, Grossmanin ja Helpmanin malli ei kärsi nk. mustista laatikoista, jotka ovat ominaisia mm. tariffin muodostuksen malleille ja poliittisen tuen malleille. Toisaalta, Grossman-Helpman-malli on kaukana täydellisyydestä yrittäessään kuvata lobbaajien ja poliitikoiden kanssakäymistä todellisessa maailmassa. Yhteisen agentin kirjallisuus, joka on rakentunut Grossman-Helpman-mallin ympärille, sisältää tutkimuksia jotka käsittelevät mm. eturyhmien endogeenistä muodostumista, epäsymmetristä informaatiota sekä hierarkkisia hallintorakenteita. Kukin näistä näkökulmista tarjoaa monia uusia mallinnusmahdollisuuksia sekä valaisevia piirteitä poliittisesta pelistä. Edellisten lisäksi luodaan lyhyt katsaus myös muutamiin muihin uudistettuihin versioihin perus Grossman-Helpman-mallista.

Näkökulmia, joita ei vielä ole käsitelty yhteisen agentin malleissa ovat mm. eturyhmien vaikutuskanavien moninaisuus, tunteisiin ja irrationaalisuuten perustuva päätöksenteko, hyvän maineen tärkeys lobbaamisessa sekä erot institutionaalisissa rakenteissa maiden välillä.

Avainsanat: Kauppapotiikka, Poliittinen taloustiede, Lobbaus, Intressiryhmä, Yhteinen agentti, Menu auction

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1 Introduction

Motivation and background

The concept of economic efficiency, central in economics, does not always go hand in hand with the concept of political efficiency. The latter concept, based on Magee, Brock and Young (1989), relates a political action to the chances of election of one of the political parties in an economy. As an example, even though in the light of economic theory, free trade would produce a clear Pareto improvement compared to protection, completely free trade of goods, services, and capital is seldom practiced in reality. This is due to a large extent to special interests in economy and politics that conduct trade policy out of the theoretical optimum. There are numerous examples of trade disputes between industrialized countries that have come about because of national political interests weighing more than bilateral or multilateral aggregate gains in economic terms[1]. Magee et al. (1989) serve an illuminant statement of the role of national political interests in relation to economic interests:

> "We have regressive policies because income inequality is politically efficient; we have lobbies giving funds to parties because that is politically efficient; and we have politicians using these funds to educate voters who are underinformed, and this is politically efficient. For decades, economists have been stuck on the concept of economic efficiency, but this concept is too narrow to provide a proper understanding of economic policy formation." (Magee et al. 1989, xiii)

Simply put, policy outcomes are a result of two main forces: politicians' desire for re-election, and special interest groups' (SIG) desire for policies favouring their members. Given that political decisions and the content of policies usually have distributional effects in the society, it is natural that different socio-political groups make effort in order to alter the distribution of income to the benefit of the members of the group. Lobbying is attached to every level of policy making, and special interest groups, guided by the welfare of the members they represent, do not hesitate to use every possibility to influence the political process in their favour. The ways to operate of special interest groups are observable, even though most of the broad electorate do not recognize their impact in political outcomes, so it is technically possible to model the political process under a theoretical model which takes into account the presence of lobbying groups.

[1] Classical examples include the steel tariff dispute between the U.S. and the EU that escalated in 2002-2003, the phase-out of the multi-fibre agreement between the EU and Asian countries, or the EU's restrictions on American imports of genetically modified food, opposed by the European public opinion.

A large body of theoretical literature has evolved around the issues of lobbying, interest groups, and political economy, and the literature is divided into several subfields. This study concentrates on the body of political economy literature centered on common agency theory initiated by Bernheim and Whinston (1986). Grossman and Helpman (1994) later adopted the common agency framework and constructed a thorough model which offers one way to describe the process of trade policy formation as a game between a policymaker and interest groups. Their workhorse model has afterwards inspired numerous studies on several policy fields. Applications of the model concern international trade policies (Grossman and Helpman 1995a, 1995b), electoral competition (Grossman and Helpman 1996, Prat 2002), public goods (Besley and Coate 2001), redistribution (Dixit, Grossman, and Helpman 1997), local public goods and fiscal federalism (Mazza and van Winden 2002, Persson 1998), capital taxation (Marceau and Smart 2002), environmental policies (Aidt 1998), labour market policies (Rama and Tabellini 1998), and legislative bargaining (Persson 1998, Dharmapala 1999).

Research questions and methodology

Common agency models have managed to treat the complexities of the political game in a fairly rich and formalized way compared to previous attempts, which is why they have become something of a theoretical consensus among researchers, although several alternative models still exist. The goal of this study is to answer one fundamental question: How does the existing research using common agency models capture the endogeneity of policy making?

To get some perspective on the topic of endogenous policy models, I first go through different typologies of models that have emerged around the theory of endogenous policies. Having done that, I concentrate on the most recent and most renowned model of endogenous policy formation, namely that of Gene Grossman and Elhanan Helpman (1994). The discussion of the Grossman-Helpman (GH) model aims to build some thorough understanding of the strengths and weaknesses of the model in order to evaluate its performance. More specifically, two main topics arise out of the discussion of the model: what restrictions does the model have, and how has the subsequent research literature been able to amend the basic model set-up? The study is conducted in the form of a survey on the existing literature.

What can be concluded from the discussion of these questions is that the Grossman-Helpman model is well constructed and captures the political economy setting somewhat better than substituting models such as the tariff-formation function, political support function or campaign contribution function approach. The strength of the GH model is that it offers microfoundations to the objective functions of the politician and the SIGs and thus serves a more complete picture of the decision-making than its predecessors. However, there are issues that the model does not address such as the hierarchical structure of the government, asymmetric information, and endogenous formation of the lobby groups. These have been treated within the common agency model during the past decade, and the models have given new insights of the interactions between lobbies and politicians.

Other aspects that are scratched in this study include multiple agents, dynamic models, the inclusion of a foreign government, other than truthful equilibria, and non-quasilinear preferences. Aspects that have not yet been treated under common agency models are for example the combination of contribution and information giving, the role of emotions and feelings, the multiplicity of influencing channels, the internal politics of SIGs, the importance of credibility and reputation in lobbying, and the differences in institutional structures. However, ignoring additional assumptions in the models is sometimes justified if they would come at a cost to the traceability of the model.

Limitations and structure

Given that the regulatory conventions for lobbying activities are different between countries and involve a lot of detailed information, legal aspects of lobbying are not discussed in this study. I also intend not to cover ethical aspects or welfare considerations of lobbying, something that would however be interesting to analyze.

Since the central interest of this study is to get an overview on the way political decision making has been formalized in theoretical models, actual policy outcomes and welfare considerations of lobbying, through the analysis of the efficiency of equilibria, are not given explicit attention. The focus will be on models where interest groups use monetary

contributions to influence the decisions of a policymaker. Models that incorporate information as the primary source of interest group influence will be left out of this study.

In what follows, the terms lobby group, pressure group, and interest group are used interchangeably, and the agent in the common agency models is referred to either as the politician, the decision maker or the government.

The study is organized as follows. Chapter two presents some general aspects of lobbying and special interest group activities. Chapter three provides an overview on the main classes of models that have been used to describe endogenous trade policy formation. It serves as a short history behind the Grossman-Helpman model and gives an idea of how it compares to the other modelling types. The Grossman-Helpman model itself is introduced in chapter four along with a presentation of the menu auction framework by Bernheim and Whinston which offers the game theoretic backbone of the Grossman-Helpman model. Chapter five introduces some subsequent research literature that has taken the basic Grossman-Helpman model some steps further adding more realistic assumptions to it or otherwise altering the settings of the model. Some ideas for further research are laid out in chapter six before drawing conclusions in chapter seven.

2 Special interest groups and lobbying

As already stated, policies in practice are not set by merely following the economic theory. There are distributional consequences that politicians find hard to dismiss. This is to a large extent due to special interest groups that wish the policies to be shaped in their favour. As the members of these interest groups also represent the voters in parliamentary elections, and, as comes clear in this and the subsequent chapters, also financers of political campaigns, politicians face pressure to listen to their views.

Before moving on to the activities of SIGs, we could ask what actually is an entity termed ‘special interest group’. Grossman and Helpman (2001, 75) define special interest groups as groups whose members desire policies that would not be considered desirable by the average citizen. Thus, any minority group of citizens that shares identifiable characteristics and similar concerns on some set of issues might be termed as a special interest group. With this

definition, the members of a profession comprise a group, because they share similar aims in regard to policies that affect their vocation. Retired persons form a SIG, because their goals for health policy and social security differ from those of the average voter. Environmentalists represent a special interest to the extent that their concerns for the environment exceed those of the average citizen. Similarly, all ethnic, religious, or social groups can be considered as representing special interests.

It must however be noted that not all SIGs are organized and not all groups undertake political activities. Grossman and Helpman define an 'organized SIG' as a body that undertakes political actions on behalf of a number of citizens (Grossman & Helpman, 2001, 103). They refer to those who are served by a SIG as its 'members', whether or not they are formal, dues-paying members of some organization. The difficulty of getting all these 'members' to take part in the organization is the essence of the discussion and research of the logic of collective action which will be shortly covered in the next chapter.

Organized SIGs undertake a variety of activities to further their political ends. Many of these activities entail the collection and dissemination of information but SIGs play also a large role in political financing. The next two subsections will take a look at the manifold activities of SIGs in the political arena.

2.1 Purposes and forms of activity

Interest groups engage in a variety of activities to promote their political objectives. Grossman and Helpman have discussed the different methods of lobbying in their book on special interest politics (2001). In order to give a broad picture of the various forms that lobbying activities can take, their findings are summarized here. In general, lobbying is either conceptualized as transmission of information or contribution payments to candidates and parties. Another way to classify would be to divide the activities of interest groups into direct and indirect influence, the former including influencing the behavior of policymakers while the latter including the influencing of the behavior of voters. I follow here the division made by Grossman and Helpman (2001).

Transmission of information

Interest groups are a necessary source of information for policymakers, both because the groups are already familiar with many of the technical issues from their everyday involvement in the areas where policies are determined and because they are prepared to undertake research to produce information that they do not initially have. SIGs provide legislators with intelligence of various sorts, including technical information about the likely effects of a policy, assessments of how the legislator's home district will be affected, and information on how other legislators are likely to vote. The groups are especially valuable to those who are drafting bills, because they are usually familiar with existing laws and programs and can provide assistance in wording legislation that accords with existing statutes.

In addition to their efforts to inform and persuade legislators, many SIGs also attempt to educate the general public. The reasons for these activities are much the same as for lobbying activities. The typical voter, even more than the typical legislator, lacks the expertise and technical information needed to evaluate alternative policy proposals. For their part, SIGs are happy to serve as educators, because by doing so they can try to shape the public opinion in a way that will be beneficial for their cause. Interest group leaders also devote resources to educating their own members. Internal communications from the leaders to the members serve to alert the latter to issues that are coming before Congress or Parliament, and to inform them of how they might be affected by the policies under consideration.

Sometimes, although less frequently, SIGs engage in demonstrations and protests. This way, groups try to educate policymakers, group members, and the general public, all at once. A lot of information may be transmitted indirectly since the willingness of the participants to bear discomfort and inconvenience signals the intensity of their feelings about the issues.

Financial contributions

Another main SIG tactic is their giving of financial resources to candidates and parties. This may be either a substituting or a complementing strategy of SIGs with regard to the information sharing. Monetary contributions provide incentives for the lobbied politician to deviate from a first best policy choice or from pursuing the wishes of a median voter. While politicians may win elections partly because they support popular policies, a successful campaign also requires money for advertising and other expenses. It may therefore be in the

interest of a politician to adopt positions that are against the interest of the typical voter if he is offered a sufficiently large financial contribution to do so.

Campaign giving by special interest groups in the United States has long been regulated by federal law. By the early 1970s, many of the unions and other organizations had found a way to circumvent the restrictions imposed by the law. They formed political action committees (PAC) which are stand-alone organizations that collect voluntary contributions from individuals on behalf of the groups and funnel them to the candidates and parties. The Federal Election Campaign Act of 1974 introduced limits on the size of PAC gifts, but since the early 1980s, SIGs have developed new methods for circumventing the limitations on their giving to candidates and parties. So called 'soft money' has been introduced, and thereby national parties can raise unlimited amounts from SIGs and redistribute the proceeds to the state party organizations in states where electoral needs are perceived to be great. The state organizations can spend the funds in a way that generally benefits the party's congressional and presidential candidates as well as on overhead expenses.

What do the special interest groups then buy with their hard and soft money? There is constant debate around this question, and three main answers can be stated. First, contributions have been argued to buy access – a chance for a lobbyist to meet with a lawmaker to present his positions. When access must be purchased, it may be because the legislators view their time as a scarce resource. In addition, money can play a role in allocating appointments if it signals to the legislator something about the value of what the group has to say. That is, these access costs are used by the politician to screen the lobbies. Often contributions are paid already before the political agenda of the parliament is known. This points to the fact that part of the contributions to politicians are made simply to get access in case important issues from the point of view of the interest group get on the table.

Second, campaign contributions might also buy credibility. In many situations, a group's claims may not be fully credible. A legislator may lack the means to verify a group's claims, in which case the group may be tempted to exaggerate. If a group puts up money to back its words, it may signal to the legislator that its members indeed have strong preferences. Third, contributions are claimed to buy pure influence. This view has been discussed a lot in the media and there exists a wide pressure among voters on a campaign finance reform,

something that has been recently debated also in Finland. Influence can come in many stages in the legislative process: it may come in a speech not delivered or in an amendment not offered in the parliament, in the fine details of legislation, or in the form of a bill pigeon-holed in subcommittee. Documenting that money affects policy outcomes is however no easy task. It is difficult to know what a bill would have looked like or how a legislator would have voted in the absence of contributions.

An additional remark should be made about the form of contributions since they are not necessarily strictly monetary. Contributions can be generally interpreted as something which is beneficial for the receiver and costly for the donor. Favourable policies can thus be implicitly exchanged for future employment, in-kind services (e.g. 'wining and dining', free rented cars, holidays etc.), volunteer labour, or even plain bribes.

This study concentrates on the models with the contribution setting only and leaves aside studies made on the informational lobbying. Lobbying based on information transmission has been formalized for example by Austen-Smith and Wright (1992), Lohmann (1994 and 1998), and Bennedsen and Feldmann (2002). The information sharing incentives of lobbies are discussed in general sense also by Grossman and Helpman (2001). A recent study of Bennedsen and Feldmann (2006) makes a contribution in combining the information sharing and contribution giving motives of interest groups.

2.2 Scale of lobbying in the U.S. and in Europe

According to European Commission estimates, Commission and European parliamentary officials face 20,000 lobbyists on a daily basis (European Commission, 2001). Substantial Europeanization of interest groups has been occurring with an estimated 1,450 interest groups operating at a European level instead of being active on a more local scale (Greenwood, 2003). As the agenda-setter, the Commission is the primary focus of much of the lobbying activity. However, access to the Commission is generally biased towards business interests. It is estimated that business and professional organizations represent approximately 76 per cent of EU interest groups (Greenwood, 2003). Figures provided by the Parliament suggest that of the 5,039 accredited interest groups 70 per cent are business oriented and 20 per cent are non-governmental organizations (European Parliament, 2003).

What comes to the number of SIGs in the United States, the 2000 edition of the Encyclopedia of Associations listed more than 22,000 non-profit membership organizations in the U.S. that were national in scope. However, only about an estimated one-third of them devoted resources to political activities. The number of organizations cited in the 1959 edition of the Encyclopedia was 5,843, which suggests a significant growth in the number or organized interests in fifty years. Another publication, Washington Representatives, lists more than 11,000 companies, associations, and public interest groups that engaged representatives in Washington, D.C. in 1999. (Grossman & Helpman, 2001, 2)

At least in the European and American federal level the activities of special interest groups are closely regulated, and groups must register themselves officially and report systematically about their activity. In the U.S., lobbying expenditures and activities have been systematically registered for a long time, whereas in Europe, an EU level registry of special interest groups has been created only recently and thus far reporting has been on a voluntary basis. Currently, the European Commission run register of interest representatives covers 1127 pressure groups[2] but there has been some criticism towards the accuracy of the lobbying expenses reported by the groups so the picture the registry gives is far from being a complete one[3]. Of the total number of registered interest representatives, 60 % are classified as in-house lobbyists and trade associations, of which companies represent a rough one quarter, 25 % are registered as non-governmental organizations and think-tanks, and the remaining 15 % are law firms and other organizations.

To assess the influence of interest group money in politics in concrete terms, a reference can be made to an empirical study of Baldwin and Magee (2000) that examines voting by U.S. representatives on the North American Free Trade Agreement (NAFTA), the Uruguay Round Agreement, and most-favoured nation status for China in the presence of lobbying contributions. Using political economy models of trade policy to formulate an empirical specification of congressional voting behaviour, they find that campaign contributions

[2] Register accessed on March 8th, 2009.

[3] Financial Times: "EU faces challenge over lobbying register" on Oct 31, 2008. Some groups are claimed to have reported imprecise lobbying expenses, and therefore stricter guidelines are welcomed by certain groups in order to improve the transparency of the reporting system.

received in the 1992 election from PACs influenced legislators' votes on the NAFTA and the Uruguay Round bills (which were voted on in 1994). Labour group contributions were associated with votes against freer trade while business contributions were associated with votes in favour of freer trade, which is in line with the Heckscher-Ohlin hypotheses. The main quantitative results that Baldwin and Magee show are that labour contributions resulted in 67 extra votes against NAFTA and 57 extra votes against the Uruguay Round bill, while contributions from the business groups resulted in 41 extra votes in favour of NAFTA and 35 extra votes for the Uruguay Round bill. This last result would suggest that NAFTA would have failed if business groups had made no contributions to representatives. These comparative statics results were obtained by running simulations with the model by setting either the labour or business contributions to zero. While the results of Baldwin and Magee offer some proof for the claim that trade policies would be on sale, it should be noted that their empirical model relies on many simplifying assumptions and the use of several proxy variables as well as mechanical simulation results.

3 On the models of endogenous policy theory

Endogenous policy theory is an umbrella term for a vast literature that has its roots in the public choice theory with foundational work by James Buchanan, Gordon Tullock, and Charles Tiebout among others. Magee et al. (1989, 31) describe a policy as 'endogenous' if it can be explained by rational maximizing behaviour. A complete endogenous policy model has both lobbying and policies endogenous, whereas a partial endogenous policy model has only one of these two elements endogenous. A general equilibrium endogenous policy model has both politics (the parties and the lobbies) and economics (goods and factor markets) based on maximization by the actors.

Since the 1980s, there has been an upsurge in theoretical as well as empirical economic studies of the behavior and political influence of interest groups. Books by Sloof (1998), Drazen (2000), Persson and Tabellini (2000), and Grossman and Helpman (2001) present surveys of theoretical studies and refer to a wealth of evidence of the significance of organized interests in the political arena. These surveys encourage to conclude that political economics has moved away from the common assumption of atomistic demand in 'political markets', such as in the median voter model, towards a more realistic framework with a

pluralistic view that takes into account all the actors involved. Whereas older models rely mainly on nonderived influence functions, the more recent literature is more explicit on the institutional assumptions and more uncompromising on the requirements of individual rationality.

3.1 What constitutes a good model?

This section goes through some typologies of political economy models. They all deal with endogenous trade policy, but in principle any other policy could as well be described using the approaches about to be introduced. The purpose of this section is to get an overview on models that have been constructed for endogenous policies in order to see what makes the Grossman-Helpman model such a distinctive contribution to the political economy literature.

As illustrated in Figure 1, introduced in Rodrik (1995, 1459), in principle a political economy model of trade policy must have four elements. First, it must contain a description of individual preferences over the domain of policy choices available to policymakers. Given an underlying economic model in the form of the Hecksher-Ohlin or specific-factors framework, and the presumption that preferences for policy depend only on self-interest, one can deduce individuals' policy rankings on the basis of their factor endowments or sector-specific skills. This is illustrated as box A in the figure. Second, the model must contain a description of how these individual preferences are aggregated and channelled, through pressure groups, political parties, or grass-roots movements, into "political demands" for a particular policy or another (box B). This step involves a characterization of the modes of political organization as well as of the forms that political influence takes (lobbying, campaign contributions, voter registration, etc.).

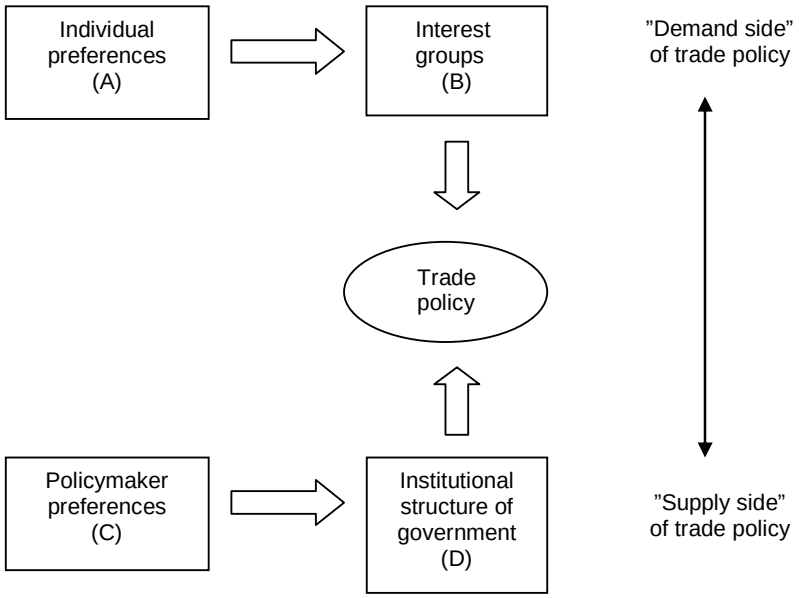

Figure 1. Elements of a political economy model of trade (Rodrik, 1995).

The next two components have to do with the "supply side" of trade policy. Here, the model must first characterize policymakers' preferences (box C): do politicians make given decisions because they want to get re-elected, because they want to transfer resources to favoured groups, because they have partisan preferences, or simply because they are interested in maximizing social welfare? To know how these preferences play out and eventually interact with the demands for trade policy, the model finally has to specify the institutional setting in which policy takes place (box D).

A satisfactory treatment of all these components is a challenging task, and none of the models introduced in the next section provides a truly endogenous picture. Each of them takes shortcuts and leaves implicit some of the elements mentioned above.

3.2 The variety of models

Rodrik (1995) distinguishes five categories for models of political economy of trade policy: the tariff-formation function approach, the political support function approach, the median voter theorem, the campaign contributions approach, and the political contributions approach. Within these models, the first two adopt a so called black-box approach to the modelling of

endogenous trade policy, representing thus partial endogenous policy models, while the latter three have stronger microfoundations.

3.2.1 Tariff-formation function

Under the tariff-formation function approach, the tariff is a direct increasing function of resources going into lobbying in favour of the tariff and a decreasing function of lobbying resources devoted against it. No microfoundations are provided for the function itself. This approach was first used by Findlay and Wellisz (1982). A much cited article is also that of Feenstra and Bhagwati (1982).

In its simplest version (see e.g. Rodrik, 1986), the model consists of a two-sector economy where one of the sectors uses only labour under constant returns to scale, while the other one, the politically-active sector, employs labour and sector-specific capital. As long as the first sector is active, the constant marginal product of labour there fixes the economy-wide wage (here assumed at unity). The tariff-formation function consists of a relationship of the form $t = t(L^l)$, where L^l is the amount of labour used by the politically active sector in the lobbying process. The endogenous level of lobbying (and hence of trade protection) is given by the solution to the following problem:

$$\max_{L^l} \ \pi\left[p^*(1+t(L^l)),1\right] - L^l \tag{3.1}$$

which maximizes the payoffs to the lobby group. The first term characterizes the profits attainable to the politically-active sector who benefits from a tariff applied over the products that use the sector-specific capital. The second term denotes the costs from lobbying to the group. This approach assumes that owners of the specific factor can perfectly coordinate their lobbying behaviour and costlessly prevent free riding.

The model of Findlay and Wellizs (1982) has two industry lobbies in a sector-specific factors setting, each deciding how much labour to devote to the lobbying activity. The resulting tariff level is expressed as $t = t(L_1^l, L_2^l)$ with L_1^l and L_2^l standing for the amount of labour devoted to lobbying activities by each of the sector-specific factors. The tariff is increasing in the import-competing industry's lobbying, and decreasing in the other industry's lobbying. Moreover, diminishing returns to lobbying are assumed. A Nash equilibrium in the two groups' lobbying

strategies determines the tariff. Feenstra and Bhagwati (1982) allow both labour and capital to be used in lobbying activities, but they focus on a case where only a single industry is politically active.

3.2.2 Political support function

In models using the political support function approach, the government maximizes an objective function where different groups in the general population are given different weights depending on their political importance to the incumbent government. Classical examples of studies based on this approach are Hillman (1982) and Van Long and Vousden (1991).

The policymaker is assumed to be exposed to political influence from an organized interest group representing a particular industry, but is also assumed to take care about the efficiency consequences of restricting trade. The ultimate objective of the government is to secure its popularity among voters, in the hope of getting re-elected. The policymaker therefore maximizes a function which trades off the gains from protection to a given industry against the losses to the general population. Letting p stand for the relative price of the organized industry and p^* for the relative world price, Hillman (1989) writes the government's objective function to be maximized, as

$$W^{PS} \equiv M\left[\pi(p)-\pi(p^*), p-p^*\right]. \tag{3.2}$$

The first argument captures the political-support motive in favour of the industry whose profit function is included in the maximand, while the second represents the efficiency loss for the economy due to the difference between national and international price levels. Hence, the derivative of the first argument with respect to p is positive (when $p \geq p^*$), while it is negative for the second argument. In the expression (4.2), both industry profits and overall welfare enter the political support function not in levels but in deviations from the free trade benchmark, p^*. The first order condition for maximizing W^{PS} with respect to p is given by

$$M_1\pi_p + M_2 = 0\,. \tag{3.3}$$

Since $M_1 > 0$ and $\pi_p > 0$, an interior solution to this problem always requires that a positive level of protection is provided to the industry concerned ($p > p^*$).

Van Long and Vousden (1991) provide a generalization in which political support depends explicitly on the income levels of different groups in a sector-specific factors economy. The authors distinguish between three groups in a two-good economy: owners of the specific factor in sector one, owners of the specific factor in sector two, and owners of the mobile factor, labour. Letting h = 1, 2, 3 denote representative individuals from each one of these groups respectively, the income of each representative individual can be described as follows:

$$I^1 = \pi_1(p, w) + \sigma^1(p - p^*)m_1 \tag{3.4}$$

$$I^2 = \pi_2(1, w) + \sigma^2(p - p^*)m_1 \tag{3.5}$$

$$I^3 = wL + \sigma^3(p - p^*)m_1 \tag{3.6}$$

Here good 2 is taken to be the numeraire (so that p is the relative price of good 1), and σ^h denotes the share of each group in tariff revenue, described by $(p - p^*)m_1$, where m_1 denotes import demand. The political support function by Van Long and Vousden then becomes

$$\tilde{W}^{PS} = \sum_h a_h V(p) I^h = V(p) \sum_h a_h I^h \tag{3.7}$$

where a_h are exogenous weights reflecting the politician's preferences over the three groups. $V(p)I^h$ represents each group's (or representative individual's) indirect utility function.

3.2.3 Median voter

Since Anthony Downs (1957), political scientists have used a simple model of competition among political parties to show how the preferences of voters might be reflected in actual policies. The model starts by supposing that there are two competing parties, both ready to promise whatever will enable it to win the next election. The policy to decide on is one-dimensional, such as the level of tariff rate. Voters, for their part, are supposed to differ in the policies they prefer. All the voters can then be thought of being put in a line in the order of the tariff rate they prefer. The two parties want to find the middle ground, and both will tend to

converge on the tariff rate preferred by the median voter. The median voter model of electoral competition has been helpful as a way of thinking about how political decisions are made in the real world, where the effects of a policy on income distribution may be more important than their effects on efficiency.

The median voter approach in trade policy determination was pioneered by Mayer (1984), who considered a direct-democracy model where the tariff level is determined by voting among the population. Using a Heckscher-Ohlin model, Mayer showed that each factor owner has an optimal tariff rate whose value is uniquely determined by the individual's factor ownership. The exportable, i.e. good 2, is set as numeraire with $p_2 = p_2^* = 1$ and $p_1 = p = p_1^*(1+t) = p^*(1+t)$. Assuming that tariff revenue is distributed in proportion to each person's share in factor income, individual *h*'s optimal tariff rate is found by maximizing his indirect utility function $V(p)I^h$ with respect to *p*. This yields:

$$t^h = -\frac{I}{p^* \partial m_1 / \partial p} \frac{\partial \phi^h / \partial p}{\phi^h} \tag{3.8}$$

where *I* is aggregate income, ϕ^h is individual *h*'s share in aggregate income, and $\partial m_1 / \partial p < 0$, i.e. imports decrease as the price of the imported good increases. In the Heckscher-Ohlin model, $\partial \phi^h / \partial p > 0$ if individual *h* is relatively well-endowed in the factor that is used intensively in the importable, and the strength of the effect is larger the more 'specialized' the individual is in that factor. Consequently, such an individual's most preferred tariff will be strictly positive. Moreover, the more open the economy to imports and the more price sensitive the import demand, the lower the individually desirable tariff (or export subsidy).

As long as voters differ only along a single dimension (such as in their relative capital-labour endowment), the median-voter theorem can be applied to determine the tariff rate that would emerge from voting. If there are no costs to voting, the median eligible voter's decision is the outcome of majority voting. Therefore, under majority voting the endogenous level of trade policy is determined as if a policymaker maximized the utility of the median voter denoted by

$$W^{MV} = V(p)I^m, \tag{3.9}$$

with *m* referring to the median individual. Mayer (1984) also considers the specific-factors case, to show that if there are costs from voting, a small industry is likely to gain protection because other interests may find voting against the proposed tariff increase not worthwhile.

3.2.4 Campaign contributions

In the models mentioned so far, the transfer of resources from special interest groups to politicians does not play any direct role. Models by Magee, Brock, and Young (1989, chs. 3 and 9) and Grossman and Helpman (1994) have explicitly addressed the role of monetary contributions. In Magee et al., lobbies make contributions to increase the probability that their favoured political party wins the election. In Grossman and Helpman, as summarized in the next section, campaign contributions are made to influence the policy stance of the incumbent government.

Magee et al. (1989) add two political parties and two lobbies to the standard Heckscher-Ohlin model with two goods and two factors. One of the parties is assumed to be pro-trade, while the other is pro-protection. Each lobby represents one factor of production (capital or labour), and makes contributions to one of the two parties. More precisely, in line with the Stolper-Samuelson theorem, the economy's scarce factor organizes the protectionist lobby, and the economy's abundant factor organizes the pro-trade lobby. Each party's election probability is increasing in the campaign contributions it receives but decreasing in the level of the policy intervention it commits itself to.

Formally, good 1 is assumed to be capital-intensive and a parameter q measures the probability that the pro-capital party is elected. Denoting by C_K and C_L the campaign contributions made respectively by the capitalist lobby to the pro-capital party and by the labour lobby to the pro-labour party, q is expressed as $q(C_K, C_L, p_1 - p_1^*, p_2 - p_2^*)$. The pro-capital party selects p_1 to maximize $q(\cdot)$, while the pro-labour party selects p_2 to maximize $1-q(\cdot)$. By definition, $q(\cdot)$ is increasing in own received contributions and in the pro-labour distortion $(p_2 - p_2^*)$, and decreasing in the contributions received by the other party and in the pro-capital distortion $(p_1 - p_1^*)$. As for lobbies, they maximize the expected incomes of the factors they represent, net of campaign contributions. Letting $\{r_K, w_K\}$ represent the factor

returns when the pro-capital party is in power and $\{r_L, w_L\}$ the factor returns when the pro-labour party is in power, the objective functions for both lobbies are given by

$$\max_{C_K} \left[qr_K + (1-q)r_L \right] K - C_K \tag{3.10}$$

$$\max_{C_L} \left[qw_K + (1-q)w_L \right] L - C_L \tag{3.11}$$

The assumed strategic interactions are as follows: the two parties play Nash against each other, as do the two lobbies. It is further assumed that the game is played in two stages where the parties select their policies in the first stage and the lobbies offer their contributions in the second. The implication is that lobbies' contributions are intended to affect the election outcomes but not party platforms. The equilibrium policy is a subgame perfect Nash equilibrium to this two-stage game. The model generates equilibrium levels of p_1 and p_2, i.e. an import tariff and an export subsidy. The model describes how policies are borne out as a result of electoral competition.

3.2.5 Political contributions

In the political contribution models, policies are determined through monetary contributions by lobbies to incumbent politicians. The most renowned model in this category is that of Gene Grossman and Elhanan Helpman (1994). The model is summarized here but a more detailed presentation is provided in chapter five.

The Grossman-Helpman model deals with a single incumbent government (or a representative politician) that maximizes a weighted sum of total monetary contributions and aggregate welfare:

$$G = \sum_{i \in L} C_i(\mathbf{p}) + aW(\mathbf{p}) \tag{3.12}$$

where a (> 0) is the relative weight placed on aggregate welfare, and $C_i(\mathbf{p})$ represent the contributions. The underlying economic model is that of a small open economy, where the wage is fixed to unity due to the presence of a numeraire sector which uses labour alone. There exist n additional sectors which use labour plus a specific factor. Some of these specific

factors are represented by lobby groups. Each lobby approaches the incumbent politician with a contribution schedule that links any chosen policy vector to a pre-defined contribution level.

Each lobby *i* wants to maximize its membership's utility. Lobby *i*'s problem thus consists of selecting contribution schedules in order to maximize the joint net welfare of its members. By the definition of the timing of the game, and contrary to the model by Magee et al. (1989), lobbies are assumed to commit to their contributions before policies are selected. The incumbent government takes the contribution schedules as given and maximizes *G* accordingly.

Equilibrium consists of a vector of domestic prices which maximizes *G*, plus a set of contribution functions $\left\{C_i^\circ(\mathbf{p}^\circ)\right\}$ such that each of these maximizes the joint welfare of the lobby's membership, given the schedules of other lobbies, and the anticipated decision rule of the government. Grossman and Helpman rely on results from Bernheim and Whinston's (1986) work on common agency to show that the protection received by a sector is higher when it is organized, when its output is high relative to competing imports, and when the price elasticity of the competing imports is low.

3.3 Comparison of the models

The purpose of this section is to provide a summary of the previous five modelling types in order to see how they compare to each other with regard to the four model elements defined by Rodrik (1995). The table below (Table 1) describes each of the modelling approaches by the elements it contains. As is clear from the table, two of the five models cover all four elements at least at some depth. The median voter model, however, does not consider lobbying in the first place, so it cannot be accused of not giving explicit treatment to the actions of lobby groups.

	Individual preferences (A)	Interest group's actions (B)	Policymaker's preferences (C)	Institutional structure of government (D)
Tariff formation	●	●		
Political support			●	●
Median voter	●		●	●
Campaign contributions	●	●	●	●
Political contributions	●	●	●	●

Table 1. Summary of the modelling typologies

The two first models, the tariff-formation function and the political support function, offer only a partial view of the whole political field by treating either the political demand side or the political supply side as a black box. The tariff-function approach, while quite popular, leaves aside the supply side of protection as the preferences of the politician are not explicitly stated. The political support function can be viewed as the mirror image of the tariff-formation function approach because it makes explicit the objective function of the policymakers while leaving implicit the actions taken by pressure groups to extract the desired behaviour from them. What these black boxes translate to, however, is more simplicity in the use of the models.

The median voter model is exemplary in that it is a fully-specified political economy model, with no black boxes among the three elements that the model actually treats. The assumption of direct democracy greatly simplifies the institutional setting but is however an abstraction from reality: in practice, trade policy, or any other policy, is rarely determined by majority voting. The model is in fact no interest group model because the policy outcome is based on the median individual's preferred tariff rate which is not subject to lobbying. Therefore, the term lobbying model, used sometimes in this study, refers actually only to the four other typologies introduced. The median voter framework is however widely used in literature of political economy.

The campaign contributions model of Magee et al. fulfils the criteria of a general equilibrium endogenous policy model defined by the authors themselves. It includes both the political and economic side of a country, taking thus together politicians (or parties), lobbies, goods, and

factors of production. The campaign contributions model is based on the Heckscher-Ohlin framework whereas the political contributions model of Grossman and Helpman builds on the Ricardo-Viner specific-factors model. The two frameworks produce different individual preferences on trade policy; in Heckscher-Ohlin models, factors evaluate trade policy based on their factor type while in Ricardo-Viner models, factors evaluate trade policy based on their industry of employment. There has been some research that has tried to shed some light on the question of which of these frameworks is more appropriate (see e.g. Scheve & Slaughter, 2001).

In the theoretical modelling of endogenous protection in general sense, the Grossman-Helpman model is the biggest advance as it provides strong microfoundations to the behaviour of both lobbies and the government. In addition, the Grossman-Helpman model is multisectoral so it allows a rather general analysis of the theme. On the other hand, the model is subject for instance to the criticism that only a small part of lobbying activity in real politics takes the form of financial contributions.

3.4 Logic of collective action

Lobby groups are not single entities, but rather consist of individuals who contribute to the group's activities. This is of importance, because the benefit of lobbying has the characteristic of a public good if the induced policy change through lobbying affects all individuals in a society and if it is not possible to exclude anybody from it. As is common in the provision of public goods, incentives to free-ride among lobby members, or between interest groups that share the same political preferences, may result and make any joint action difficult. Mancur Olson (1965) is renowned for having studied in a broad sense the free-rider dilemma and the dynamics of interest group formation. As Olson puts it, while it is in the interests of the group as a whole to press for favourable policies, it is not in any individual's interest to do so.

In his book *The Logic of Collective Action*, Olson discusses the purposes and chances of organizations to get themselves organized in order to produce some public good for their members. His work is mainly structured around two broad questions: what makes collective action possible, and what is the relationship between group size and the effectiveness of the group? He concludes that rational, self-interested individuals will not act voluntarily to

achieve their common or group interests. The reason for this claim is that when interests are shared, rational actors should prefer to free-ride and let others pay the cost of goods that will benefit everyone. If, nevertheless, we see groups acting to further their interests, this is possible to the extent that collective action is accompanied by private incentives to reward contributors or to punish non-contributors.

As for the second question, Olson's conclusion is that group size is inversely related to successful collective action, while in the case of small groups the collective good is provided, but at a suboptimal level. The reason for this lies in the notion that the collective good is likely to be provided by the individual in the group for whom the personal gain is the largest. The collective good is provided at the level that this largest actor is willing and able to pay for. Then, once the member with the largest obtainable gain has secured the amount he wants, no one has an incentive to provide any more of the collective good (Olson, 1965, 29). The larger the group the smaller the capacity of one actor to cover the costs, and therefore the larger the suboptimality. If the size of the group exceeds a given threshold, no member, no matter how large, will be able to provide any quantity of the collective good.

The problem of collective action can explain why policies that seem to both produce more costs than benefits and hurt more voters than they help can nevertheless be adopted. This happens when the advocates of the policy are a small group that is able to mobilize itself and be well aware of the consequences of the policy to its members. At the same time the opposing side may consist of a huge population that does not even perceive itself as an interest group. Consumer groups are often underrepresented in the political arena, perhaps due to the difficulty of forming an efficient interest group.

There is a wide body of literature deriving from the themes laid out by Olson. There have been various attempts, both theoretical and empirical, to find support for Olson's ideas, but the results remain mixed for instance on the impact of firm concentration on the protection benefited by an industry (e.g. Pecorino (1998), Esteban and Ray (2001), Magee (2002), Hansen et al. (2005)). Following Olson's reasoning, more concentrated industries should gain more tariff protection while larger sectors with less concentration should have problems in maintaining cooperation in the lobbying process.

Even though the scope of this study does not allow for a more detailed look at this literature, it is certainly relevant to the modelling of the political game between interest groups and politicians. An adequate handling of the questions related to the organizing capabilities of different industries may enrich and improve the existing models. However, modelling the endogenous formation of interest groups is problematic and in most models the free-rider challenge is kept aside by relying on an assumption that an exogenously given part of the citizens are able to overcome the incentive to free-ride and thus manage to build up an interest group while the rest of the people stay unorganized. If all citizens were represented by interest groups then the different lobbies would offset each other's objectives, and the political results would be the same as if there were no lobbies at all (this is discussed for instance in Grossman and Helpman, 1994). The Grossman-Helpman model does not address the issue of collective action, something which is subject to improvements in subsequent studies. Mitra (1999) renders the formation of lobby groups endogenous in trade policy setting, Damania and Fredriksson (2003) do it in environmental policy setting, and Laussel (2006) builds on a model treating the provision of public goods.

4 Common agency, menu auctions and Protection for Sale

Grossman and Helpman built their Protection for Sale article (1994), which studies the trade policy formation in a common agency framework, on the foundations of Bernheim and Whinston's earlier work on common agency and menu auctions. This chapter introduces both of these integral models, because they represent the stone base of this study and allow us to look in later chapters at models that go beyond these 'basic' models as I henceforth intend to call them.

4.1 Common agency framework

The endogenous protection model of Grossman and Helpman that will be presented in the next section is an application of a menu auction game in which principals introduce the agent a menu of offers for various possible actions that the agent can make. The theoretical foundations for menu auctions in a common agency framework are laid out by Douglas Bernheim and Michael Whinston in a paper published in 1986. This section offers a rough introduction to the common agency and menu auctions framework. Bernheim and Whinston

already proposed to use their model in political economy settings, something which Grossman and Helpman did a bit later in a formal manner in their Protection for Sale article. Being familiar with the idea of menu auctions helps in understanding the steps taken in the Grossman-Helpman model.

In the auction model that Bernheim and Whinston introduce, the auctioned object is not well-defined and indivisible. They give an example of a large government construction project which can be composed of several distinct component contracts, and the bidders can submit offers on more than one component and may condition offers upon the set of contracts received. The authors focus on first-price menu auctions under complete information, and they show that the auctions always result in an efficient action. 'First-price' refers to the characteristic of the model that each bidder (principal) pays the agent the amount announced for the action chosen in his or her menu. The agent makes the choice in order to maximize his own payoff given the menus of offers that the bidders have named. Bidders are assumed to have complete information on each other and on the actions and their economic consequences which is a restrictive but simplifying assumption.

As to the allocational efficiency of the menu auction game, in first-price complete information auctions of a single *indivisible* object, it entails no complex thinking: equilibrium requires that the auctioneer sell the good to the individual who values it most highly. The Nash Equilibria of first-price *menu* auctions, for their part, need not be efficient in general. Bernheim and Whinston solve the problem by introducing "truthful equilibria", a subset of the Nash Equilibria set, which ensure that the menu auctions are always efficient. In a truthful equilibrium, the bids of all principals correctly reflect their relative preferences for the various alternative actions. Bernheim and Whinston prove that the best response set of every principal always contains a truthful strategy so they are not costly for principals to use. Moreover, the truthful Nash equilibria are the only equilibria which are coalition-proof, i.e., stable when nonbinding communication between the principals is possible.

4.1.1 The model

The model is based on a game in which an auctioneer (the agent) selects an action affecting the wellbeing of M bidders (principals), each of whom offers a menu of payments contingent

on the action chosen by the agent. For ease of exposition, the following presentation and notation of the model is based on a discussion by Laussel and LeBreton (2001).

Let us denote the set of principals by $N = \{1,....,n\}$. The agent will be identified by the index 0. The possible choices of the agent are given by a set *A*. Principal *i* receives gross monetary payoffs described by the function $v_i : A \to \mathbb{R}$ while the function $v_o : A \to \mathbb{R}$ indicates the utility (or disutility) in monetary units that the agent experiences in taking each possible action. Let us denote by 2^N the set of subsets of *N* including the empty set. A common agency game is then completely described by an $(n+2)$ tuple $\Gamma \equiv \{A, v_0, v_1, ..., v_n\}$.

A strategy for each principal *i* consists of a function $c_i : A \to \mathbb{R}_+$, that is, the principal offers the agent a monetary reward of $c_i(a)$ for selecting action *a*. For each action *a*, the principal gets a net payoff given by the function n_i with

$$n_i(a) = v_i(a) - c_i(a). \tag{4.1}$$

The agent chooses an action that maximizes her total payoff, i.e., given monetary rewards $c \equiv (c_1, ..., c_n)$ the agent selects an action in the set *M*(*c*) with

$$M(c) \equiv \arg\max_{a \in A} \left[\sum_{i \in N} c_i(a) + v_0(a) \right]. \tag{4.2}$$

For all subsets $S \in 2^N$, $W_\Gamma(S) = \max_{a \in A} \left[\sum_{i \in S} v_i(a) + v_0(a) \right]$ is the highest joint payoff for the agent and principals in group *S* and $A_\Gamma^*(S) = \arg\max_{a \in A} \left[\sum_{i \in S} v_i(a) + v_0(a) \right]$ is the set of actions that yield this payoff.

An outcome of the game is an (*n* + 1) tuple (c^*, a^*) with $c^* \equiv (c_1^*, ..., c_n^*)$. An outcome is a Nash equilibrium if $a^* \in M(c^*)$ and there is no $i \in N$, $c_i : A \to \mathbb{R}_+$ and $a \in M(c_i, c_{-i}^*)$ such that $n_i(a) \succ n_i(a^*)$. In other words, the efficient equilibrium action maximizes the joint payoff of the agent and all the principals so that no principal attains a higher payoff by altering his contribution schedule given the schedules of others.

4.1.2 Truthful equilibria

The model described has two stages and it is solved using backward induction starting from the decision of the agent. This may result into multiple subgame perfect Nash equilibria, that is, equilibria where the contribution schedule of each interest group is a best response to the set of schedules of the other groups, when all groups correctly anticipate the policymaker's best response. Some of these can be inefficient. Bernheim and Whinston have therefore developed a refinement of the set of Nash equilibria that selects equilibria that implement Pareto-efficient actions. Bernheim and Whinston have considered equilibria that arise when each principal offers the agent a payment function that is *truthful.* A truthful payment function for principal *i* rewards the agent for every change in the action exactly the amount of change in the principal's welfare, provided that the payment both before and after the change is strictly positive. In other words, the shape of the payment schedule mirrors the shape of the principal's indifference surface. In such a case, the principal gets the same utility for all actions a that induce positive payments $C_i(a) > 0$; the payment is just the compensating variation.

The authors show that the common agency game has a truthful equilibrium in which all the principals follow truthful strategies and that such an equilibrium is Pareto-efficient. By the definition of Pareto-efficiency, the outcome is thus such that neither the policymaker nor any SIG could be made better off by a different policy choice or a different set of contribution levels without another SIG or the policymaker being harmed.

Grossman and Helpman (2001) speak of truthful contributions as compensating contribution functions. The term 'compensating' derives from the fact that when the SIG makes positive offers for two different levels of the policy, the difference between the two offers compensates for the difference in the SIG's evaluation of the two policies. In other words, if $C(a)$ is a compensating function with $C(a_1) = c_1 > 0$ and $C(a_2) = c_2 > 0$ for some a_1 and a_2, then $U(a_1, c_1) = U(a_2, c_2)$. The term 'compensating' reflects the relationship between the contribution functions and the economic concept of Hicksian compensating variation, which again refers to the amount an agent must be paid (or taxed) in a new situation to leave him exactly as well off as he was in an initial situation (Grossman & Helpman, 2001, 232).

Bernheim and Whinston further proof that a SIG (having quasi-linear preferences) can always design a truthful payment schedule to achieve its political objectives at no extra cost to itself. Thus, the SIG's best response always includes a truthful strategy. Dixit, Grossman and Helpman (1997) have extended this formal proof to more general preferences.

One general feature of the basic common agency model as introduced by Bernheim and Whinston is that it is practically a game between the principals. The strategic role of the agent is very small and the actual battle is done among the principals when drafting their contribution schedules. As shown, under truthful strategies the agent will eventually choose the action leading to the efficient equilibrium. This feature is somewhat changed when the agent is given more power, for example through the ability to set the agenda which is discussed in chapter five.

4.2 The Grossman-Helpman model

This section provides a thorough presentation of the Grossman-Helpman model in order to study its mechanics and find debatable issues that will then be picked up in later chapters.

Individuals

Let us start from a small economy that is populated by individuals with identical preferences but different factor endowments. Each individual maximizes a quasilinear utility function given by

$$u = x_0 + \sum u_i(x_i) \tag{4.3}$$

where x_0 is consumption of good 0 and x_i is consumption of good i, $i = 1, 2, ..., n$. The sub-utility functions $u_i(\cdot)$ are differentiable, increasing, and strictly concave. Good 0 serves as numeraire, with a world and domestic price equal to 1. Let us denote by p_i^* the exogenous world price of good i, while p_i represents its domestic price. With these preferences, an individual spending an amount E consumes $x_i = d_i(p_i)$ of good i, $i = 1, 2, ..., n$ (where the

demand function of $d_i(\cdot)$ is the inverse of $u'(x_i)$[4], and $x_0 = E - \sum p_i d_i(p_i)$ of the numeraire good. By plugging these back into the utility function one gets the indirect utility of the form:

$$V(\mathbf{p}, E) = E + s(\mathbf{p}) \tag{4.4}$$

where $\mathbf{p} = (p_1, p_2, ..., p_n)$ is the vector of domestic prices of the nonnumeraire goods and $s(\mathbf{p}) = \sum u_i[d_i(p_i)] - \sum p_i d_i(p_i)$ is the consumer surplus derived from those goods.

Production

Good 0 is manufactured from labour alone with constant returns to scale and an input-output coefficient equal to 1. The aggregate supply of labour is assumed to be enough to ensure a positive supply of this good. In a competitive equilibrium (with $MC = p$) the wage rate then equals 1. Production of each nonnumeraire good requires labour and a sector-specific input. The technologies for these goods exhibit constant returns to scale, and the various specific inputs are available in inelastic supply. With the wage rate fixed at 1, the aggregate reward to the specific factor used in the production of good *i* depends only on the domestic price of that good. This reward is denoted by $\pi_i(p_i)$.

Political activity of individuals

A typical individual derives income from wages and government transfers, and possibly from the ownership of some sector-specific input. It is assumed that claims to the specific inputs are indivisible and nontradable, and that individuals own at most one type. Those who own some of the specific input used in producing good *i* will see their income tied to the domestic price of that good. These individuals, in addition to their general interest as consumers in trade policies that affect any domestic prices, will then have a direct stake in the tax or subsidy applicable to trade in good *i*.

The various owners of the specific factor used in industry *i*, with their common interest in protection (or export subsidies) for their sector, may choose to join forces for political activity. It is simply assumed that in some exogenous set of sectors, denoted *L*, the specific-

[4] From the maximization of the quasilinear utility function we get the inverse demand function $p(x) = u'(x)$. The demand function $x(p)$ $(= d(p))$ is then the inverse of $u'(x)$.

factor owners have been able to organize themselves into lobby groups. The lobbies serve to coordinate campaign giving decisions and to communicate the political rewards to the government. In the remaining sectors, if any, the individual owners of the specific factors remain unorganized. Any individual perceives himself as too small to communicate political demands effectively or to influence policy. Therefore, the unorganized factor owners, as well as all individuals who own no claims to a specific input, refrain from making political contributions.

The lobby representing an organized sector *i* makes its political contribution contingent on the trade policy vector implemented by the government. Since the country is small, it can equivalently relate the contribution to the realized vector of domestic prices instead of political actions, *a*, in the Bernheim and Whinston model in the previous section. Let us denote by $C_i(\mathbf{p})$ the contribution schedule tendered by lobby *i*. The lobby tailors the schedule to maximize the total welfare (income plus consumer surplus less contributions) of its members. It then collects the necessary donations from its members in such a way as to allow all to share in the gains from political coordination. It will prove convenient in what follows to express the joint welfare of the members of lobby group *i* as $V_i = W_i - C_i$, where W_i is their gross of contributions joint welfare. We note that

$$W_i(\mathbf{p}) = \ell_i + \pi_i(p_i) + \alpha_i N\left[r(\mathbf{p}) + s(\mathbf{p})\right] \tag{4.5}$$

where ℓ_i is the total labour supply (and also the labour income) of owners of the specific input used in industry *i* and α_i is the fraction of the voting population that owns some of this factor.

Policy instruments

The set of policy instruments available for politicians is restricted in this model; the government is allowed to implement only trade taxes and subsidies. These policies drive a gap between domestic and world prices. A domestic price in excess of the world price implies an import tariff for a good that is imported and an export subsidy for one that is exported. Domestic prices below world prices correspond analogously to import subsidies and export

taxes. The net revenue from all taxes and subsidies, expressed on a per capita basis, is given by

$$r(\mathbf{p}) = \sum (p_i - p_i^*)\left[d_i(p_i) - \frac{1}{N} y_i(p_i) \right] \tag{4.6}$$

where N measures the total (voting) population and $y_i(p_i) = \pi_i'(p_i)$ is domestic output of good i. It is assumed that the government redistributes revenue uniformly to all of the country's voters. Then $r(\mathbf{p})$ gives the net government transfer to each individual.

The government

The incumbent government cares about the total level of political contributions and about aggregate wellbeing. The government values contributions, because they can be used to finance campaign spending, and they may provide other direct benefits to the officeholders. Social welfare will be of concern to the incumbent government if voters are more likely to re-elect a government that has delivered a high standard of living. The utility function is meant to capture the policymaker's personal preferences over the various possible policy outcomes, as well as her concern for her future electoral prospects. The policy chosen will affect the politician's chances of being re-elected if voters look retrospectively at her record when deciding whether to vote for her in subsequent elections. The utility function $G(\cdot)$ is assumed to be increasing in contributions; this reflects an assumption that the politician can use any funds she receives from the interest group to finance campaign spending or otherwise purchase political gain. The government's objective function is presented by the following linear form,

$$G = \sum_{i \in L} C_i(\mathbf{p}) + aW(\mathbf{p}) \qquad a \geq 0 \tag{4.7}$$

where W represents aggregate, gross-of-contributions welfare[5]. Aggregate gross welfare equals aggregate private income plus trade tax revenues plus total consumer surplus; that is,

[5] The government's welfare function could also be written as $\tilde{G} = a_1 \sum_{i \in L} C_i + a_2 (W_i - \sum_{i \in L} C_i)$, where a_2 is the weight the government attaches to *net* aggregate welfare. Maximizing $\tilde{G}$ is equivalent to maximizing G with $a = a_2 / (a_1 - a_2)$, provided that $a_1 > a_2$. It is assumed that this is the case, i.e. that politicians value a dollar in their campaign coffers more than a dollar in the hands of the public. Whether this is a correct assumption can be questioned.

$$W(\mathbf{p}) = \ell + \sum_{i=1}^{n} \pi_i(p_i) + N\left[r(\mathbf{p}) + s(\mathbf{p})\right]. \tag{4.8}$$

The centre of interest, here, is the political equilibrium of a two-stage non-cooperative game in which the lobbies simultaneously choose their political contribution schedules in the first stage and the government sets policy in the second. A subgame perfect Nash equilibrium is a domestic price vector $\mathbf{p}^\circ$ that maximizes the governments objective taking the contribution schedules as given, and a set of contribution functions $\left\{C_i^\circ(\mathbf{p})\right\}$, one for each organized lobby group, such that each one maximizes the joint welfare of the group's members given the schedules set by the other groups and the anticipated political optimization by the government. The equilibrium structure of protection is characterized in the next section, and the lobbies' political contributions that induce the policy choice of the government in the section that follows.

4.2.1 The structure of protection

As noted earlier, in this economy the interaction between the various lobbies and the government has the structure of a menu-auction problem. Bernheim and Whinston limited their analysis to situations where players bid for a finite set of objects, but their main results apply also when the auctioneer can choose from a continuum of possible actions, such as the level of tariffs and subsidies in the model at hand. Accordingly, the government's choice set of domestic price vectors is allowed here to be continuous.

Let us denote by *P* the set of domestic price vectors from which the government may choose. *P* is bound so that each domestic price p_i must lie between some minimum $\underline{p}_i$ and some maximum $\overline{p}^i$. Lemma 2 of Bernheim and Whinston implies that equilibrium to the trade-policy game can be characterized as follows:

PROPOSITION 1 (B-W): $\left\{C_i^\circ(\mathbf{p}^\circ)\right\}$ is a subgame-perfect Nash equilibrium of the trade policy game if and only if:

(a) C_i° is feasible for all $i \in L$;

(b) $\mathbf{p}^\circ$ maximizes $\sum_{i\in L} C_i^\circ(\mathbf{p}) + aW(\mathbf{p})$ on P;

(c) $\mathbf{p}^\circ$ maximizes

$$W_j(\mathbf{p}) - C_j^\circ(\mathbf{p}) + \sum_{i\in L} C_i^\circ(\mathbf{p}) + aW(\mathbf{p}) \text{ on } P \text{ for every } j \in L;$$

(d) for every $j \in L$ there exists a $\mathbf{p}^j \in P$ that maximizes $\sum_{i\in L} C_i^\circ(\mathbf{p}) + aW(\mathbf{p})$ on P such that $C_j^\circ(\mathbf{p}^j) = 0$.

Condition (a) restricts each lobby's contribution schedule to be among those that are feasible i.e., contributions must be nonnegative and no greater than the aggregate income available to the lobby's members. Condition (b) states that, given the contribution schedules offered by the lobbies, the government sets trade policy to maximize its own welfare.

Condition (c) stipulates that, for every lobby *j*, the equilibrium price vector must maximize the joint welfare of that lobby and the government, given the contribution schedules offered by the other lobbies. If this were not the case, then lobby *j* could reformulate its policy bids to induce the government to choose the jointly optimal price vector and could appropriate some of the surplus from the switch in policy.

Condition (d) requires that for every lobby group j there must exist a policy other than $\mathbf{p}^\circ$ that elicits a contribution of zero from group *j* and which the government finds equally attractive as the equilibrium policy $\mathbf{p}^\circ$. This feature is related to the discussion of equilibrium contribution schedules offered by lobbies to induce the government to choose the policy most favourable to the given lobby. This topic is taken up in the next section.

Let us assume now that the lobbies set political-contribution functions that are differentiable, at least around the equilibrium point $\mathbf{p}^\circ$. With contribution functions that are differentiable, the fact that $\mathbf{p}^\circ$ maximizes $V_j + G$ implies that the following first-order condition is satisfied:

$$\frac{\partial W_j^\circ(\mathbf{p}^\circ)}{\partial \mathbf{p}^\circ} - \frac{\partial C_j^\circ(\mathbf{p}^\circ)}{\partial \mathbf{p}^\circ} + \sum_{i\in L} \frac{\partial C_i^\circ(\mathbf{p}^\circ)}{\partial \mathbf{p}^\circ} + a\frac{\partial W(\mathbf{p}^\circ)}{\partial \mathbf{p}^\circ} = 0 \quad \text{for all } j \in L. \tag{4.9}$$

However, the government's maximization of G requires the first-order condition

$$\sum_{i \in L} \frac{\partial C_i^{\circ}(\mathbf{p}^{\circ})}{\partial \mathbf{p}^{\circ}} + a \frac{\partial W(\mathbf{p}^{\circ})}{\partial \mathbf{p}^{\circ}} = 0. \tag{4.10}$$

Taken together, (4.9) and (4.10) imply

$$\frac{\partial C_i^{\circ}(\mathbf{p}^{\circ})}{\partial \mathbf{p}^{\circ}} = \frac{\partial W_i^{\circ}(\mathbf{p}^{\circ})}{\partial \mathbf{p}^{\circ}} \text{ for all } i \in L. \tag{4.11}$$

Equation (4.11) establishes that the contribution schedules are locally truthful around $\mathbf{p}^{\circ}$; that is, each lobby sets its contribution schedule so that the marginal change in the contribution for a small change in policy matches the effect of the policy change on the lobby's welfare. This notion of truthfulness can be extended to define globally truthful contribution schedules which eventually imply the government to choose **p** such that it maximizes the joint welfare of the represented industries and the government.

The next step is then to characterize the equilibrium trade policies that can be supported by differentiable contribution schedules. Summing (4.11) over i and substituting the result into (4.10) gives

$$\sum_{i \in L} \frac{\partial W_i^{\circ}(\mathbf{p}^{\circ})}{\partial \mathbf{p}^{\circ}} + a \frac{\partial W(\mathbf{p}^{\circ})}{\partial \mathbf{p}^{\circ}} = 0. \tag{4.12}$$

This equation characterizes the equilibrium domestic prices supported by differentiable contribution functions. To get the policy outcome, it is necessary to calculate both of the terms in (4.12). They can be obtained by using the previously given definitions and expressions. Equations (4.5) and (4.6) can be combined and differentiated then with respect to p_j to find how marginal policy changes affect the welfare of some lobby i. The resulting expression is then summed over all $i \in L$ to derive the first term in equation (4.12). The second term is obtained by making use of the definition of W in (4.8) and differentiating the resulting expression with respect to p_j. Substituting the two expressions obtained into (4.12) allows us to solve for the domestic prices in political equilibrium, assuming that these prices lie in the interior of P. The result is expressed in terms of the equilibrium ad valorem trade taxes and subsidies, which are defined by $t_i^{\circ} \equiv (p_i^{\circ} - p_i^{*}) / p_i^{*}$.

PROPOSITION 2 (Equilibrium policies): If the lobbies use contribution schedules that are differentiable around the equilibrium point, and if the equilibrium lies in the interior of *P*, then the government chooses trade taxes and subsidies that satisfy

$$\frac{t_i^\circ}{1+t_i^\circ} = \frac{I_i - \alpha_L}{a + \alpha_L}\left(\frac{z_i^\circ}{e_i^\circ}\right) \quad \text{for } i = 1, 2, ..., n \tag{4.13}$$

where $z_i^\circ = y_i(p_i^\circ)/m_i(p_i^\circ)$ is the equilibrium ratio of domestic output to imports (negative for exports since exports correspond to negative imports) and $e_i^\circ = -m_i'(p_i^\circ)p_i^\circ/m_i(p_i^\circ)$ is the elasticity of import demand or of export supply (the former defined to be positive, the latter negative).

Proposition 2 implies that, all else equal, industries that have high import demand or export supply elasticities (in absolute value) will have smaller ad valorem deviations from free trade. This is true for two reasons. First, the government may bear a political cost from creating deadweight loss (if $a > 0$). To the extent that this is so, it will prefer to raise contributions from sectors where the cost is small. Second, even if $a = 0$, if $\alpha_L > 0$ the members of lobbies as a group will share in any deadweight loss that results from trade policy. The owners of specific inputs in industries other than *i* will bid more to avoid protection in sector *i* the greater is the social cost of that protection.

Equation (4.13) implies that all sectors that are represented by lobbies are protected by import tariffs or export subsidies in the political equilibrium. In contrast, import subsidies or export taxes are applied to all sectors that have no organized representation. In other words, the organized interest groups collectively manage to raise the domestic prices of goods from which they derive profit income and to lower the prices of goods that they only consume. The political power of a particular organized sector is reflected by the ratio of domestic output to imports. In sectors with a large domestic output, the specific-factor owners have much to gain from an increase in the domestic price, while the economy has relatively little to lose from protection when the volume of imports is low with a given import demand elasticity.

The smaller is the weight that the government places on a dollar of aggregate welfare compared with a dollar of campaign financing, the larger in absolute value are all trade taxes and subsidies. An interior solution remains possible, however, even if the government cares only about contributions (so $a = 0$). This is because the interest groups themselves do not want the distortions to grow too large. As the share of voters who are members of one interest group or another increases, equilibrium rates of protection for the organized industries decline. At the extreme, when all voters belong to an interest group (so $\alpha_L = 1$) and all sectors are represented (so $I_i = 1$ for all *i*), then free trade prevails in all markets. In this case, the various interest groups neutralize one another, so that an industry's demand for protection is matched in equilibrium by the opposing interest groups' bids for a low domestic price. On the other hand, if interest-group members comprise a negligible fraction of the voting population (so $\alpha_L = 0$), then no trade taxes or subsidies will be applied to a good not represented by a lobby (for which $I_i = 0$). The intuition behind this is that when the potential political contributors are few in number, they stand little to gain from trade interventions in sectors other than their own.

4.2.2 Political contributions

The previous section characterized the structure of protection that emerges from the political process whenever the interest groups use contribution schedules that are locally differentiable. This restriction on the contribution functions leaves latitude for schedules with many different shapes, and in fact the set of contribution schedules that supports the equilibrium policy vector is not unique. Different sets of equilibrium contribution schedules give rise to different equilibrium transfers by the various lobby groups and thus to different net payoffs for the groups' members. It is therefore interesting to take a look at the determination of equilibrium contributions in different political settings.

Grossman and Helpman limit their focus from this point on only to truthful Nash equilibria. With this restriction, and an earlier definition of truthful contribution schedules, the competition between the lobbies involves only a choice of scalars $\{B_i\}$ which represent the net welfare to lobby *i* whenever it makes a positive contribution to the government in equilibrium. Given these 'anchors', the lobby then wishes to make B_i as large as possible and

the contribution as small as possible, but without going so far as to induce the government to deviate from $\mathbf{p}^{\circ}$ to some alternative policy that might be damaging to its interests.

Each lobby must thus worry about what policy would be chosen if it were to raise its B_i to a level where the government would opt to neglect its interests entirely. Grossman and Helpman define $\mathbf{p}^{-i}$ as the policy that would emerge from political maximization by the government if the contribution offered by lobby *i* were zero, that is,

$$\mathbf{p}^{-i} = \arg\max_{\mathbf{p}\in P} \sum_{\substack{j\in L \\ j\neq i}} C_j(\mathbf{p}, B_j^{\circ}) + aW(\mathbf{p}) \text{ for } i \in L. \tag{4.14}$$

Lobby *i* will raise its B_i to the point where the government is just indifferent between choosing the policy $\mathbf{p}^{-i}$ and choosing the equilibrium policy $\mathbf{p}^{\circ}$. The following equation expresses this indifference:

$$\sum_{\substack{j\in L \\ j\neq i}} C_j^T(\mathbf{p}^{-i}, B_j^{\circ}) + aW(\mathbf{p}^{-i}) = \sum_{j\in L} C_j^T(\mathbf{p}^{\circ}, B_j^{\circ}) + aW(\mathbf{p}^{\circ}) \quad \text{for all } i \in L. \tag{4.15}$$

Grossman and Helpman introduce three cases to illustrate how the equilibrium contributions are determined in different situations. In the first case, only one lobby group is assumed to be politically active. The equilibrium policy vector in this case provides protection for sector *i* ($p_i^{\circ} > p_i^{*}$), and so long as $\alpha_i > 0$, it calls for import subsidies and export taxes on all other goods ($p_j^{\circ} < p_j^{*}$ for $j \neq i$). The equilibrium campaign contribution of lobby *i* is found using (4.15), recalling that in this case $\mathbf{p}^{-i} = \mathbf{p}^{*}$, which results to $C_i^T(\mathbf{p}^{\circ}, B_i^{\circ}) = aW(\mathbf{p}^{*}) - aW(\mathbf{p}^{\circ})$. It can be seen that the lobby contributes an amount that is proportional to the excess burden that the equilibrium trade policies impose on society. The factor of proportionality is the weight that the government attaches to aggregate gross welfare in its own objective function. In this political equilibrium, the politicians derive exactly the same utility as they would have achieved by allowing free trade in a world without influence payments. Thus, a lobby that faces no opposition from other lobbies captures the entire surplus from its political relationship with the government.

In the second case, all of the voters are represented by lobby groups. The political competition in this case results in free trade. Nevertheless, each lobby must make a positive campaign contribution in order to induce the government to choose this outcome rather than one that would be still worse from its perspective. Assuming for simplicity that there were only two nonnumeraire goods and two lobbies, and using again (4.15), it is concluded that both lobbies must actively contribute to the incumbent government in order to support the free-trade outcome. When all voters are active in the process of buying influence, the rivalry among competing interests is most intense, and the government captures the entire surplus from the political relationships. Grossman and Helpman further show that each lobby *i* must contribute to the politicians an amount equal to the difference between what its rival and the government could jointly achieve were lobby *i* not itself active in the political process and what the two actually attain in the full political equilibrium.

In the third case, the ownership of the specific factors is so highly concentrated that interest-group members account for a negligible fraction of the total voting population. The political equilibrium in this case has positive protection for all organized sectors. But since $\alpha_i = 0$ for all *i*, the members of each interest group receive only a negligible share of government transfer payments and derive only a negligible share of the surplus from consuming nonnumeraire products. Thus, no lobby is willing to contribute toward trade intervention in any sector other than its own. The common agency problem here is the same as for a set of separate principal-agent arrangements between each industry lobby and the government. As in case 1, each lobby *i* must compensate the government for the political cost of providing protection (it pays *a* times the deadweight loss imposed by the industry policy p_i°). But with no political rivalry between the special interests, each industry group captures the entire surplus from its own political relationship with the government.

4.3 Limitations of the model

Although the Grossman-Helpman model is widely adopted in political economy literature and it offers an ingenious way to characterise the policy making process, the model is far from being a complete picture of the reality. There has been significant progression from the earliest lobbying models to the Grossman-Helpman model but certain open questions still remain.

First, the policymaker can only choose from two trade policies; taxes and subsidies. In reality, the set of policy instruments that could be adopted or at least taken into consideration is richer. What comes to trade policies, quotas, production or consumption taxes and subsidies, or regulatory barriers would also offer a way to drive trade to a given direction if so decided. The authors themselves recognize this as well and include a short discussion of the consideration of output subsidies within the framework. The implications of the presence of consumption and production taxes and subsidies at the disposal of the government are worked out more thoroughly by Dixit (1996).

In addition to being based on perfect competition in product markets, the model does not in this form take into account the downstream users of specific factors. In the basic model presented, the various industry groups oppose one another only to the extent that owners of specific factors also protect their interests as ordinary consumers. In reality, there are also numerous producers who use the specific factor as an intermediate input and who therefore oppose any increases in the domestic price of those factors. Whereas domestic manufacturers support import barriers of their final products, the users of intermediate inputs want to use their political power against such policies. The downstream users of specific factors can however be incorporated into the model, which is something that Krishna and Gawande (2005) have done in their empirical testing of the GH model with American data.

Moreover, Grossman and Helpman do not address the question of lobby formation; which industry groups manage to organize themselves into effective lobbies. Their model takes the interest groups as exogenous – some industries are organized and some are not. They do not address the issue of how the utility function of the interest groups relates to the policy preferences of the individual members, nor do they concern themselves with the internal distribution of the burden for paying the contribution. Rather, they simply assume that the group has managed to overcome its collective action problem, and that the interest group's utility function represents its internally agreed objective.

What Grossman and Helpman also assume is complete information between the interest groups and the policymaker. It can be, however, that when making political contributions the interest group does not know for sure the ideology and values of the policymaker. Inclusion of

information asymmetry in the model might change the behaviour of interest groups or the policymaker and possibly also the outcome of the policy game.

The government structure of the Grossman-Helpman model is very simple. The model assumes that there is only one policymaker (that may represent a group of policymakers) who decides on trade policies. In reality, no government works that way. The governmental structure of the European Union, for instance, is complex with the procedure between the Commission, the Parliament and the Council of Ministers, and with various working groups as well as committees working on the proposals. Thus, taking into account the hierarchical structure of the government would enrich the basic model.

5 Amended Protection for sale

The previous chapter covered some shortcomings of the Grossman-Helpmann model. This chapter provides a look at some research which is based on the idea of the original GH model but which tries to improve or amend it in different ways in order to make the theory better suitable for modelling the real world. In what follows, three such issues are addressed separately: endogenous lobby formation, asymmetric information, and hierarchical government structure. Other possible aspects are briefly presented under the last section of the chapter. The emphasis will be on the constructions of the models rather than on their results.

5.1 Endogenous lobby formation

This topic was referred to already in the discussion of the logic of collective action in chapter four. As mentioned there, many common agency models take a shortcut in the treatment of the organizing capabilities of industries by assuming that the share of sectors that undertake political activities is given as an exogenous parameter. However, the decision to become organized or not can be made endogenous by adding certain new ingredients into the GH model. Devashish Mitra's (1999) formal handling of an endogenous lobbying model has gained attention and has been adopted by other theorists as well (see e.g. Krishna and Mitra (2005), and Magee (2002)). This section also takes a look at an alternative endogenous lobby model introduced by Didier Laussel (2006) which in fact follows the very same idea of fixed lobby formation costs as Mitra (1999).

5.1.1 Endogenous lobbies by Mitra

Mitra (1999) has incorporated endogenous lobby formation into the Grossman-Helpman model. To do so, he adds one preliminary stage to the common agency game where inputs owners in each sector must decide to form a lobby or not. To form a lobby, they must collectively incur an organizational cost that is sector specific. When deciding whether or not to get organized, the lobby groups take into account the benefits that they can obtain in the second stage of the political game by being organized and the losses they would incur by remaining unorganized.

Mitra concludes that industries with higher levels of capital stock, fewer capital owners, more inelastic demand, and smaller geographical dispersion are the ones that get organized. As to the policy outcome, a surprising result he obtains is that the equilibrium trade subsidy for an organized group is no longer always positively related to the government's affinity for political contributions; in certain cases, the level of trade subsidy for each organized group turns out to be decreasing in the affinity for political contributions. This result is in contrast to the Grossman-Helpman result where the trade subsidy for each organized group is monotonically increasing in the government's interest in political contributions.

The model

The basic settings of the model are identical to those of Grossman-Helpman. However, Mitra makes slightly different symmetry assumptions. He lets H_i, denote the set of individuals who own the *i*th specific factor, and each of the sets is assumed to have *m* members who own equal amounts of the specific factor.

The proportion of population that owns some factor of production besides labour is denoted by $\theta = mN / M$ (*N* is the number of sectors that produce nonnumeraire goods). It is also a measure of the degree of equality of the ownership of specific factors. From the indirect utility function of an individual and the assumption that each individual owns at most one type of specific factor, the total welfare of the set of individuals owning the *i*th specific factor is given by

$$\Omega_i(\mathbf{p}) = \sum_{h \in H_i} l^h + \pi(p_i) + \theta M / N \left[r(\mathbf{p}) + s(\mathbf{p}) \right] \qquad (5.1)$$

For notational simplicity, it is from now on assumed that each individual in the economy is endowed with exactly *l* units of labour. At this point, a departure is made from the Grossman-Helpman framework as the number of lobbies, *n*, will be endogenously determined.

The model has two stages. In the first stage of the game, owners of each kind of specific factor decide whether to contribute to the financing of the fixed and sunk costs (defined in labour terms) of forming an organized lobby. These fixed costs consist of the costs of forming an organization, establishing links with politicians, hiring professional lobbyists, building a communications network among members, designing a scheme of punishments for defaulting members, etc. Forming a lobby can also be one way of getting closer to the government, so that political influence can be exercised on government's decision-making. In sectors without lobbies, transaction costs for communicating the offers or persuading the government are likely to be so high that political activity does not take place.

In the second stage, the game proceeds in the same way as in Grossman-Helpman, with lobbies providing the government with their truthful contribution schedules and government setting the trade policy to maximize its objective function. The problem is solved by backward induction, and an equilibrium in this game is the number of lobbies formed n° and a domestic price vector $\mathbf{p}^{\circ}$.

Going back to the first stage, the fixed labour cost of lobby formation for the *i*th group of specific factors is denoted by F_i. Fixed costs here are heterogeneous because groups are assumed to differ in their organizational abilities: groups that have formed associations for other purposes (e.g., sharing technical know-how) may find it cheaper to get politically organized than other groups, and some groups may be geographically more concentrated than others.

$\tilde{\Omega}_O(n)$ and $\tilde{\Omega}_u(n)$ denote the equilibrium gross welfare of an organized group and of an unorganized group, respectively, when there are *n* lobbies. In addition, $\tilde{C}(n)$ denotes the equilibrium contribution by a representative organized group. Now, assuming *i* - 1 groups as organized, the members of another group decide whether to form a lobby or remain unorganized. The provision of the fixed cost of lobby formation is assumed to be the results

of a Nash bargaining between the group members. However, once the lobby is formed, the lobby machinery can enforce perfect coordination among the members of that group in the collection of political contributions. There are three possibilities that arise, and by studying them Mitra concludes that a lobby is formed under the following condition:

$$\tilde{\Omega}_O(i) - \tilde{\Omega}_u(i-1) - \tilde{C}(i) > F_i, \tag{5.2}$$

that is, when the net benefit from being organized exceeds the fixed costs of forming a lobby.

The groups are then ranked and indexed in ascending order of their fixed costs such that

$$F_{\min} \le F_1 < F_2 ... < F_{n-1} < F_n < F_{n+1} ... < F_N \le F_{\max}. \tag{5.3}$$

Since the number of lobbies is assumed to be continuous, the above equation means that $F'(n) > 0$. It can then be shown that if $\tilde{\Omega}'_O(n) - \tilde{\Omega}'_u(n) - \tilde{C}'(n) < F'(n)$, that is, if the net increase in lobby welfare when being organized instead of unorganized increases less than the fixed costs when the number of already organized groups increases, there exists a unique Nash equilibrium, n^0, for the number of lobbies, and it is the one that satisfies the condition $\tilde{\Omega}_O(n^0) - \tilde{\Omega}_u(n^0) - \tilde{C}(n^0) = F(n^0)$, i.e. all groups with fixed costs less than or equal to $F(n^0)$ are organized.

Mitra then assumes that there is a continuum of nonnumeraire goods and the totality of them is normalized to one so that $n \in [0,1]$. He then defines gross and net benefits for a sector from lobby formation. By combining those expressions and differentiating with respect to *n* he obtains that both gross and net benefits from formation are decreasing in the number of lobbies already formed. Proceeding then to the determination of equilibrium contributions of organized sectors, Mitra obtains that the equilibrium contribution level by an organized sector compensates for the reduction in the gross welfare of the other existing organized groups and the reduction in the overall social welfare brought about by the formation of that organized group. The same result was found already in the GH model in the context of equilibrium contribution payments.

Other results of the paper are obtained by analyzing the comparative statics of the model. Mitra looks at the impacts of a change in the distribution of factor ownership, in the government's affinity for contributions, and of changes in industry characteristics by loosening the symmetry assumptions between sectors.

5.1.2 Other settings

Didier Laussel (2006) builds his model with endogenous lobby formation on a slightly modified version of the lobbying model of Persson (1998). In Laussel's model, interest groups hold different fixed endowments of an 'infrastructure good' which is a complement in the consumption of the local public good. The groups which benefit from larger infrastructure endowments are proved to be the ones which become organized because a relatively high infrastructure level increases both the absolute and the marginal utilities derived by the members from public good consumption. The size of the group is also an attribute that is positively correlated with the organizing probability of a given group, which is in contrast to the main Olsonian propositions.

Like Mitra (1999) in the case of the Grossman-Helpman model, also Laussel incorporates the lobby formation as a preliminary stage into the model of Persson. In this first stage of the game, similarly again to Mitra, the groups decide to become organized or to stay unorganized given the expected costs they would incur and the expected benefits which they would derive from these decisions in the following stages. At a coalition-proof Nash equilibrium, a lobby is formed if and only if the aggregate expected net benefits of its formation are positive. Technically, the main difficulty is to ensure that these costs and benefits are uniquely determined, that is, that the equilibrium of the second and third stages of the game is unique. To solve this technicality, Laussel draws on the work of Laussel and Le Breton (2001) on the structure of equilibrium payoffs in common agency models to provide a simple condition which ensures the uniqueness of equilibrium payoffs: the cost-elasticity of the supply of public good function of the government should not be larger than 2.

The model

The total number of groups is assumed to be n ($j = 1,2,\ldots,n$), and the set of all groups is N. Each group has N_j identical individuals belonging to it, and so the total number of individuals

belonging to a group is given by $P = \sum_{j=1}^{n} N_j$. The utility function of a member *i* of group *j* is given by

$$U_j^i = c_j^i + \sigma_j H\left(\frac{g_j}{\sigma_j}\right) \tag{5.4}$$

where c_j^i denotes the consumption of a private good, g_j is the per capita supply of a local public good, and $\sigma_j > 0$ is a parameter which measures the exogenously fixed per capita level of a group specific infrastructure. A higher value of σ_j enables the members of the group to derive more utility from a given provision of the public good. This infrastructure good and the public good are complements in consumption, such as for instance hospitals and health expenditures. Each individual is assumed to have the same income level *y*.

The provision of public goods is assumed to be financed through taxes per head τ_j which are proportional to the group specific observable per capita infrastructure levels, that is, $\tau_j = \tau\sigma_j$ where $\tau \geq 0$ is a tax rate which is uniform over all groups.

The model has three stages: In the first stage, members of each group *j* decide whether or not to contribute to the cost *F* of forming a lobby. This decision is a best response to the decisions simultaneously taken by the members of all other groups. As in Mitra (1999), a lobby will eventually be formed if and only if the aggregate benefit accruing to its members is at least equal to the fixed cost *F*. In the second stage, the organized groups choose their contribution schedules $T_{j.}$ These schedules depend on the vector *g* of public good supplies to all of the *n* groups, organized or unorganized. The contributions paid by the members of the group have to cover the money transferred to the politician plus a fixed cost *F* of lobbying, that is,

$$\sum_i t_j^i = F + T_j(g). \tag{5.5}$$

In the third and final stage, the politician sets the provision of public good *g* in order to maximize an objective function familiar from the GH model.

The game is solved as usual by working backwards. Detailed descriptions of the solutions to the third and second stages of the game are laid out in the Laussel's paper. I focus here on the formal handling of the first stage, the lobby formation. Laussel, like Mitra, assumes a continuum of lobbies. The aggregate infrastructure endowment level $\Omega = N\sigma$ is assumed to be continuously distributed over the interval $\left[\underline{\Omega}, \bar{\Omega}\right]$.

Laussel draws the conditions for the creation of a lobby by analysing the evolution of the benefits for a group *j* of getting organized instead of staying unorganized when the set of already organized groups is *L*. The benefit function is defined as $B(\Lambda_L, \Omega_j)$ where Λ_L is the aggregate infrastructure level of the already organized groups, and Ω_j denotes the aggregate infrastructure level of group *j*. By differentiating the benefit function *B* with respect to Λ_L Laussel draws the conclusion that, with certain assumptions, the benefit for group *j* from getting organized is a decreasing function of the number of groups that are already organized, and a strictly increasing function of its own infrastructure level (Lemma 3). The relation of *B* with respect to α, the relative weight of social welfare in the government's objective function, is not clear, but with certain general assumptions for the functions $H(\rho)$, *B* can be concluded to be a strictly decreasing function of α which conforms with the GH results.

From the Lemma 3, Laussel continues to define three separate cases for the formation of lobby groups that may arise in the equilibrium, all of which are qualitatively the same as in Mitra (1999). First, all groups are organized if the benefit to any group from getting organized exceeds the fixed cost *F* when all other groups in the economy are already organized. Second, no group is organized if *B* is lower than *F* for all groups. Third, if there is in the equilibrium a group that is indifferent between getting organized or remaining unorganized then all groups with a higher aggregate infrastructure level than this group get organized while the remainder of the groups abstain from political activity.

The role of the group size is taken into discussion by noting that one of the assumptions in the model was that the level of infrastructure per individual is uniform across groups. Therefore, as the results indicate an increasing probability of getting organized as the aggregate infrastructure endowment level of the group is high, it is straightforward that larger groups

become organized in equilibrium while smaller ones remain unorganized. Assuming further that *F* would increase less than proportionately with the group size, only large groups would be organized in the equilibrium. These results would clash with the hypotheses of Olson on the group size and collective action.

A different treatment of endogenous lobbying is offered by Felli and Merlo (2006) who endogeneize the number of lobby groups by assuming that the incumbent politician selects the interest groups she wants to bargain with. Their model does not represent the common agency tradition so it is not in the interest of this study to go through it in detail. However, the approach of Felli and Merlo differs from the usual way of making the number of lobbies endogenous so it is instructive to give a short summary here. The authors consider a citizen-candidate model of electoral competition that builds on the work by Besley and Coate (2001). The political process is modelled as a multistage game that begins with the citizens' decisions to participate in the political process as candidates for public office. Given the set of candidates, citizens vote in an election that selects the winner to choose policy for one period. After the election, lobbies try to influence the policy choice of the elected candidate through monetary contributions. Given the set of existing lobbies, the elected candidate, however, chooses the coalition of lobbies she will bargain with. One of the main results of the model is that in equilibrium, no elected candidate ever includes all lobbies in the bargaining process. Thus, not all lobbies are active in the game, but in this model it is due to some factor independent of the organizing capabilities of the interest groups.

5.2 Asymmetric information

All of the models referred to so far are complete-information models where uncertainty or asymmetric information plays no role. In particular, politicians are assumed to be perfectly informed about the characteristics of pressure groups and the latter in turn to have full information about the political preferences of decision makers and about the economy-wide consequences of policy choices. In practice, none of these assumptions is realistic. There might be incomplete information of the weight that the politician puts on social welfare, of the politician's ideological strength or of his policy preferences as well as of the distribution of power in the government's decision-making process. The case of asymmetric information

within common agency models is discussed for example by Le Breton and Salanié (2003), and Martimort and Semenov (2007, 2008).

5.2.1 Models by Martimort and Semenov

Martimort and Semenov (2007) introduce asymmetric information on a decision maker's preferences in a common agency model where interest groups use nonlinear contribution schedules for two purposes: to compete for the agent's services, and to learn about his preferences, that is, for screening the politicians. The authors deal with two kinds of asymmetries: horizontal asymmetries, in which there is uncertainty on the decision maker's ideal policy point, and vertical asymmetries, in which the ideological strength of decision makers is unknown which translates into uncertainty on how much they value monetary contributions.

The authors draw two main conclusions. First, asymmetric information redistributes bargaining power between interest groups and the politician in non-trivial ways. As such, asymmetric information is an important ingredient to explain some systematic biases of policy outcomes towards either some interest groups or the decision maker. Second, under asymmetric information, interest groups no longer contribute for a policy change as much as what it is worth to them under complete information. Instead, the groups' contributions are lower to incorporate a discount related to their ability to solve the asymmetric information problem. This discount might be so large that some groups may prefer to abstain from contributions to decision makers who are seen as too hard to influence. Different groups do not suffer in the same way from paying this discount and this is reflected in the resulting influence on the political process.

In the vertical differentiation, decision makers trade off social welfare maximization against the monetary contributions they receive from the lobbies. They have the same ideal policy but differ in terms of the weight they give to ideology, which is private information. The equilibrium policy in this case may be systematically biased towards the weakest interest group, the one whose preferences are further away from the decision maker in the policy space. In the horizontal differentiation, decision makers differ in terms of their most preferred policy and have private information on this parameter. The equilibrium policy might be

systematically biased towards the decision maker's ideal point featuring some status quo bias of economic policy. Contributions in this case are small, sometimes even nonexistent when horizontal uncertainty is large enough.

The underlying model

Two interest groups (IG), P_1 and P_2 are assumed to influence a policymaker through monetary contributions, and the politician sets a policy q in a one-dimensional space. P_1 has an ideal point located at $a_1 = a + b$, whereas P_2's ideal point is located at $a_2 = -a$. The politician's ideal point is at θ. The IGs and the politician have quasi-linear utility functions, given by, respectively

$$\begin{aligned} V_i &= -\frac{1}{2}(q-a_i)^2 - t_i \quad \text{for } i = 1,2 \\ U &= -\frac{\beta}{2}(q-\theta)^2 + t_1 + t_2, \end{aligned} \tag{5.6}$$

where β is a scale parameter capturing the intensity of the politician's ideological preferences towards his own ideal point, and t_i denotes non-negative contributions. Under horizontal asymmetric information, politicians differ in terms of their ideal points θ. Under vertical asymmetric information, politicians have the same ideal point but differ in terms of their ideological bias β.

The game proceeds like a standard common agency game with interest groups moving in the first stage and the politician in the second. Under complete information, the efficient policy $q^*(\theta,\beta)$, which maximizes the joint payoff of the interest groups and the politician, is a weighted average of the different players' ideal points with weights reflecting their ideological biases:

$$q^*(\theta,\beta) = \frac{b+\beta\theta}{2+\beta}. \tag{5.7}$$

When $b > 0$, this policy is biased towards P_1's ideal point, which is further away from the politician's own ideal point than P_2's[6]. P_1 is therefore referred to as the weak principal, with P_2 being the strong principal. The efficient outcome would be implemented using truthful contribution schedules, following the terminology of Bernheim and Whinston (1986).

[6] The politician's ideal point is assumed to be situated in point 0 on the same axis with the principals.

Vertical asymmetric information

The politician has now private information on the parameter β but this ideological bias is not too strong; β is assumed to be uniformly distributed on $\left[0, \overline{\beta}\right]$ where $\overline{\beta} \leq 1$. For simplicity, it is assumed that the politician's ideal point θ = 0. This setting results in an equilibrium $q^e(\beta)$ which is upward distorted with respect to first-best $q^*(0,\beta)$:

$$q^e(\beta) = \frac{b}{2+3\beta-2\overline{\beta}} \geq q^*(0,\beta), \text{ with equality only at } \beta = \overline{\beta}. \qquad (5.8)$$

The politician always gets a positive payoff in equilibrium, and the weak principal's marginal contribution is greater than that of the strong principal.

Each IG clearly wants to push the policy towards his own ideal point. In the absence of the other group's contribution, this requires a greater (lower) transfer when the politician has a strong (weak) ideological bias. A strong ideological bias translates here to a high value of β. This being said, under asymmetric information, in the absence of the other group's contribution, a politician with a low ideological bias would be tempted to exaggerate this bias to receive greater contributions from the IG. This would leave a positive information rent to politicians having small ideological biases.

When, instead, IGs compete for favours, both offer large contributions to the politicians with a small β. Politicians with stronger ideological biases find it now attractive to pretend having less. Because IGs have opposing preferences each of them can only mitigate the equilibrium policy that the other would induce being alone. This makes the policy less sensitive to the politician's ideological bias. To limit the extra rent left to politicians with stronger ideological biases, both IGs offer contributions which have less mitigating power compared to what they offer when knowing β. This is true for both principals but the strong one does so even more. As the contributions are designed to counter the other IG's preferences, the weak IG's marginal contribution is greater because the strong one is close to the politician in the policy space. At equilibrium, the chosen policy is thus upward distorted for all types $\beta < \overline{\beta}$. Vertical asymmetric information thus redistributes the bargaining power somewhat in favour of the weakest IG. The assumption that the IGs are asymmetric (i.e. $b > 0$) is crucial here. Otherwise

the first-best efficient policy would always be the agent's ideal point even under asymmetric information.

Horizontal asymmetric information

Under horizontal asymmetric information, the politician's ideal point θ is private information and drawn uniformly from an interval $[-\delta, \delta]$. To simplify the model, both IGs are assumed to be symmetrically located around 0, that is, $b = 0$. The politician's ideological preferences are now assumed to be sufficiently pronounced.

To understand the impact of horizontal asymmetric information, it is first useful to think of P_1 as being the only IG around. It is first assumed that $a > \delta$, that is, whatever the agent's ideal point the IG's preference is more extreme. Under asymmetric information, more extreme politicians who are closer to P_1's ideal point would like to appear more moderate to grasp the high contributions that P_1 would offer for more moderate politicians. To avoid this, P_1 increases the distance between the policy suggested to moderate types and his own ideal point. Reducing the information rent of extremist politicians calls for distorting the policy in the direction of the agent's ideal point and paying less transfer to moderate types. However, P_1 is constrained in doing so by the fact that the politician may always refuse any contribution and choose the status quo policy. Asymmetric information undermines significantly the influence of IGs as soon as horizontal uncertainty is large enough. As they are symmetrically located around the agent's expected ideal point, none of the IGs gains anything from this bias contrary to the case of vertical uncertainty.

Martimort and Semenov (2008) continue from where their previous article stayed and give a more comprehensive analysis of a common agency game under asymmetric information. This article builds on the model introduced in the previous paper and enriches it by looking at numerous alternative settings and strategies that could occur in the policy game. The authors divide the analysis into several subproblems. To start with, interest groups (assumed to be two) form a coalition giving rise to two alternative scenarios. In case the politician's ideological bias (β) is weak (i.e. low in value) then the optimal policy is inefficient and distorted towards the politician's ideal point θ. Moderate politicians get information rent by exaggerating their policy stance, whereas politicians with an extreme viewpoint do not gain

any rent. In case the ideological bias is strong (β is high) then the coalition of interest groups does not contribute at all and the optimal policy coincides with that of the politician's ideal.

In the presence of competing interest groups, three main scenarios arise. First, a laissez-faire equilibrium results when there is a strong ideological bias combined with a large horizontal uncertainty. In that case the politician puts significant weight on ideology, and the interest groups' ideal points lie both within the interval defined by the most extreme possible views of the politician. As a consequence, there is no contribution from either of the interest groups, and the politician implements his ideal policy. Even when the ideological distance between the politician and an interest group is small, the latter cannot ensure that the former will only follow his own recommendation because there is too much uncertainty in the politician's preferences which may be too distant from those of the group. This result is the same as in the Grossman-Helpman model with all sectors represented by a lobby who ultimately cancel each other out.

Second, when the degree of polarization between the interest groups increases (or respectively the horizontal ideological uncertainty of the politician decreases), the market for influence becomes segmented with interest groups on both sides of the political spectrum being linked in exclusive relationships with decision makers who are sufficiently close ideologically. The authors call this situation a *partition equilibrium of type 1*. By definition, in this equilibrium, principal *i* offers a positive contribution only on a non-empty subset Ω_i of the interval of the politician's possible policy stances. Moreover, the principals' areas of influence are disconnected, so that they do not overlap each other. A partition equilibrium of type 1 is symmetric when there exists $\tau \in (0, \delta)$ such that $\Omega_2 = [-\delta, -\tau]$ and $\Omega_1 = [\tau, \delta]$. Between these two subsets is the area $\Omega_0 = [-\tau, \tau]$ where none of the principals contribute. Thus, if the realized stance of the politician is sufficiently extreme and thus falls in either of the interest groups' subsets, that group is able to influence the final policy choice by contributing. Otherwise, for moderate politicians for whom θ falls on the interval Ω_0, the equilibrium policy is equal to the politician's ideal point in which case she would not obtain any information rent. A partition equilibrium shares some common features with the laissez-faire equilibrium. In both cases, the decision maker might be freed from the principals' influence but in the partition equilibrium this happens only when the politician is sufficiently moderate.

Interest groups are now able to exercise unchallenged influence when their ideological distance with the politician is small. The most extreme politicians are thus linked in exclusive relationships with nearby groups.

Third, a modification from the previous scenario, a *partition equilibrium of type 2*, arises when the politician's horizontal ideological uncertainty decreases further. Now, both interest groups suffer less from not knowing the agent's preferences, and even moderate politicians receive positive contributions from both interest groups. The influence areas of the interest groups thus overlap. A partition equilibrium of type 2 is symmetric when there exists $\tau \in (0, \delta)$ such that $\Omega_2 = [-\delta, \tau]$ and $\Omega_1 = [-\tau, \delta]$. The overlapping area, where both groups simultaneously contribute, is given by $\Omega_1 \cap \Omega_2 = \Omega_0$. In such a case, the equilibrium policy reflects the preferences of both groups only for moderate politicians and is otherwise biased towards the preferences of the nearby group for more extreme politicians.

In summary, Martimort and Semenov list some central elements that are highlighted in both of their papers. Firstly, under asymmetric information, competition between interest groups leads to huge inefficiencies in policy choices. There always exists a strong bias towards the politician's ideal point. If ideological uncertainty is very large, transaction costs become also large and interest groups might refrain from contributions. When the politician's ideological bias is strong and there is sufficient horizontal uncertainty, interest groups may not contribute to a politician whose ideal point lies too far away from their own preferences. The market for influence is segmented with exclusive relationships between politicians and interest groups whose preferences are close in the political spectrum.

As horizontal uncertainty decreases, the areas of influence of competing interest groups begin to overlap. More extreme legislators continue to collect most contributions though they may still receive contributions from opposing groups. For example, one should expect older decision makers whose views are better known to gain more support from both sides of the political spectrum.

If the decision maker's ideological bias is not too strong, possibly due to the fact that the policy at stake is sector specific and has little appeal for the general public, interest groups

always contribute. However, the nature of competition is highly dependent on the amount of ideological (horizontal) uncertainty. When groups face much uncertainty they are more congruent and the pattern of contributions may reflect some cooperation. On the other hand, with less uncertainty on the politician's ideology, competition induces interest groups to raise contributions even for the most extreme politicians.

5.2.2 Other settings

Le Breton and Salanié (2003) add asymmetric information into a common agency model in an abstract policy space. They depart from the basic setting of Grossman-Helpman by assuming that the type of the politician is not common knowledge. This is done by inserting into the model the assumption that a parameter α, the weight of social welfare in the politician's payoff function, is private information to the politician. Technically, this assumption transforms the original common agency game into a common agency game with adverse selection. This reflects the view that lobbyists do not know for sure how costly it is to buy the favour of a politician.

In the first section of the paper, the authors concentrate on a binary setting where the politician can choose among two possible decisions – the status quo or an alternative policy. In this setting, the society can be divided into two natural interest groups: those who gain and those who lose when moving from one decision to the other. As a conclusion, the proportion of 'bad' politicians (with a low α) must be above some critical value depending on the characteristics of the two groups and the magnitude of the stake. If there are too few bad politicians, supporters of the efficient decision are willing to endorse the risk of losing in return for lower contributions to the politician. The authors also study the free-rider problems of lobby group formation in the light of the Olson's hypotheses. In that respect the model would also belong to the category of endogenous lobby formation discussed earlier.

The model setup

A politician must choose between two policies, a_1 and a_2. This choice affects the payoffs of *n* principals identified by the subscript *i*. The payoff of the agent and the principals depends on the policy selected and on monetary transfers. The set of principals is partitioned into two sets according to whether they prefer the first or the second policy alternative. In the first set, I_1,

principals are characterized by their surplus $V_1^i > 0$ if a_1 is chosen instead of a_2. In the second set, I_2, principals are characterized by their surplus $V_2^i > 0$ if a_2 is chosen instead of a_1.

The total surplus of principals if policy a_k is chosen is denoted by W_k, and it is further assumed that

$$\Delta = W_2 - W_1 = \sum_{i \in I_2} V_2^i - \sum_{i \in I_1} V_1^i > 0. \tag{5.9}$$

Following from this, the efficient decision is now a_2.

In the two-stage game that follows, each principal, instead of being represented by a lobby group, is assumed to act alone and to offer a contribution to the politician. This serves as a way to avoid the free-rider problem of group formation. In the second stage, the politician selects the decision which maximizes his payoff defined as a sum of total welfare of principals (W) weighted by α and the total amount of transfers (T). If decision a_k is chosen, principal P_i gets $V_k^i - T_k^i$ if $i \in I_k$ and $-T_k^i$ otherwise. The politician gets $\alpha W_k + \sum_i T_k^i$. For simplicity, it is assumed that a transfer is paid by a principal only if his preferred decision is selected. Therefore, $T_2^i = 0$ for $i \in I_1$, and $T_1^i = 0$ for $i \in I_2$. The efficient decision will then be selected if

$$\alpha\Delta + \sum_{i \in I_2} T_2^i \geq \sum_{i \in I_1} T_1^i. \tag{5.10}$$

In other words, the efficient decision is obtained if the transfers for choosing policy 1 do not exceed the value of transfers for choosing policy 2 plus the aggregate welfare gain from the efficient policy choice.

Incomplete information on α

It is now supposed that α is a random variable whose distribution is common knowledge but whose realization is known only to the politician when the game begins. More precisely, α is drawn from the interval $[\underline{\alpha}, \bar{\alpha}]$ ($\alpha \geq 0$), with cumulative density function F and density function f which is assumed to be positive on the whole interval. A politician of type α will select the efficient decision if α is above some threshold α_0:

$$\alpha > \frac{\sum_{i \in I_i} T_1^i - \sum_{i \in I_2} T_2^i}{\Delta} \equiv \alpha_0. \tag{5.11}$$

After denoting by *T* the vector of transfers, the principals' payoff functions are:

$$\begin{aligned} \Pi_i(T) &= (V_1^i - T_1^i)F(\alpha_0), \text{ when } i \in I_1 \\ \Pi_i(T) &= (V_2^i - T_2^i)(1 - F(\alpha_0)), \text{ when } i \in I_2 \end{aligned} \tag{5.12}$$

This means that principal *i* who belongs to I_1 pays a positive contribution and receives a net payoff of $\Pi_1(T)$ only when α is below the threshold α_0, thus with probability $F(\alpha_0)$. A principal belonging to I_2 receives a payoff of $\Pi_2(T)$ when $\alpha > \alpha_0$, that is, with probability $(1 - F(\alpha_0))$. The authors then determine the transfers T_1^i and T_2^i paid by principals in both interest groups and substitute them into the expression (5.11) in order to obtain the condition for the policy outcome to be the efficient one (a_2).

In a more general case, with more than two policy choices, the common agency problem with adverse selection is more complicated, and Le Breton and Salanié are not able to provide a full characterization of efficiency. Instead, they derive disjoint necessary and sufficient conditions for an equilibrium to be efficient. The proportion of 'bad' politicians is important in the general case as well.

Mike Felgenhauer (2007) treats information asymmetries as well although in a somewhat different model of common agency where the equilibrium is reached by using mixed rather than pure strategies. In the model, it is assumed that a policymaker has to choose among two alternatives and has private information about the welfare maximizing option, i.e. his optimal policy point. The decision maker responds to the lobbies' contributions, but also cares for the socially best alternative. These preferences are mirrored in the auction: in order to win with certainty, a lobby has to outbid its rival at least by a constant Δ, where Δ reflects the policymaker's preference for the social optimum. Otherwise the policymaker chooses her ideal point and collects the bribes from the corresponding interest group. Lobbies are assumed to have identical valuation for their preferred policies so that the information transmission purpose of contributions is left aside.

The model

There is a policymaker who has to decide upon policy x that may be either 1 or 0. The policymaker is an expert, who knows which decision is best for society, but this knowledge is her private information. Ex ante, each of the policies is welfare maximizing with equal probability. The policymaker has a valuation $\Delta \geq 0$ for choosing the social optimum. Her utility function is given by

$$u = \Delta y + t_0 + t_1, \tag{5.13}$$

where t_j is the contribution from interest group j, and y is a dummy which gets the value of 1 if the socially best policy is chosen and zero otherwise.

There are two interest groups $j = 0,1,$ who prefer either policy 0 or 1, respectively. Both groups have the same valuation θ for their preferred policy. The utility functions of the groups are given by $u_1 = \theta x - t_1$ and $u_0 = \theta(1-x) - t_0$. The timing of the game is the same as usual, but before the contribution offers from lobbies the policymaker privately observes the welfare maximizing policy.

Felgenhauer shows that an equilibrium in the game is found only in mixed strategies, and any equilibrium in mixed strategies implies welfare inefficiencies. Surprisingly, however, these inefficiencies are found to be the same for different levels of the decision maker's valuation Δ for the best policy. Thus, in the class of mixed strategy equilibria, if there were two candidates for the policy make's job, an electorate should be indifferent between the two, even if one of them intrinsically cares more for the social optimum.

Epstein, Milchtaich, Nitzan and Schwarz (2007) introduce an appealing idea which the existing common agency models have neglected: there is likely to be asymmetric information concerning the power distribution within a set of potential sources of power in a legislative structure. Interest groups may have a list of potential decisive agents but no firm information regarding the identity of the decisive agent – the true target of their efforts. From the contestants' point of view, resources directed to the wrong agent are simply a waste. Under such uncertainty, it makes sense to direct resources to several potential "power centers". The essential question is then how much effort to make and how to allocate it among the potential

power centers. Epstein et al. have treated this topic in a symmetric lottery contest, but the idea could well be transferred also under a common agency model.

5.3 Hierarchical governments

Another significant matter that the basic GH model does not address is the fact that political decisions are taken on several levels with part of the decision power delegated from the government to lower, executive levels enjoying some degree of autonomy. Examples of such structures are offered by a combination of a legislature and a bureaucracy, a president and a parliament, or the board of directors and an executive officer in a firm's governance. Furthermore, besides targeting policymakers at different tiers within a single governmental body, interest groups may target them at different governmental levels like the municipal, state, or national level. This implies that competition among lobbies extends from a single tier to several tiers making lobbying more complex than in usual formalizations. So far, however, hierarchical decision making has been discussed in relatively few common agency studies.

5.3.1 Models by Mazza and Van Winden

In Mazza and Van Winden (2008), policies are the result of the choices made by two agents within a hierarchy. A legislator decides on the budget to be successively spent by a bureaucrat. Both agents are lobbied by one or two interest groups. The combination of sequential decision making and lobbying implies that the interaction between the agent at one tier and the interest group(s) depends on the exchange between the same interest group(s) and the agent at the other tier.

Mazza and Van Winden remind that the existence of multiple opportunities to influence decision making needs not be as advantageous for an interest group as it may seem at first sight. For example, a multi-tier process of decision making could increase lobbying expenditures because a group might need to influence more agents in order to obtain a favourable policy. The outcome of lobbying is also more difficult to predict. Lobbying a policymaker may trigger responses by decision makers at other tiers whose behaviour cannot be completely controlled through the policymaker that is lobbied.

The model of Mazza and Van Winden is summarized as follows. At the higher level, a legislator (*L*) decides on the size of the tax revenue needed to finance two public goods, each of which is consumed by a different group of people. *L* is interested in the welfare of the different groups as well as in the contributions they can offer. Moreover, *L* has distinct preferences concerning the allocation of the budget across the public goods, but this is effectively decided at a lower level, by a bureaucrat (*B*). *B* can only disregard the preferences of *L* at a personal cost, for example, in terms of career prospects or loyalty. However, *B* may be compensated by the interest groups for skewing the budget allocation to a certain direction.

The model setup

Mazza and Van Winder consider an economy where individuals are divided into two groups, of size n_1 and n_2. The members of each group derive utility from disposable income and the consumption of a group-specific pure public good G_i financed by tax t on gross income y_i. Thus, individual utility is given by $u_i = (1-t)y_i + h_i(G_i)$ for $i = 1, 2$. The supply of the public goods results from the policy choices made by two public agents, *L* and *B*, at different levels. *L* chooses t while *B* determines the share s (or 1-s) of the resulting tax revenue R to be allocated for the production of G_1 (or G_2). Public goods are produced according to $G_1 = sR$ and $G_2 = (1-s)R$. An interest group i wishing to influence decision making offers a contribution schedule $C_i(t)$ to *L* and a schedule $E_i(s)$ to *B*. A net welfare function for group i subtracts the lobbying expenditures from the aggregate utility of the group:

$$V_i = U_i(s,t) - C_i(t) - E_i(s), \quad i = 1, 2. \tag{5.14}$$

The objective function of the legislator *L* is given by

$$P_L = \sum_i l_i C_i(t) + l \sum_i \theta_i V_i(s,t), \quad l_i, \theta_i, l > 0, \tag{5.15}$$

where l_i reflects the 'shadow price' that group i faces when lobbying *L*, l indicates the preference of *L* for social welfare relative to contributions, and θ_i denotes the political weight of group i. Lobbying requires that the net benefit from it to *L* be positive, that is, the shadow price of lobbying should be sufficiently low (i.e. l_i sufficiently high) compared to *L*'s interest in the group's welfare.

As for the bureaucrat, he is assumed to have the possibility for some opportunistic behaviour with lobbies. On the other hand, *B* is constrained by *L*'s objective function. This may be for example due to bureaucratic loyalty or career concerns. *B* chooses *s* in order to maximize

$$P_B = \sum_i b_i E_i(s) + bP_L(s,t), \quad b_i, b > 0, \tag{5.16}$$

where b_i reflects the shadow price of lobbying *B*, *b* indicates the weight that *B* attaches to the objective of *L*, that is, the degree of indirect control of *L* over *B*. From the objectives of *L* and *B* it follows that a group is only able to lobby *B* if $b_i > bl\theta_i$.

The timing of the game follows the usual manner, with the lobbies announcing their offers in the first stage and the decision maker maximizing her objective after that. Now the game is however played twice in a row, first at the upper tier and then at the lower one.

Monopsonistic lobbying

It is first supposed that group 2 does not take part in lobbying activity and so there is only one lobby group, and $C_2 = E_2 = 0$. A subgame-perfect equilibrium at the lower tier is made up of a policy-contribution pair (s^l, E_1^l) such that the interest group makes a truthful contribution, while the policy selected by *B* maximizes P_B given the contribution schedule offered by the lobby. The superscript *l* is used to denote the case when there is lobbying activity from the side of group 1. As usual, for any given *t* and C_1, the equilibrium maximizes the joint welfare of the lobby and *B*, and s^l is thus determined by

$$b_1 U_{1s}(s^l) + bl\theta_2 U_{2s}(s^l) = 0, \tag{5.17}$$

where the subscript *s* denotes partial derivative with respect to *s*. This equation can be seen as a maximization of a weighted gross political welfare function where the organized interest group benefits from a larger weight than the unorganized group 2 (as $b_i > bl\theta_i$). As a consequence, lobbying increases the group's share of the overall budget and the group has an incentive to lobby *B*.

The problem at the upper tier is solved in a similar manner, taking into account s^l and E_1^l from the earlier stage. *L*'s optimal policy is implicitly determined by

$$l_1\left[U_{1t}(t^l) - E_{1t}^l(t^l)\right] + l\theta_{2t}(t^l) = 0. \tag{5.18}$$

Using the equation for *L*'s objective function and the fact that the lobby pays a contribution C_1^l that leaves *L* indifferent between the tax rate t^l and the rate t^u that would be optimal for *L* in the absence of lobbying at his tier, Mazza and Van Winden show that the group 1 will not loose from lobbying *L* even if it already lobbies *B*.

Some conclusions can be drawn from the results of the game. Firstly, lobbying can be harmful to both policymakers. Although each decision maker is just compensated for giving in to the lobby, the fall-back outcome is changed by lobbying at the other tier. *L* can never gain from lobbying at the lower tier because both the contributions paid to *B* and the policy change it induces there represents a net loss for *L*. The effect of lobbying at the higher level on the welfare of *B* can be positive or negative, depending on its effect on the tax rate and the sign of the impact of the tax rate on the contribution E_1^l paid to B.

Competitive lobbying and comparative statics

After the benchmark case of only one contributing lobby group, Mazza and Van Winden discuss the implications of competitive lobbying, with both interest groups being politically active. The basic mechanics of the model remain the same although competition among interest groups produces somewhat different outcomes for all actors. In contrast to the monopsonist case, under competitive lobbying both decision makers may benefit from lobbying. On the other hand, competitive lobbying may be detrimental to both lobby groups as they find themselves in a prisoner's dilemma with lobbying being the dominant strategy at each tier.

The authors consider also some comparative statics of competitive lobbying. They make three remarks: (i) The reaction of *L* to an increase in a group's effectiveness in lobbying *B* may be to reduce the level of overall budget directed to the provision of the group's public good (through a decrease in the tax rate). So, although a group is able to increase the share of the

budget spent on its public good, the absolute level of the budget may decrease through a reduction in tax revenues induced by *L*. This is the same intuition as found in Mazza and Van Winden (2002) where they conclude, in a similar game setting, that centralization of policymaking in the EU level may lead to a smaller EU budget than under a decentralized structure. The federal budget, in that case, represents a form of incentive scheme to limit lobbying expenditure at the lower agency level.

(ii) An improvement of group *j*'s effectiveness in lobbying *L* induces group *i* to shift resources to *L*'s tier if its own effectiveness in lobbying *L* is sufficiently higher relative to group *j*. (iii) For any given *t* and *C*, a stronger influence of *L* on *B* (larger *b*) has no effect on *B*'s policy but reduces lobbying expenditure $(E_1^* + E_2^*)$. The latter result may be reversed through a positive effect of *b* on t^* (and thus on the level of tax revenues to be allocated). The positive effect may come about because it induces *B* to better regard the preferences of *L*. This may in turn boost lobbying expenditure on *B* and give one reason why lobby groups may be more interested in lobbying bureaucrats than legislators. In fact, as the authors note, competition for influence at the bureaucratic tier may work as a perfect substitute for legislatorial oversight.

5.3.2 Models with an agenda setter

When treating the hierarchical processes in policy making, it is practical to make use of decision making structures including an agenda setter. This is the focus of for example Dharmapala (1999) and Bergemann & Välimäki (2001). Dharmapala (1999) adopts the Grossman-Helpman model to analyze decision making by legislative committees. He aims to compare two possible institutional structures through which a legislature may choose taxes or subsidies for each of the economy's *n* sectors. The first of these involves empowering a committee to decide simultaneously on the policies relating to all sectors. This is called a tax committee approach (TC). The alternative structure involves establishing *n* separate specialized committees each one deciding only over the policy imposed for its own sector, in isolation from the other sectors and committees. This is referred to as specialized committee structure (SC).

As the TC has the power to decide on the entire vector **p** of producer prices, it is able to offer subsidies to the organized sectors at the cost of unorganized sectors which would be imposed taxes. In contrast, SC *i* chooses only p_i which means that the committee cannot affect policies on other sectors than its own. Under the SC structure then, lobbies have to decide to which committees they should direct their lobbying efforts. Dharmapala approaches the problem by studying the two extreme cases between which the optimal strategies must lie: either all organized groups lobby all specialized committees or then each group chooses only one committee to lobby.

In analyzing the policy outcomes in the TC and SC regimes, Dharmapala notes that the internal decision-making processes of the committees is crucial for the results. Thus, he analyses separately three different characterizations of the committee decision-making process: the agenda setter dominated (A), majoritarian (M), and universalistic (U) processes. In the A model, one member of the committee is exogenously selected to be the agenda setter. He has the power to make a proposal which the other committee members are not allowed to amend. In the M model, all members have the right to make proposals and amendments to others' proposals. Each decision is based on a vote that follows a majority rule. In the U model, each decision maker enjoys exclusive proposal power over a subset of the committee's sphere of jurisdiction, and these proposals are voted against a reference option.

Agenda setter dominated committees are assumed to consist of *l* members who seek to maximize a weighted sum of monetary contributions and social welfare. Considering first a TC model, Dharmapala denotes by $\mathbf{p}^{AT}$ the vector of producer prices enacted by the committee and by $\mathbf{p}^{ATP}$ the proposal made by the agenda setter. The game proceeds as follows. In the first stage, organized groups lobby the agenda setter by offering her contribution schedules conditioned on $\mathbf{p}^{AT}$. In the second stage, the agenda setter chooses a policy to propose to the committee. The policy is chosen to maximize an objective function familiar from the GH model with attention given to both contributions and social welfare. In the third stage, the agenda setter bargains with the other members of the committee by making them take-it-or-leave-it offers conditional on their vote in the final stage of the game. Each committee member maximizes an objective function including both social welfare and the

transfers offered by the agenda setter. In the final stage, the committee votes on $\mathbf{p}^{ATP}$ against the default alternative of undistorted world prices $\mathbf{p}^{*}$.

The game is solved using backward induction. Dharmapala makes the proposition that the unique equilibrium of the committee voting game is for all members to vote for the proposal $\mathbf{p}^{ATP}$. Thus, the outcome which emerges from the vote is $\mathbf{p}^{ATP} = \mathbf{p}^{AT}$. The agenda setter anticipates this, and maximizes her welfare by choosing $\mathbf{p}^{ATP}$ accordingly, given the contribution schedules offered by the interest groups. In the first stage, when the lobby groups use truthful strategies, the optimal policy maximizes the joint surplus of the agenda setter and the lobbies. The maximization problem yields results which are in line with those obtained in the GH model.

Under the specialized committee structure, the legislature is divided into *n* separate committees. It is first assumed that all organized groups simultaneously lobby all the specialized committees. The timing of this game is as follows. First, all groups lobby committee *i*'s agenda setter, A. Then, A chooses a proposal p_i^{ASP}. In the third stage, A offers transfers to the other committee members, and finally the committee votes on the proposal. Letting p_i^{ASL} be the *i*'th producer price enacted when all organized groups lobby SC *i*, Dharmapala shows that the result from the game is identical to that arising from the TC structure.

However, as Dharmapala remarks, lobbying is constrained by transaction costs and issues of credibility. Developing a relationship of credibility with a committee, let alone with *n* committees is costly, and these transaction costs, which are likely to be increasing in the number of committees lobbied, will be balanced against the expected benefits from lobbying. As a result, groups can be expected to lobby some, but not all committees. Thus, Dharmapala introduces a case with restricted lobbying where each group lobbies only one specialized committee. The timing is now as follows. The *i*'th SC is lobbied by *i*'th group if that group is organized; otherwise, it is not lobbied at all. In other respects the game is similar to that in the previous case where an agenda setter, instead of being lobbied by only one group, was lobbied by all groups. Solving the game follows thus the same principles as in the both cases

discussed earlier, with the result being also analogous to that obtained earlier. A different result follows if the agenda setter in SC *i* does not face any lobbying. Then she selects the producer price for the sector *i* to be identical to the world price.

The treatment of majoritarian and universalistic committees follows the same lines as in the agenda setter dominated committees so it is not worthwhile to spell out a detailed description of those models. After studying the outcomes of all the six games that arise out of the three committee decision-making processes combined with both a TC and an SC regime, Dharmapala draws the conclusion that the tax committee structure is likely to give rise to lower subsidy levels than the specialized committee structure.

Bergemann and Välimäki (2001) apply a dynamic common agency model to a game of agenda setting. The motivation for the dynamic model structure is the fact that political choices are rarely made only once, and the future implications of a current decision are often more important than the immediate impacts of the policies. A dynamic perspective is of particular need, if the politician and the lobbyists cannot commit to future actions and transfers. The authors first introduce a very simple dynamic common agency model with only two time periods. In the first stage, the agent chooses the actions that are available in the second period. The common agency game itself, with the set of possible actions determined earlier, is played in the second period. Given that the agent initially decides on the actions that form the basis for the choice in the second stage, this game resembles technically an agenda setting game. The authors conclude from this simple model that the outcome of the game is efficient if the agent can be lobbied in both stages, and the payoff to the agent is higher in this game compared to a static, one-period game. This main feature of the model carries over to more general dynamic models as well.

The idea of the game is that the agent has the power to set the agenda by selecting a subset of an exogenously given set of feasible actions. This is done in the initial period. Then, in the subsequent period, the principals bid on the actions on the agenda, like in a static menu-auction game. The principals are however allowed to influence the same agent in his selection of the agenda in the initial period, which extends the game over two periods and thus makes it a dynamic game. More formally, in period 0, each principal bids on the subset *A* chosen by the agent from the set of feasible actions. The agent receives a reward $r_i(A)$ from principal *i* if

he selects the subset *A* for the second stage. The choice of *A* is costless to the agent and it has no immediate payoff consequences for the principals. The eventual choice of the agent in period 1 is, however, restricted to the subset *A*. The main difference of the model to the basic static common agency model is that by selecting an action today, the agent can change the nature of competition among principals tomorrow. The agent naturally prefers such a subset of actions that increase competition among the principals in the second period and thus give rise to higher equilibrium payoffs to the agent.

5.4 Other aspects

This section takes up briefly some additional issues that have aroused academic discussion in relation to the basic GH model to show that there still remain several debatable topics within common agency models. As mentioned in the previous section, Bergemann and Välimäki (2001) have analyzed the common agency framework in a dynamic setting where the game extends over several time periods. Dynamic common agency is adopted also in the work of Bellettini and Ottaviano (2005) who consider interaction between overlapping generations and policymakers in a model where competing generations invest resources to lobby either for the maintenance of the current technology or for the adoption of a new one. It is assumed that the young prefer innovation and progression while the older generation is more conservative.

Prat and Rustichini (2003) remark that, given that modern democracies are characterized by a multiplicity of public decision makers, the assumption of a unique politician in common-agency models is unrealistic. They introduce a game of complete information with many principals and many common agents. Each agent makes a decision that affects the payoffs of all principals, and each principal offers monetary transfers to each agent conditional on his action chosen. Technically the game set up is analogous to the usual common agency game, although now principals offer contributions to several agents simultaneously. The authors assume that the transfer from a principal to an agent is only conditional on the action chosen by the given agent. However, it is recognized that the transfer could also depend on the actions chosen by other agents in which case agents would have an incentive to influence each other's choices.

In the paper of Kirchsteiger and Prat (2001), the authors ask whether the truthful equilibrium laid out by Bernheim and Whinston is the only reasonable equilibrium. They claim that the truthful equilibrium may be quite complex and it is difficult for players to arrive at the truthful strategy equilibrium. Moreover, if a principal is not sure what the other principals are doing, playing truthful may be risky. The standpoint of Kirchsteiger and Prat is to see principals behaving in a simpler way. Instead of making positive offers on all, or most, possible alternatives as the truthful equilibrium requires, each principal makes only one strictly positive offer on the alternative that she hopes to get. Such a strategy is called natural and, if it exists, the corresponding equilibrium is also natural.

Dixit, Grossman and Helpman (1997) develop a more generalized version of the Grossman-Helpman model. Their main concern is the common agency model's assumption of a quasi-linear utility function for individuals which they claim is inappropriate by not allowing one to analyze the distributional concerns of policy making. Since quasi-linearity implies constant marginal utility of income for individuals, utility is assumed to be perfectly transferable between players in the common agency framework. By definition, utility is transferable if one player can transfer part of his utility to another player without altering the total utility of the group of players. It is thus assumed that an additional unit of money is valued equally by all players. Quasi-linearity therefore makes the agent's actions independent of the distribution of payoffs among the principals. Often however, wealthy and poor players may derive a different utility from the same amount of money, and in reality, politicians often care about income inequality. The authors remind that in many economic applications money itself is transferable but the players' payoffs are not linear in money. Their paper generalizes the common agency theory to handle such situations. The indirect utility function of individuals is assumed to be strictly increasing and strictly concave in income, and the marginal utility of income goes to infinity as a given lower bound to income is approached. The authors show that, even when utility is not transferable across players, the agent's actions in equilibrium still achieve a jointly efficient outcome.

Krishna and Mitra (2005) study the impact of unilateral trade liberalization by one country on its partner's trade policies. Specifically, they are interested in examining the question of whether unilateral trade liberalization by one country could induce reciprocal liberalization by its partner in the absence of any communication or negotiation between the two countries.

They find that such unilateral liberalization by one country has the effect of increasing the incentives for the export lobby in the partner country to form and to lobby effectively against the import-competing lobby there for lower protection.

The model of Krishna and Mitra considers a small open economy that trades with a large partner. The production side of the economy is assumed to consist of the production of three goods: an import-competing good, an exportable, and a numeraire good that uses labour alone. Each individual owns some of the specific factor used in the production of either of the goods. Formation of organized lobbies itself is treated as being endogenous, as in Mitra (1999). Free trade is the policy outcome if both industries are organized. In the initial situation, the import-competing sector in the small country is represented by an organized lobby but the exportable sector is not. Consequently, the country's trade policy vector, being determined between the import-competing group and the government, is characterized by import tariffs and export taxes; the latter aimed to lowering the lobby's cost of consuming the exportable good.

In this context, unilateral liberalization by the large partner country is shown to increase the incentives for the formation of an export lobby in the small country. This happens for two reasons. First, a higher world price of the exportable good, which is induced by the liberalization, makes the existing trade policy vector more costly for the export lobby. Secondly, at higher export prices, the import-competing lobby has incentives to lobby for a trade policy vector even more biased against the exporting lobby, further raising the incentives for formation of the export lobby. Once formed, this export lobby then competes with the import competing lobby in trying to reduce domestic tariffs and export taxes. Unilateral liberalization by one country therefore has a strategic effect on the relevant groups in the partner country so that ultimately freer trade is the outcome.

6 Ideas for further research

The preceding chapters have looked at early research on endogenous policy theory, at the emergence of the Grossman-Helpman model on the foundations of Bernheim and Whinston, as well as at more recent research based on common agency. A natural next step is then to look for aspects that the existing literature has not yet covered. In the pursuit of a common

agency model which would track the dynamics of real world politics, certain issues remain undiscovered. For instance, policies treated in the models are often chosen simultaneously with other policies, so this interdependence may need to be taken into account. In addition, there is a need for more studies with a dynamic framework that would take into account the long process of certain policy matters and the dimension of commitment to contribution offers and policy choices.

One basic assumption in common agency models is that SIGs use monetary contributions as an influence tool. However, lobbying can also consist of transmitting useful information to politicians, or, more specifically, of combined forms of these two activities that are usually treated as each others' substitutes. It is not yet well understood which way of influencing an interest group prefers, and what the relevant conditions for this choice are. A recent example of a model treating interest groups as providers of both information and contributions is the paper of Bennedsen and Feldmann (2006) which, however, does not apply the common agency framework. Their idea could nevertheless be reproduced in such a setting as well. The paper investigates what mix of instruments an interest group should choose, and how the use of one instrument affects the effectiveness of the other. The authors identify an information externality that raises the cost of offering contributions, and it is shown that this indirect search cost reduces the group's incentive to gather information when contributions are allowed.

The model set up of Bennedsen and Feldmann is the following: interest groups and a decision maker are uncertain about some aspect of a policy decision; depending on the true nature of the uncertain aspect, the decision maker prefers either an outcome that favours an interest group or one that harms it. The interest group has the ability to gather information that may reduce the uncertainty, and it may therefore be in the position to provide the decision maker with useful information. The interest group will naturally only gather and transmit the information if it is in its interest to do so. Alternatively or additionally, the interest group may take advantage of the decision maker's ignorance and induce her to choose the favourable outcome by offering campaign contributions.

Collecting information and deciding not to provide it to the decision maker is information in itself, and a rational decision maker will make use of it. Independently of whether the interest

group's search for information is observed by the decision maker, the collection of information creates an informational externality when it leads the decision maker to infer that the group is knowledgeable and is withholding its information. In conjunction with contributions, however, this information externality increases the cost of bribing the decision maker ex post. The information externality eventually reduces a single lobby group's incentive to search for information. The results are slightly different in the presence of competitive lobbying.

Moreover, as van Winden (2003) points out, there are multiple means and multiple channels for exercising lobbying, more than just contributions and information transmission. He adds structural coercion and representation on the list. Structural coercion refers to constraints on the behaviour of a policymaker which are not related to influence attempts. The behaviour of voters forms a constraint of this type. Through the use of endorsements, or campaign contributions after policies have been determined, interest groups may affect voting and thereby influence the political process. In case of representation, interest groups try to get their interests directly represented among the policymakers. This may be achieved in different ways: through multiple positions and penetration where, for example via an election, a position of policymaker is obtained, or through 'revolving doors' (i.e. offering future career opportunities for politicians), or even through the development of social ties and affective bonds with politicians.

There are no common agency models yet incorporating these means of influence. Extension of the so-called citizen-candidate model of representative democracy (see e.g. Besley and Coate, 2001) may be helpful, though, to deal with the penetration aspect. Real world representation of SIGs in the legislative process is reflected in the fact that the European Commission's expert groups, which play an important role in the early stages of EU decision making, welcome outside input at the drafting stage. Thus, interest groups that get consulted are given a privileged access in the legislative process. As a consequence, these expert groups are a major focus for lobbyists (representing mainly business interests), who often succeed in getting a seat or even a position of dominance there (Corporate Europe Observatory, 2007).

Reputation and credibility are issues that are often emphasized in the context of lobbying. Although the Commission is considered open and accessible, an interest group's effectiveness

in influencing policy directly is determined by its ability to establish a positive reputation in the European political process (Coen, 2007). That is, by the extent to which it can establish its reputation as a provider of reliable, issue-specific and pan-European information. As an example, Nokia has managed to successfully build up a reputation of a reliable source of information which has given it a remarkable power in drafting policies that affect its own business environment (Kauppalehti, Jan 22, 2009).

In the case of Nokia, two aspects are pronounced: credibility and direct influencing. In the turn of the millennium, Nokia started to lobby the Commission directly instead of relying on professional lobbies, and today, Nokia is among the very few Finnish companies that have managed to influence the EU legislation. In fact, the emergence of some 200 private lobbying agencies of firms in Brussels reveals that direct influencing has gained support and that the corporate lobbying activities are becoming more and more professional. After the establishment of a private lobbying agency in 1994, Nokia has managed to build up credibility and a solid reputation in relation to the Commission and is now able to have its say in issues that are related to its business activity. Thus, credibility and a good reputation clearly improve an interest group's stand in the game, so that incorporating this aspect into the models might offer new insights. A more widespread use of dynamic common agency settings may be useful in addressing this topic.

Persson, Tabellini, and Roland (2000) discuss the institutional differences between a congressional regime of the U.S. type and a parliamentary regime of the European type. According to them, lobbying is quite fragmented in the United States as interest groups interact mainly with individual lawmakers. In Europe, on the other hand, interest groups are generally larger and have more symbiotic relations with political parties. This pattern could reflect the differences across political regimes: presidential-congressional regimes have greater separation of proposal powers among individual legislators, whereas the institutions of parliamentary regimes produce legislative cohesion in the form of stable coalitions within and across parties. This being said, models focusing on policy making in a country with a certain political regime should pay attention to the specificities in the institutional structure of the government which determines to some extent the role and activities of SIGs.

Other issues to be still taken into account include for example the impact of emotions and feelings in decision making, and the internal dynamics of interest groups. Affective social ties in the interaction between a policymaker and an interest group would not only imply that the former may be willing to benefit the latter without compensation, but also that the interest group may care about the interests of the policymaker. In addition, interest groups are commonly assumed to act as single, unitary actors. Nevertheless, the internal cohesion and dynamics of group members has an impact on the lobbying efficiency of the group, so SIG heterogeneity on this dimension may be as well be a fruitful addition to the models.

7 Conclusion

This study has reviewed models of endogenous policy theory, and in particular the most recognized contribution to the literature, namely the common agency model of Grossman and Helpman (1994). The aim has been to build a fairly broad picture of how the Grossman-Helpman model compares with preceding endogenous policy models and how the common agency tradition has developed in theoretical literature since the introduction of the Protection for Sale article in the early 1990s.

The political contribution approach of Grossman and Helpman was an advancement in relation to earlier approaches for treating endogenous political decision making in that it provided stronger microfoundations for the government's and lobbies' objective functions. It also offered a pluralistic view of the political decisions by including all actors involved in the process; the government or politician, interest groups as well as all sectors of the economy. As a consequence, the model does not include black boxes which some of its earlier counterparts were guilty of. One central process is however treated as exogenous; the equilibrium number of organized interest groups is taken as given and thus the factors that drive the formation of lobby groups lack a comprehensive treatment in the Grossman-Helpman model.

This shortcoming, as well as some other abstentions from reality of the basic model, have however been discussed in later research literature. The issue of endogenous lobbies has been tackled insightfully by Mitra (1999) whose augmented version of the Grossman-Helpman model has gained recognition and a kind of status as the standard model of endogenous lobby

formation. The essence of Mitra's work was to add one preliminary stage to the GH model, where SIGs decide whether to get organized and face the fixed costs, but also the lobbying possibilities, that it brings about.

Other issues added to the basic model include asymmetric information and hierarchical government structure both of which have attracted several academic contributions during the 21st century. Asymmetric information may actualize as uncertainty about the weight that the politician puts on social welfare, about the politician's ideological strength, about his policy preferences, or about the distribution of power in the government's decision-making process. The treatment of structural hierarchies offers also numerous alternatives for modelling purposes, as the hierarchy may come about in the separation of a legislature and a bureaucracy, a president and a parliament, or a national versus a municipal tier to name only a few. Common for the results obtained from the models treating information asymmetries and hierarchical governments is that in both of the settings the influencing power of SIGs is clearly weakened in the political process.

Other aspects that have been given attention in recent common agency literature are for example the inclusion of a foreign government or multiple agents in the model, the analysis of non-quasilinear individual preferences, other than truthful contributions and equilibria, and dynamic game-theoretic settings. All these contributions have enriched the basic Grossman-Helpman model and proved its usefulness in more general settings than mere trade policy formation.

The multiplicity of existing models speaks of the multiplicity of forms that lobbying can take and the complexity of political decision-making processes. Thus, it is natural that there remain still issues that the existing common agency models have neglected. Some ideas and thoughts that have surfaced while going through the surveyed literature were spelled out in the last chapter in order to offer some kindling for further research. There seems to be a need for more research with a dynamic perspective and for more models that combine contribution offers with informative lobbying. Research also needs to go beyond the common assumption of exogenously given groups that are of fixed size and behave as unitary actors. Despite the general recognition of the Olsonian hypotheses on the logic of collective action, the

formation, dynamics, and internal politics of interest groups are also still generally neglected topics in common agency models.

Besides contributions and information transmission, other forms and channels of influence, such as interest group's penetration into actual politics, and socio-emotional ties to politicians, could also be discussed in common agency models. Furthermore, the tendency of individuals to base their decisions on feelings and emotions instead of rational reasoning, could generate new insights if parameterized in the models. Finally, credibility and reputation building seems to be crucial in real life lobbying so that this aspect, along with other aspects arising out of empirics, could get more accentuated in theoretical research.

As a final remark, while a long list of neglected topics in common agency models could be drawn, there remains a trade-off between the inclusion of realistic, often complicative assumptions, and the traceability of the model. Therefore, it is sometimes justified to leave aside certain additional assumptions, however realistic they might be, that seem to weaken the message or the ease of use of the model. This should naturally not discourage further research on the topic of special interest groups and their influence in policy formation.

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