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DOTTORATO DI RICERCA IN

European Doctorate in Law and Economics (EDLE)

Ciclo _XXVI______

Settore Concorsuale di afferenza: 13/A2

Settore Scientifico disciplinare: SECS-P/02

TITOLO TESI

Regulating State Aid: Inter-jurisdictional competition, public choice, and corporate governance

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Esame finale anno __2014________

Regulating State Aid:
Inter-jurisdictional competition, public choice,
and corporate governance

Regulering van overheidssteun:
Inter-jurisdictionele mededinging, public choice en
corporate governance

Proefschrift ter verkrijging van de graad van doctor aan de
Erasmus Universiteit Rotterdam op gezag van
de rector magnificus
Prof.dr. H.A.P. Pols
en volgens besluit van het College voor Promoties

De openbare verdediging zal plaatsvinden op
dinsdag 24 juni 2014 om 13.30 uur
door

Philip Cosmo Hanke
geboren te Wenen, Oostenrijk

Promotiecommissie

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This thesis was written as part of the European Doctorate in Law and Economics programme

A collaboration between

Acknowledgements

My thanks go to Klaus Heine, who was my thesis supervisor and provided constant encouragement combined with good advice. Working on this dissertation, and co-authoring papers with him has been an amazing learning experience.

I wrote this dissertation within the framework of the European Doctorate of Law and Economics. Therefore, I would like to thank all the people at the program's three partner universities for facilitating my stay and making this thesis possible. I was lucky to receive an ERASMUS MUNDUS scholarship for the duration of the program and am very thankful for that. The members of the inner committee, Thomas Eger, Ann-Sophie Vandenberghe, and Louis Visscher, are to be thanked for their comments, which greatly improved this thesis.

In Rotterdam, I would like to thank Marianne Breijer, Simone Rettig, and Wicher Schreuders, as well as all the staff of the Rotterdam Institute of Law and Economics who accommodated me for the biggest share of my PhD studies. In Bologna, I want to thank Luigi Franzoni and Lisa Verniti. At Hamburg University, my thanks go to David Börn, Patrick Leyens, and Frauke Schmidt. During the writing of this book, I had the chance to spend time at Tel Aviv University. Sharon Hannes, the staff of the Law School, and its PhD students are to be thanked for their kind hospitality.

Academic work thrives on intellectual exchange. I therefore want to thank my fellow PhD students, as well as all the participants of the various conferences in Austria, Canada, Germany, the Netherlands, the United Kingdom, and the United States at which I presented parts of this dissertation for their comments and critical questions. Participation

in the conferences was also made possible thanks to a contribution by the Trustfonds of Erasmus University Rotterdam. I furthermore thank the people who took the time to discuss parts of my dissertation. These include Florian Baumann, Dhammika Dharmapala, Anna Maria Doose, Christoph Engel, Wolfgang Kerber, Dennis Mueller, Kenneth Thomas, and Joel Trachtman. In addition, I want to thank two anonymous referees of *Managerial and Decision Economics* for valuable comments. I also want to thank Wolfgang Weigel of Vienna University for inspiring me to embark on this journey into law and economics.

Finally, I want to thank Barry and Cornelia Britton, as well as Andrea and Klaus Nierlich and the rest of my family for their never-ending support throughout my studies. Thank you, Alexandra Gaviria, for your love and support!

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List of Abbreviations

AIT	Agreement on Internal Trade
APEC	Asia-Pacific Economic Conference
ARRA	American Recovery and Reinvestment Act
ASEAN	Association of South-East Asian Nations
ATBMS	Affecting Trade Between Member States (in the sense of article 107 TFEU)
CARICOM	Caribbean Economic Community
CBA	Community Benefit Agreement or Cost-Benefit Analysis
CEO	Chief Executive Officer
CFI	Court of First Instance
CJEU	Court of Justice of the European Union
CME	Coordinated Market Economies
CoC	Code of Conduct
CPI	Corruption Perception Index
CRD	EU Capital Requirements Directive
DG	Directorate General (of the European Commission)
DWL	Dead-weight loss
EC	European Commission
ECJ	European Court of Justice (part of the CJEU)
EU	European Union
FDI	Foreign Direct Investment
FSB	Federation of Small Business (UK)
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product

IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
KfW	Kreditanstalt für Wiederaufbau
LME	Liberal Market Economies
MBAF	Minnesota Business Assistance Form
MEA	More Economic Approach
NTB	Non-Tariff Barrier to Trade
PGE	Permanent Group of Experts (WTO)
R&D	Research and Development
R&R	Rescue and Restructuring
RAG	Regional Aid Guidelines
SAAP	State Aid Action Plan
SAC	State Aid Control
SCM	Agreement on Subsidies and Countervailing Measures (WTO)
SGEI	Services of General Economic Interest
SME	Small and medium-sized Enterprises
TARP	Troubled Asset Relief Program
TEC	Treaty establishing the European Community
TEU	Treaty of the European Union
TFEU	Treaty on the Functioning of the European Union
TI	Transparency International
UK	United Kingdom
U.S.	United States
WTO	World Trade Organization

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- *Baldwin v. Fish and Game Commission of Montana*, 436 U.S. 371 (1978)
- *Camps Newfound/Owatonna, Inc. v. Town of Harrison*, 520 U.S. 564 (1997)
- *Charter Township of Ypsilanti v. General Motors Corp.*, 201 Mich. App. 128, 506 N.W.2d 556 (1993)
- *City of Columbia v Omni Outdoor Advertising, Inc.*, 499 U.S. 365 (1991)
- *Cooley v. Board of Wardens*, 53 U.S. (12 How.) 299 (1852)
- *DaimlerChrysler Corp. v. Cuno*, 547 U.S. 332 (2006)
- *Federal Trade Commission v. Phoebe Putney Health System, Inc, et al., 568 U.S. (2012)*
- *Hughes v. Alexandria Scrap Corp.*, 426 U. S. 794 (1976)
- *New Energy Co. of Ind. v. Limbach*, 486 U. S. 269 (1988)
- *Reeves, Inc. v. Stake*, 447 U.S. 429 (1980)
- *Smith v. Turner; Norris v. Boston*, 48 U.S. 283 (1849), also referred to as the "Passenger Cases"

- *West Lynn Creamery, Inc. v. Healy*, 512 U.S. 186 (1994)

- *White v. Massachusetts Council of Construction Employers, Inc.*, 460 U.S. 204 (1983)

European Union[1]

Treaty

Articles 107-109 TFEU, as well as Article 3 TEU, Articles 3-6 TFEU, Article 14 TFEU, Article 42 TFEU, Article 50 (1) and 50 (2) (h) TFEU, Article 93 TFEU, Article 106 TFEU, Article 119 TFEU, Article 346 TFEU, Protocol (no. 26) on Services of General Interest, Protocol (no. 27) on the Internal Market and Competition

Guidelines, communications, and resolutions

2004/C 244/02	Community Guidelines on State Aid for Rescuing and Restructuring Firms in Difficulty
2008/C 270/02	Communication from the Commission on the application of State aid rules to measures taken in relation to financial institutions in the context of the current global financial crisis
2009/C 16/01	Temporary Community framework for State aid measures to support access to finance in the current financial and economic crisis
2010/C 117 E/26	European Parliament resolution of 25 March 2009 on the future of the automotive industry
	Annex IIIA of Commission Regulation (EC) 794/2004 (OJ L 140, 30.4.2004)

[1] An exhaustive compilation of all applicable rules applicable to state aid can be found at http://ec.europa.eu/competition/state_aid/legislation/compilation/toc_02_10_2012_en.pdf

European Court of Justice

C-41/90	Klaus Höfner and Fritz Elser v Macrotron GmbH [1991] ECR I-1979
C-379/98	PreussenElektraAG v. Schleswag AG, [2001] ECR I-2009
C-730/79	Philip Morris v Commission [1980] ECR 2671
C-234/89	Stergios Dilimitis v. Henninger Bru AG [1991] ECR I-935
C-280/00	Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH [2003] ECR I-7747
C-57/00P	Freistaat Sachsen v Commission [1999] ECR II-3663
T-171/02	Regione autonoma della Sardegna v Commission [2005] ECR II-2123

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CHAPTER 1

Introduction

Subsidies and other forms of state aid to firms can be an important instrument in the toolkit of politicians in order to pursue their objectives, while the regulation of state aid can put significant constraints on governments' decision-making (de Cecco, 2013). European state aid control, in particular, is concerned with maintaining competition among firms without distortion by state interventions (Kerber, 1998). Yet, state aid control not only protects competition among firms, but is at the same time also an instrument to conduct industrial policy (Gómez-Barroso and Feijóo, 2012). In order to fully understand the possible effects of state aid and to design an optimal regulatory design, it is crucial to disentangle the various processes concurrently at work and to consider them against the backdrop of the institutions in which they take place.

Modern societies are characterized by delegation. Citizens elect representatives to act on their behalf. Shareholders of a firm hire managers to take care of the day-to-day business. In many occasions, but especially in times of crisis, these agents get together and strike deals. Governments might pledge tax cuts or subsidies if the managers agree to build a manufacturing plant within the state's jurisdiction. Governments might also want to rescue an ailing firm and save jobs.

The normative question whether governments should be allowed to do that is non-trivial and has been the subject of debate for decades. However, much of this literature has to be re-discussed in the light of

the agency problems involved. Politicians as well as managers have to be analyzed as self-interested actors. This means that managers might demand subsidies and use them in a way that is against the interest of the firm's owners, e.g. to follow their hubris and empire building strategies or to gain access to cash-flow which could be diverted into their own pockets. Conversely, politicians, trapped in a race between jurisdictions and acting in their own interest, might end up handing out subsidies or bailing out firms although this is not desirable from a welfare point of view. Importantly, most of the decisions take place in a setting of risk and fundamental uncertainty. All this can lead to unwanted effects.

Subsidies to firms, be they relocation incentive packages or bailouts, have been debated from different angles and under different legal regimes. The European Union discusses the topic from the perspective of competition law and favors an approach enforcing a level-playing field between firms. The United States, on the other hand, believes more in inter-jurisdictional competition while the criticism of this regime, mostly voiced by NGOs, revolves around the concern of what is polemically called "corporate welfare" (Slivinski, 2007). In other words, the European literature discusses state aid as an economic order, whereas the American literature focuses more on the contracting problems and the rent-seeking aspects. Both worlds can learn from each other, and combining those views is the goal of this book.

The financial crisis has led to a surge in bailouts and subsidies. Some industries, foremost the banking sector in the U.S. and Europe, have been *de facto* nationalized. Without discussing each case in detail, it is nevertheless crucial to understand the political processes involved and the redistributions taking place. While subsidies to firms can contribute to the stability of a financial or industrial system and can be justified in the presence of market failures (e.g. under-investment in research and development or training), they also bear the risk of questionable redistribution. For instance, a majority with strong preferences for a good produced by a firm receiving state aids could redistribute income from a minority with weak preferences for said good by levying a tax and using these funds to lower the price of the good.

A jurisdiction might for instance invest in big infrastructure works (such as expanding their highways or airports) – infrastructure works that only increase welfare if any firm actually decides to relocate to this

jurisdiction. Similarly, jurisdictions might have to pay out subsidies to other firms or reduce their tax base below the desired tax rate solely to build up a reputation as an attractive location, even though those other firms either never threatened to leave or would have come anyway.

Furthermore, decisions are made under uncertainty. Politicians seeking investments have only limited information about firms. They do not know the firms' cost functions and do not know to what degree subsidies and other state aids account for in their decision on relocation or shutdown. It is also not always known how quickly a firm that has gone into bankruptcy or left the market will be replaced.

As a result of the agency problems involved, obsolete and possibly harmful industries might be kept alive and public funds might end up in the pockets of corrupt politicians, lobbying groups, and ill-monitored firm managers.

The literature on subsidies implicitly conceives state aid as always beneficial to the aid-receiving firm. However, the picture changes once agency problems are assumed between the managers and owners of the firm. In this case, subsidies may not only run counter to the desired result of the aid grantor, but also to the interests of firm owners. Managers may divert subsidies into their own pockets, thereby reducing the value of the firm. With separation of ownership and control, self-interested managers acquire state aid not necessarily in the interest of the firm's shareholders (but instead for empire building, for example) or refuse subsidies to avoid the terms and conditions that they come with. This leads to two questions. Firstly, how should shareholders set up the corporate governance structure of the firm? Keeping managers at arm's length gives the latter the discretion to engage in tax-avoiding and rent-seeking activities, but also enables them to accrue more private benefits at the shareholders' expense. Secondly, what does this mean for regulatory bodies? Since shareholders are subject to costly coordination and contracting problems, any regulation of subsidies (e.g. European state aid control) should take corporate governance issues into account. Again, risk and uncertainty play a role. The shareholders, giving the managers some degree of discretion, do not know exactly how they will act and how much of the income they will report accurately.

In summary, this book pinnacles around three paramount concepts:

- Inter-jurisdictional competition, that is, a race between various

levels of government for jobs and firm location,

- Delegation, that is, politicians and corporate executives acting in their own interest or the interest of lobbying groups, and
- Decision-making under risk and uncertainty.

It proposes a view that reconsiders European state aid control as an economic order in light of the potential contracting problems involved.

1.1 The law and economics of state aid (control)

As Dewatripont and Seabright (2006) point out, there is something highly peculiar about state aid control. Unlike competition law, where the public authorities intervene in the decisions taken by private firms in order to protect competition, state aid regulation establishes an authority or mechanism that intervenes in spending decisions taken by other public authorities. Law and economics of state aid control is therefore concerned with the behavior of the state, and not necessarily the behavior of the private actors. In matters relating to the granting of subsidies to firms, the government is not a black box anymore. In fact, what is subject to analysis is the competition between several governments which may or may not be subject to another government that controls their actions and interactions. While the government is sometimes understood as a possibly benevolent social planner, the participation of governments in competitions for capital can be seen as a wasteful process.

Paradoxes arise also when we look at which areas of the world currently implement some sort of state aid control. Interestingly, the U.S. federal government would be the top candidate for interventions against its federal entities - given the high degree of interdependence between the state level and the federal level, the federal government has a stronger levy (for instance, and this has happened in the past, the federal government could threaten to withdraw federal highway funds if certain policy demands are not met, such as raising the drinking age to 21 years (Thomas, 2000)). We rather observe something different: the region with the most sophisticated state aid rules is the European Union, a structure

of independent states with a very weak supranational component (the European Commission).

All those decisions take place in full knowledge of the fact that nowadays there are no closed economies anymore. Jurisdictions, whether they want it or not, are engaged in an at least regional, but often even worldwide competition for capital. Their decisions can also produce externalities on other jurisdictions. The topic is relevant at the international level, but also within states, and especially in federal states[1]–an institutional setting home to nearly half of the world's population in 28 countries (Anderson, 2010).

Figure 1.1 illustrates the nexus of competition among firms and among jurisdictions. Competition among firms is regulated by competition policy at the lower level of jurisdiction[2]. At the same time, the jurisdictions are in a competition themselves. The regulation of this competition would then be done by a higher level of government, as it is the case in Europe.

1.2 The state as a firm

After reiterating the notion of a double competition (between firms and between jurisdictions), this book will temporarily abandon the paradigm of ensuring a "level playing field" (Kerber, 2011) and instead introduce an approach in which the state's function is primarily to maximize the utility of its citizens. Its role thus is much more than just enforcing private contracts and providing order. As such, the state actively engages in a market as an "agent" in order to maximize the utility of its "principals." The relations between the state and its citizens could then be compared to those between a firm and its stakeholders (shareholders

[1] What exactly constitutes a federal state is debatable. The following definition shall apply: "Federalism is a constitutionally established system with at least two orders of government each of which has some genuine autonomy from the other. The governments at each level are primarily accountable to their respective electorates." (Anderson, 2010, p. 1)

[2] In some legal systems, competition among firms can also be regulated by a higher level of government if the market spans several jurisdictions. The intertwined system of European competition law and EU member states' competition laws is an example. Similarly, in the United States, the Sherman Act and individual state antitrust laws allocate the regulation of competition to the state and to the federal level.

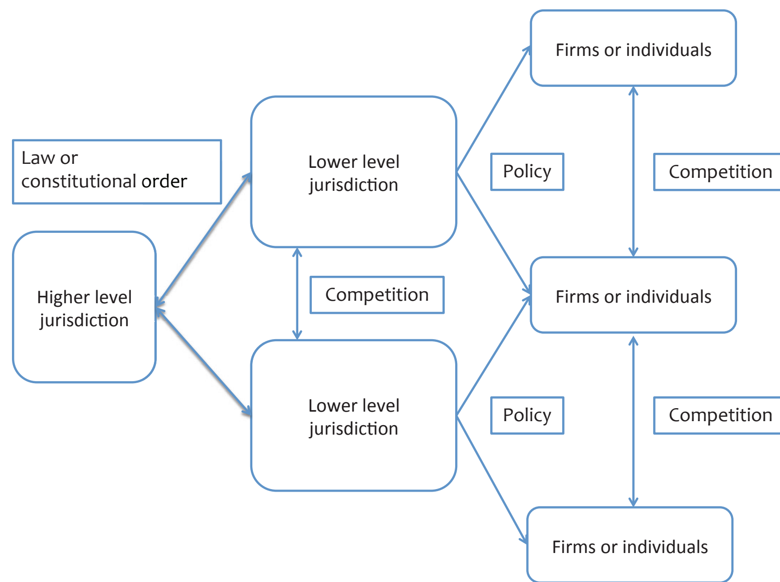

Figure 1.1: The inter-jurisdictional and inter-firm competition perspective on state aid

and workers). This view has previously been formulated for instance in Auster and Silver (1979) in their book entitled "The State as a Firm".

The angle from which this book tries to approach the topic of state aid regulation is one in which the focus is not only on the potential externalities produced, but rather on the utility-maximizing behavior of the state and the competition between jurisdictions. One of the contexts is the European common market, which prohibits state aids. The EU's approach to state aids is also an important starting point for other aspects of EU economic policy, such as the ongoing process of tax harmonization (Besley and Seabright, 1999) – by the way an example of an area in which some claim that competition is not functioning properly (Sinn, 1990). This European approach will be compared to the approach taken by the United States and at the international level.

The goal is to find determinants – economic and institutional – to explain the state-aid-granting behavior of governments and to infer requirements for a supra-jurisdictional regulation of competition. To sum up, it can be said that the regulation of state aid never involves only one collective decision. Because of a worldwide tendency to abolish trade barriers and to create customs unions or even more integrated regional/continental arrangements, the number of actors and also the number of decisions to be made is strongly increasing. As the experience shows, there are severe problems of coordination, information, and decision-making. As Sykes (2010) points out, the topic is highly complex and economies are deeply interwoven, which is why it is virtually impossible to find universal answers in a purely static analysis.

1.3 Methodology

It is probably safe to say that government subsidies for private businesses are ubiquitous around the world. And yet, the legal frameworks under which they take place vary considerably. Three of those frameworks, for their form and substance, are especially noteworthy. First, there is the United States federal system mostly characterized by a "laissez-faire" approach. Secondly, there is the highly convoluted European Union State aid control mechanism. Thirdly, the World Trade Organization (WTO) features detailed but weakly enforced trade and subsidy rules (Sykes, 2010).

What is noteworthy about this observation is that – despite the fact that these three systems have been strongly interwoven for a considerable amount of time – there are no signs of any convergence of legal systems (ibid.). The obvious explanation therefore is that identifying optimal rules is – to say the least – very controversial and subject to an ongoing debate, to which this dissertation tries to contribute. This lack of cohesion and coherence is not only observed between systems, but even within.

Recent research hence argues in favor of a more dynamic approach. Instead of trying to identify an optimal rule, the spot (or more specifically: criticism) should rather be on changes in those rules (Sykes, 2010).

In an ideal world, it would be possible to compare a setting with a certain kind of regulation (e.g. state aid control) to a setting without this regulation. But, in matters of state aid, what is the baseline that regulation should be measured against? Demsetz (1969) warned of what he called the *nirvana fallacy*:

> "The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing 'imperfect' institutional arrangement. This *nirvana* approach differs considerably from a *comparative institution* approach in which the relevant choice is between alternative real institutional arrangements. In practice, those who adopt the nirvana viewpoint seek to discover discrepancies between the ideal and the real and if discrepancies are found, they deduce that the real is inefficient. Users of the comparative institution approach attempt to assess which alternative real institutional arrangement seems best able to cope with the economic problem; practitioners of this approach may use an ideal norm to provide standards from which divergences are assessed for all practical alternatives of interest and select as efficient that alternative which seems most likely to minimize the divergence" (Demsetz, 1969, p. 1, emphasis in the original, one footnote omitted).

Applying a nirvana viewpoint would require being able to characterize either a world with perfect state aid control, or one in which the state does not interfere with the economy. Obviously, neither is realistically possible.

Given the broadness of the field, many different approaches can be chosen to address the research questions. Empirical industrial organization allows to assess the effects of subsidies empirically at the firm-level. Much of the literature uses strategic trade theory as a framework for analyzing the welfare effects and the governments' incentives (e.g. Głowicka, 2008). Political economics allows to focus more narrowly on the institutional setting and the political, non-market processes.

The academic debate on the subject can be classified into five strands of literature (Martin and Valbonesi, 2006b):

- the strategic trade policy literature,
- the tax or regulatory competition literature,
- the rent-seeking approach,
- the two primarily policy-oriented literatures on state action under U.S. anti-trust policy and on
- the corresponding literature on EU state aid control.

State aid control exists since the 1950s (with its establishment in the early European Economic Community)–albeit to different degrees of enforcement. Therefore, the field of research is not new. But with increasing economic integration and globalization, new fields of research have opened up. This dissertation will focus on the decision-making processes–a topic that allows for methodological innovation, such as the use of empirical, quantitative methods, and that requires referring repeatedly to the existing branches of the literature. In the field of state aid, there have not been many endeavors to find insights from formal models. Seminal models were written by David R. Collie who approaches the topic from a strategic trade position (see section 3.1.2.2 in chapter 3 for a review). Other models focus less on the efficiency aspect of state aids, but more at the political, public choice aspects.

The methodological scope will also go beyond law and economics. As Kassim and Lyons (2013) notes, political science can and should contribute as well. State aid has been a blind spot for several social sciences: "... political scientists have typically regarded the EU's state aid policy as too technical, legal scholars often do not regard the state aid rules as part of competition law, and while economists have examined

the justifications for industrial policy, they have only recently considered the regulation of state aid to be worthy of serious interest" (Kassim and Lyons, 2013, p. 2). State aid control as a subject that has not gotten much attention by political scientists (Franchino, 2005), even though it touches upon a large variety of policy areas.

A methodological foundation is provided, *inter alia*, by public choice. "Public choice is a perspective on politics that emerges from an extension and application of the tools and methods of the economist to collective or nonmarket decision-making" (Buchanan, 1989, p. 13). In order to do so, he adds, a particular approach to economics is required. He introduces the distinction between the "catallactic" approach and the more familiar homo oeconomicus postulate on human behavior. The catallaxy perspective to politics models politics on the exchange paradigm as opposed to the politics-as-power perspective. While in reality politics always includes a component of power and is not just about voluntary exchange, it is up to political scientists, not economists to deliberate on this. Eventually, the constitutional perspective "emerges naturally from the politics-as-exchange paradigm" (ibid., p. 18). Politics is therein seen as a game and abandons the view of benevolent dictators who use their powers in some "public interest." The public choice perspective is then extended by the concept of the homo oeconomicus. The economic theory of politics, which derives from individual utility-maximizing choice behavior, is relatively recent. The task of such a theory is to apply a "great discovery" (Buchanan, 1989, p. 20) of classical economics to politics: "that individuals acting in pursuit of their own interests may unintentionally generate results that serve the overall 'social' interest, given the appropriate framework of laws and institutions." (ibid.) Thus, public choosers (voters, politicians, bureaucrats, etc.) should be modeled as utility maximizers. This economic theory of politics emerges as the combination of the politics-as-exchange paradigm with the postulate about human behavior. The constitutional challenge, as Buchanan (1989) puts it, becomes "one of constructing and designing framework institutions or rules that will, to the maximum extent possible, limit the exercise of such interest in exploitative ways and direct such interest to furtherance of the general interest."

As hinted at already above, constitutional economics looks at the choice within constraints, but, unlike "pure" economics, it also addresses

the choice of constraints. Given the popularity of game-metaphors in economics, Kerber and Vanberg (2001) condense it to the statement that “people cannot only advance their own interests by seeking *to play a given game better*, but also by seeking *to play a better game*” (Kerber and Vanberg, 2001, p. 51, emphasis in original). It follows the distinction established by Hayek (1969) between the order of rules and the order of actions. By applying the concept of the gains from trade to constitutional choice, the question is thus “how people can realize mutual gains from voluntary cooperation” (ibid.). The combination of the economic constitution and the order of actions build the economic system.

Vanberg (1997) describes the legitimate duty of the constitutional and economic scholar or advisor if voter-citizens have needs that are critical of full-fledged competition. He or she cannot simply argue in favor of the economic advantages of a competitive system without taking into account said preferences. The task can only be to lay out the various institutional arrangements that would be able to accommodate for such preferences, their functioning and the loss in goods they would entail. Weighing the various advantages and disadvantages and choosing an order, nevertheless, shall remain up to the judgement of the voter-citizen.

1.4 The research questions

The over-arching question in the literature on state aids is: What is the optimal legal rule or set of restrictions concerning the granting of state subsidies to private businesses? Since those subsidies are awarded by public jurisdictions, the legal rule applies either to the constitution or to the legal entity at a higher level, either within a federal system, in an international setting or in a *sui generis* setting such as the European Union. Generally speaking, the question is whether subsidies should be allowed at all. An immediate consequence of this question is the necessity to determine a legal rule that answers the following: What exactly constitutes a subsidy? There is a wide literature addressing those questions with very different results. The legal regimes in place, notably the WTO Agreement on Subsidies and Countervailing Measures and EU State Aid Law, define state aid to firms *prima facie* in a similar way, but with substantial differences in the details. While a general answer to the main question might never be found unambiguously, it is

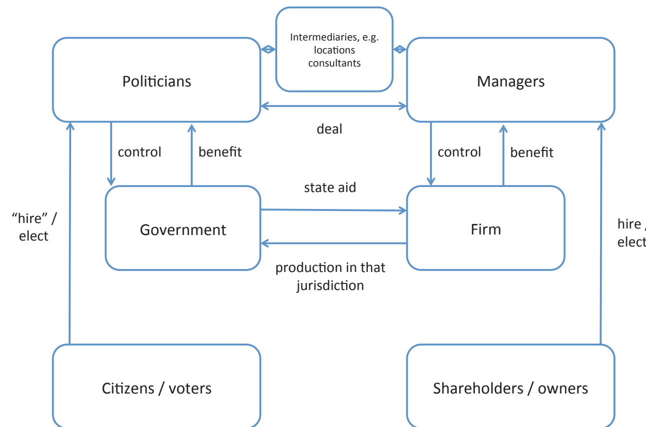

Figure 1.2: The principal-agent perspective on state aid.

possible to conceive new angles of approaching it. The issues of defining state aid, what kinds of state aid should be prohibited, and how the process should be regulated will be a recurring theme throughout this book.

The principal endeavor of this dissertation is to better understand the behavior of all actors involved in the state aid game. The idea is to further develop the view of the competition for capital and for state aid by applying the principal-agent perspective. First, different actors within jurisdictions have different interests when it comes to subsidizing firms. Similarly, different stakeholders within firms might have different interests when it comes to acquiring state aids for the firm. The main tool to understand political processes within jurisdictions is public choice, while firm behavior can be analyzed using agency-approaches.

Figure 1.2 illustrates the principal-agent perspective on state aid. While inter-jurisdictional competition and inter-firm competition still take place, this perspective abandons the monolithic view of the state and the firm. Instead, firms are seen as a nexus of stakeholders, of

which the separation of ownership and control is the most important feature. Similarly, the aid-granting entity is an institution controlled by politicians who were put in charge by the citizens of the jurisdiction.

This research design allows to do two things. First, it gives an explanation why rules are the way they are and what the problems in changing them will be. It would allow to better characterize firms that receive subsidies and to explain why they were chosen. How do state aid patterns differ between, say, the United States and the European Union? What are institutional, political determinants affecting the propensity to find an agreement?

Secondly, the aim is to learn something about the optimal design of rules. Those rules might come at different levels of government and might in some cases only have the character of mutual agreements.

1.5 Structure of this book

The steps to be taken are the following. Chapter 2 gives an overview of the rules currently in place in different parts of the world and relates them to each other. Chapter 3 will re-iterate the debates regarding the competition between jurisdictions and between firms. Chapter 4 critically assesses past state aid decisions and highlights some inherent problems. Chapter 5 is about opening the black boxes. It will look at the public choice of state aid – the political decisions involved – and also discuss the role of intermediaries in the negotiations between firms and governments. Chapter 6 focuses on the firm side of state aid and elaborates on the corporate governance issues at stake. Chapter 7 looks at the implications from this analysis, what it means for designing state aid rules, and the possible conflicts of interest. Finally, chapter 8 concludes.

CHAPTER 2

Different approaches towards the regulation of subsidies

Law and economics is probably the most interesting when we observe variety among the legal solutions to the problem at hand – an indicator of the fact that remedying it is non-trivial and controversial. And indeed how federal structures or regional groupings deal with competition between the various levels of government differs. The regimes currently in place almost constitute a continuum.

The following chapter reviews a couple of them. First, it will summarize the rules in place in the EU, then secondly the American approach, and thirdly the Canadian system as an example of an in-between approach. This task is important not only for the learning benefits inherent to comparative legal research, but also because of their relevance for regulation at the worldwide, that is, WTO level, which will be discussed fourth. How state aids are treated at the national or regional grouping level eventually affects the working of the larger global system.

2.1 The European Union

The European Union's approach is one of strict regulation. It is mainly led by considerations of market and political integration and cohesion.

The main concern is – just like in European competition law – the prevention of distortions of competition. The European state aid control regime is based on Articles 107 to 109 TFEU (formerly 87 to 89 TEC) and the various guidelines issued by the European Commission.

This regime and its developments (most interestingly: the more economic approach) are the subject of a host of publications (see e.g. Haucap and Schwalbe (2011) for a recent review; an exhaustive law and economics analysis of state aid law can be found in Nicolaides (2008)).

The following section gives a synopsis of the rules in place, the prevalence of state aid in Europe, and the current reform proposals.

2.1.1 Legal basis

The Treaty on the Functioning of the European Union (TFEU) lays out the framework for European State Aid Law.

Under the section "Aids granted by States", article 107 first formulates the prohibition of state aids in principle: "Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market." (Article 107(1))

It secondly briefly lists under which circumstances state aids shall or may be permissible (see section 2.1.3 of this chapter).

Article 108 empowers the European Commission (EC) to keep under constant review all state aid systems in place in the member states as well as to enforce the ban on certain kinds of state aids. In addition, it gives the European Council the discretion to unanimously decide to grant exceptions to the state aid rules under exceptional circumstances and upon application by a member state. The member states are obliged to notify the Commission about any plans to grant aid.

Article 109 gives the European Council the right to – on proposal from the Commission and after consulting the European Parliament – make any appropriate regulations for the application of Articles 107 and 108 and to determine the conditions in which the notification requirement shall apply and the categories of aid exempted from this procedure. As a result, the EU has enacted a number of guidelines for different kinds of aids.

There are two more sections in the TFEU that are relevant to the subject at hand. First, aiding domestic firms through preferential tax treatment is not permissible. Article 110 stipulates that no EU member state "shall impose, directly or indirectly, on the products of other Member States any internal taxation of any kind in excess of that imposed directly or indirectly on similar domestic products. Furthermore, no Member State shall impose on the products of other Member States any internal taxation of such a nature as to afford indirect protection to other products." Secondly, Art. 106 provides for a special treatment of services of general economic interest (SGEIs), which are exempt from state aid rules under certain conditions (see again section 2.1.3 of this chapter).

2.1.2 Definition of State Aid

European Law speaks of "State Aids to Undertakings." This is a very broad term encompassing more than just subsidies paid out to firms. First, it includes "any aid granted by a Member State or through State resources in any form whatsoever" (Article 107 TFEU). Secondly, the term "undertaking" as used in said article 107 is not a synonym for "firm" since undertakings can also refer to non-commercial market participants. The landmark case defining the term "undertaking" is Case C-41/90 (Klaus Höfner and Fritz Elser v Macrotron GmbH) in which the ECJ ruled that the word undertaking encompass "every entity engaged in an economic activity" (para 21). As such, a public hospital, or - as in the Macrotron case - an employment agency would be considered an undertaking, but not necessarily as a firm. Eventually, the ECJ had to clarify some issues. While Macrotron subjected all undertakings to European competition law (i.e., what is now articles 101 and 102), the famous Altmark judgement (C-280/00, 24.7.03) stipulated that, if certain conditions are met, compensation for the provision of services of general interest does not amount to state aid. Thus, in state aid contexts, the term "undertaking" would usually not include hospitals and employment agencies.

Taking articles 107 and 108 as starting points, the Commission and the European Court developed a legal definition of what constitutes state aid based on the following four criteria (Haucap and Schwalbe, 2011).

a. First, there needs to be some kind of transfer of government funds (be they direct or indirect). A transfer of government funds takes also place if the government is willing to forego certain revenues, such as in the cases of tax cuts or exemptions from certain fees. In particular, this means that regulation favoring certain firms, but which does not cost the state money, is not state aid. This constitutes a difference to WTO law (Ehlermann and Goyette, 2006) and applies for instance to some schemes that promote electricity generation from renewable energy sources, such as feed-in tariffs obliging network operators to pay higher prices for electricity generated from solar energy (see ibid., and case C-379/98, PreussenElektra AG v. Schleswag AG, [2001] ECR I-2099).

b. Secondly, this transfer of funds must confer an economic advantage upon a firm which it would not have gained otherwise. This means that a government can legitimately transfer money to firms for instance through a tender, as long as the state is not paying an excessive price for the contract. The idea is to allow government consumption as long as market prices are being paid.

c. Thirdly, transfers have to benefit specific firms in order to constitute state aid. For instance, if a government invests in infrastructure in a certain region in order to improve the region's competitiveness, thus benefiting all businesses equally, then this is not considered state aid.

d. Finally, the transfer must have an effect on competition and trade between two or more member states. The minimum amount of state aid at which the Commission considers it worthwhile to evaluate the possibly distortionary effect on competition is €200.000 (the so-called "de minimis" rule). If the transfer does not affect undertakings in other EU member states (e.g. because it is a subsidy for local services), then it is unobjectionable. An interesting case is when an aid does not affect other EU member states, but only non-member states. Theoretically, this kind of transfer would be legal, although in practice these kinds of arguments have rarely been successful (Quigley and Collings, 2003). The State Aid Action Plan (SAAP) of 2005 introduced the so-called "refined economic approach", which implemented both economic and legal analyses as the basis for the Commission's

decisions in their investigations of state aid cases (see also section 2.1.6).

If those four criteria are met, then there is state aid. But not all state aids are banned. Article 107, paragraph 3 lists exceptions from the general ban on state aid. In addition, article 108, paragraph 2, authorizes the European Council to determine types of state aid that are compatible with the EC treaty (upon request of a member state and acting unanimously).

It is also important to note that Article 107 only addresses state aid that "affects trade between Member States", meaning it applies only to aid that negatively affects trade among EU countries, but not between the EU and third countries. This explains why large subsidies for e.g. plane manufacturer Airbus are possible – its only competitor is U.S.-based Boeing (and to a lesser degree regional plane manufactures in Brazil, Canada, and Russia). Since European state aid rules pose a potential disadvantage for European firms vis-à-vis non-European firms, the EU endeavors to export its state aid rules to third countries (see section 7.3.6). EU state aid rules therefore also apply to the EFTA member states Iceland, Liechtenstein, Norway, and Switzerland. Association agreements with the accession candidate countries Macedonia, Serbia, and Turkey include provisions on state aid and public procurement, and so do the agreements with the associated countries Albania, Bosnia-Herzegovina, and Montenegro (Blauberger and Krämer, 2013).

2.1.3 Exceptions

There are three categories for exemptions from the ban on state aid: regional, horizontal, and sectoral aid. Article 107, paragraph 2, considers the following "compatible with the internal market" (that is, permitted): aid having a social character granted to individuals, aid alleviating the damages caused by natural disasters or exceptional occurrences, and aid to areas of Germany affected by the German division[1]. In paragraph 3, the article states aids that may be considered to be compatible with the internal market: regional aid to areas with serious underemployment

[1] This point was enacted before the German reunification and thus was meant to apply to Western German areas mainly along the boarder to the German Democratic Republic.

or low development, aid to help accomplish "an important project of common European interest" or to "remedy a serious disturbance in the economy of a Member State", aid to develop certain economic activities or certain economic areas, aid to promote culture and heritage conservation (all of those points always under the condition that the aid do not adversely affect trading conditions to an extent contrary to the common interest).

Although not of interest to this book, it has to be noted that Art. 42 TFEU establishes the prevalence of the common agricultural policy over competition and state aid rules. Art. 93 and 96 TFEU establish special state aid rules for the transport sector. An important field in which state aids are treated differently are so-called services of general economic interest (SGEI). Art. 106 TFEU states that undertakings are subject to competition and state aid rules only "in so far as the application of such rules does not obstruct the performance, in law or in fact, of the particular tasks assigned to them".

On 24 July 2003, the European Court of Justice delivered the landmark *Altmark* judgement, in which it held that public service compensation does not constitute State aid when all of four conditions are met:

1. "The recipient undertaking must actually have public service obligations to discharge, and the obligations must be clearly defined."

2. "The parameters on the basis of which the compensation is calculated must be established in advance in an objective and transparent manner, to avoid it conferring an economic advantage which may favour the recipient undertaking over competing undertakings."

3. "The compensation cannot exceed what is necessary to cover all or part of the costs incurred in the discharge of public service obligations, taking into account the relevant receipts and a reasonable profit for discharging those obligations. Compliance with such a condition is essential to ensure that the recipient undertaking is not given any advantage which distorts or threatens to distort competition by strengthening that undertaking's competitive position."

4. "Where the undertaking which is to discharge public service obligations, in a specific case, is not chosen pursuant to a public procure-

> ment procedure which would allow for the selection of the tenderer capable of providing those services at the least cost to the community, the level of compensation needed must be determined on the basis of an analysis of the costs which a typical undertaking, well run and adequately provided with means of transport so as to be able to meet the necessary public service requirements, would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations."[2]

If at least one of these four conditions is not met, then the public service compensation will be examined according to the state aid rules.

In December 2011 the EC issued a new set of rules pertaining to SGEIs increasing the *de minimis* threshold, altering the block exemption rules, and modifying the general framework of state aid rules regarding SGEIs.

2.1.4 Enforcement

European State Aid rules are generally enforced by the European Commission (EC). The EC acts in a double role, namely as the prosecutor as well as the judge of first instance of sorts. The Commission's decisions can be appealed to the European Court of Justice. As the designated regulator, it also issued a set of guidelines which set out certain amounts of permissible state aids for various situations (for a detailed description, see the appendices in Nicolaides et al., 2005). The procedural rules for the EU assessment of state aids are proscribed in "Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 [now Art. 108 TFEU, PCH] of the EC Treaty". This regulation has been amended after the accession of new member states.

Once an EU member state has plans to grant aid to an undertaking, it has to notify the Commission in due time and include all necessary information to enable the EC to adequately assess the case.

After the member state has duly notified the Commission about the intended aid scheme, the EC conducts a preliminary investigation in

[2] Case C-280/00, Altmark Trans GmbH and Regierungsprsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH

accordance with Art. 108 TFEU. This preliminary investigation must be completed within two months after the notification. If it finds cause for concern, it can open formal in-depth investigations and make a decision based upon its findings. During this process, the member state can amend its aid proposal (this can e.g. be done as a result of informal negotiations between the EC and the aid-granting government). The Commission can make its decision contingent on the fulfillment of certain conditions.

Sometimes, EU member states fail to notify the Commission. If the EC receives information about such an unreported aid (e.g. through a complaint by a competitor) within ten years of the awarding of the aid, the Commission may open investigations on its own. if the aid is found to be unlawful, the consequence can be an injunction or the order to recover the unlawful state aid. There is no punishment in the case of unlawful aid, other than an injunction or its recovery (it is then returned to the aid-granting entity). Furthermore, the member states have to deliver annual reports on all existing aid schemes. The Commission also has the power to conduct on-site visits to ensure the compliance with the rules. After the decision is rendered, the Court of Justice of the European Union has the role of enforcing the Commission's decision in case the member state does not comply.

2.1.5 Quantifying European state aid

The European Commission's Directorate-General for Competition monitors state aid in the EU and publishes data on a regular basis. According to the 2009 state aid scoreboard[3], the European Union member states spent a total of €73.2 billion or 0.62% of GDP (excluding crisis measures and railways) on state aid. When crisis measures are included, then the total amount is 427.4 billion or 3.62% of GDP. The last years' financial and economic crisis heavily distorts the data. When crisis measures are excluded, then the countries' percentages of GDP spent on state aid vary from 0.26% in the United Kingdom to 2.15% in Bulgaria. Before the crisis, there was a general trends towards less state aid. In 1992, the EU-15 spent 1.1% of GDP, which fell to 0.6% by the end of the decade and jumped from 0.5% in 2007 to 2.6% in 2008 with the onset of the

[3] Available online at http://ec.europa.eu/competition/state_aid

financial crisis.

In 2010, European Union member states granted a total of around €73.7 billion of non-crisis aid, equivalent to 0.6% of EU GDP. So-called crisis-related measures such as aids granted to the financial sector through recapitalization and impaired asset measures amounted to €121.3 billion or 1% of EU GDP. The 0.6% of EU GDP given to non-crisis aid can be broken down into €61 billion or 0.5% given to industry and services, €10.3 billion or 0.08% to agriculture (on top of agriculture subsidies paid for directly by the EU budget), €0.18 billion or 0.001% to fisheries, and €3.2 billion or 0.02% given to the transport sector. Furthermore (though aggregated through a different concept than the other aids and therefore not included in the total), EU member states paid €27.2 billion or 0.2% of EU GDP to railways . Distinction among aids can also be made by type. 85% of all state aid to industry and services was granted under horizontal objectives: 24.3% of total aid to industry and services as regional development aid, 23.7% for environmental protection, and 17.4% for research, development and innovation (R&D&I). Sectoral aid, which includes rescue and restructuring aid, make up the remaining 15% of total aid to industry and services.

Before granting state aid and implementing the measures taken, EU member states have to notify the European Commission (EC) and await the outcome of the Commission's investigation. If the states fail to do so, the state aid is considered unlawful. In the 2000-2010 period, the EC took 980 decisions on unlawful aid. The decisions were negative in 22% of the cases, leading to the requirement to recover the unlawful state aid, and in 3% of unlawful aid cares, conditions were attached to the decision. Among duly notified state aids, the EC's intervention rate is only one tenth of the intervention rate in unlawful aids (European Commission, 2011). It should also be noted though that in some more problematic cases there are informal negotiations taking place beforehand between member states and the Commission.

2.1.6 Conclusion and current reform processes

The European state aid control mechanism has constantly evolved in the past decades. Most recently, the EC's State Aid Action Plan of 2005 laid out a roadmap for state aid reform for the years 2005-2009. The motto and title of the plan was "less and better targeted state aid" (probably

not coincidentally mirroring the OECD's contemporary call for "less but better regulation"). This reform also included a consultation process and led to simplified rules and more block exemption regulations (the so-called *de minimis* rule).

In May 2012, the European Commission once more initiated a reform program. Its objectives are to "(a) foster growth in a strengthened, dynamic and competitive internal market", (b) "focus enforcement on cases with the biggest impact on the internal market", and (c) "streamlined rules and faster decisions"(European Commission, 2012).

The context of these objectives is clearly the economic crisis and the current need for both growth-enhancing policies and budget consolidation.

In its policy paper, the Commission's proposals include:

- "To identify common principles for assessing the compatibility of aid with the internal market, across various guidelines and frameworks"
- "To revise, streamline and possibly consolidate State aid guidelines to make them consistent with those common principles (first, the guidelines on Regional Aid, Research & Development & Innovation, Environmental aid, Risk Capital and Broadband; followed by other guidelines)"
- "To revise the Block Exemption Regulation and the Council Enabling Regulation (and, possibly, the de minimis Regulation)"
- "To clarify and better explain the notion of State aid"
- "To modernize the Procedural Regulation with regard to complaint-handling and market information tools" (ibid.)

As of the time of writing, many new state aid guidelines (e.g. regarding regional aid, R&D&I, or aviation) and regulations (e.g. general block exemption regulations, *de minimis* regulations, are at the consultation or post-consultation stage.

So far, this chapter considered the European Union as a monolithic block with a clear stance on state aid control. This view if not very accurate. Indeed, different agencies in Brussels might actually have different policy objectives and understandings of the need for state aid control.

The agency responsible for EU state aid control is the European Commission's Directorate-General for Competition's state aid division. This again underlines that European state aid control is primarily an exercise in competition law. At the same time, there are other DGs, which – even though not enforcing state aid law – operate in settings where states hand out money to firms. These might be, for instance DG Agriculture and Rural Development, DG Education and Culture, DG Mobility and Transport, and others. The policy goals of these DGs might diverge. Even though all DGs are bound by the laws of the EU Treaties, for instance, DG Mobility and Transport, primarily pursuing objectives of improved transport infrastructure, might favor a more lax stance towards aid to transportation companies than DG Competition, which is primarily concerned about distortions of competition.

2.2 The United States

At first glance, the United States does virtually not have a regulatory regime for public subsidies to firms. There are some provisions, such as that some federal funds may not be used to engage in pirating (that is, one state subsidizing a firm so that it relocates from another state) and also some states prohibit their local governments from this behavior. European State Aid Law is a sub-field of European Competition Law (it shares the same chapter with the anti-trust provisions and the rules against tax discrimination), but the American functional equivalent to European Competition Law, namely the Sherman Act, merely deals with anti-competitive behavior of private parties, applies only to interstate commerce and does not address the individual states. In this view, competition is threatened only by the acts of private actors, and not by government interventions. In various cases, such as *City of Columbia v. Omni Outdoor Advertising, Inc.*, 499 U.S. 365 (1991), courts (the Supreme Court in the mentioned case) ruled that local governments are basically exempt from antitrust regulation[4].

Of course, the American legal system must not be discussed solely on the basis of statutory laws, but the analysis also has to take into account

[4]In *Columbia v. Omni* it also ruled that political activity of a firm in order to achieve favorable regulation harming the competitor(s) is not subject to liability due to the Sherman Act.

the common law. Indeed, some (Wood, 2007) argue that the landmark case *Cuno v. DaimlerChrysler, Inc*[5] was – at least before it came to the Supreme Court – a move to rein in state aids in the United States under the Commerce Clause of the Constitution. Yet, the Supreme Court "never squarely confronted the constitutionality of subsidies,"[6] mainly because individual taxpayers do not have the standing to challenge governmental expenditures[7] (see e.g. Sykes, 2010).

Just as the legal regimes in place around the world and the (unfortunately ill-connected) literature discussing them varies, so does the vocabulary used. The American literature uses different terms than the European Union. The term "state aid" rather refers to aids to individuals, such as university scholarships. Aids given to firms (the term "undertaking" is not common in the U.S. in this context) are usually referred to either as "subsidies", or the broader term "(business) incentives". The equivalent of rescue aid in Europe is often simply called "bail-out."

2.2.1 The role of the Commerce Clause

Article I, Section 8, of the U.S. Constitution enumerates the powers of Congress, thus allocating certain authority to the federal level. Clause 3 of said section, known as the Commerce Clause, authorizes Congress to "To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes." The primary impetus behind the interstate commerce clause and allocating this power to the federal government were the tariff wars among the various states waged in the eighteenth century. Its goal is to assure the free flow of commerce in the newly created national market. Both Congress and the Supreme Court repeatedly interpreted the clause as a mandate to prevent any state measures with the goal of constraining interstate commerce (Enrich, 2006).

The Commerce Clause bans discrimination against out-of-state firms though, but applies rather to matters of discriminatory taxation and not to direct subsidies.

[5]386 F.3d 738 (6th Cir. 2004), vacated in part and remanded on other grounds, 126 S.Ct. 1854 (2006)

[6]Camps Newfound/Owatonna, Inc. v. Town of Harrison, 520 U.S. 564, 589 (1997)

[7]DaimlerChrysler Corp. v. Cuno, 547 U.S. 332 (2006)

2.2.2 The dormant Commerce Clause

The Commerce Clause primarily refers to the powers of Congress and as such falls into the realm of federal law. But this is not the whole story. In fact, there is the established doctrine of the so-called "dormant" or "negative" commerce clause which establishes that the clause also applies to the several states. This principle goes back to the middle of the 19th century, when the Supreme Court established that some state rules offend the Commerce Clause even when there is no conflicting act of Congress (Sykes, 2010). In Cooley v. Board of Wardens[8], it took a middle ground position between the view that the Commerce Clause precluded any state regulation of interstate commerce and the view that States could regulate without restrictions in fields in which Congress had not acted. In the earlier so-called Passenger Cases[9], the Supreme Court had asserted that it is the exclusive power of Congress to regulate interstate commerce.

When Ohio awarded tax credits against the Ohio motor fuel sales tax for ethanol to in-state producers or producers from states that gave reciprocal benefits to Ohio companies, the Supreme Court re-iterated the rule as follows[10]:

> "It has long been accepted that the Commerce Clause not only grants Congress the authority to regulate commerce among the States, but also directly limits the power of the States to discriminate against interstate commerce. See, e.g., Hughes v. Oklahoma, 441 U. S. 322, 441 U. S. 326 (1979); H. P. Hood & Sons, Inc. v. Du Mond, 336 U. S. 525, 336 U. S. 534-535 (1949); Welton v. Missouri, 91 U. S. 275 (1876). This "negative" aspect of the Commerce Clause prohibits economic protectionism – that is, regulatory measures designed to benefit in-state economic interests by burdening out-of-state competitors. See, e.g., Bacchus Imports, Ltd. v. Dias, 468 U. S. 263, 468 U. S. 270-273 (1984); H. P. Hood & Sons, supra, at 336 U. S. 532-533; Guy v. Baltimore, 100 U. S. 434, 100 U. S. 443 (1880). Thus, state statutes that clearly

[8] *Cooley v. Board of Wardens*, 53 U.S. (12 How.) 299 (1852)
[9] *Smith v. Turner; Norris v. Boston*, 48 U.S. 283 (1849)
[10] *New Energy Co. v. Limbach* , 486 U.S. 269 (1988)

> discriminate against interstate commerce are routinely struck down, see, e.g., Sporhase v. Nebraska ex rel. Douglas, 458 U. S. 941 (1982); Lewis v. BT Investment Managers, Inc., 447 U. S. 27 (1980); Dean Milk Co. v. Madison, 340 U. S. 349 (1951), unless the discrimination is demonstrably justified by a valid factor unrelated to economic protectionism, see, e.g., Maine v. Taylor, 477 U. S. 131 (1986)."

Consequently, the Supreme Court ruled this tax credit unconstitutional. In American Trucking Associations, Inc. v. Michigan Public Service Commission[11], it had to address the constitutionality of a $100 flat fee imposed by Michigan on trucks engaged in intrastate commerce. With regard to the Commerce Clause it emphasized:

> "Our Constitution 'was framed upon the theory that the peoples of the several states must sink or swim together.' Baldwin v. G. A. F. Seelig, Inc., 294 U. S. 511, 523 (1935). Thus, this Court has consistently held that the Constitution's express grant to Congress of the power to 'regulate Commerce ... among the several States,' Art. I, §8, cl. 3, contains 'a further, negative command, known as the dormant Commerce Clause,' Oklahoma Tax Comm'n v. Jefferson Lines, Inc., 514 U. S. 175, 179 (1995), that 'create[s] an area of trade free from interference by the States,' Boston Stock Exchange v. State Tax Comm'n, 429 U. S. 318, 328 (1977) (internal quotation marks omitted). This negative command prevents a State from 'jeopardizing the welfare of the Nation as a whole' by 'plac[ing] burdens on the flow of commerce across its borders that commerce wholly within those borders would not bear.' Jefferson Lines, supra, at 180."

The Court voted unanimously in favor of the Michigan Public Service Commission. The dormant commerce clause did not, Justice Stephen Breyer wrote, ban such a "neutral" and "locally focused fee." The reason is that it does not "facially discriminate against interstate or out-of-state activities or enterprises" since the fee applies to all intrastate transactions "applies evenhandedly to all carriers that make domestic

[11] 545 U.S. 429, 125 S.Ct. 2419, 2422-23 (2005)

journeys. It does not reflect an effort to tax activity that takes place, in whole or in part, outside the State."

This finding of the Supreme Court is conceptually not so far from the European ban on aids "affecting trade between member states" (which, given its importance as concept, can henceforth be abbreviated as ATBMS, as in Bergeron (2001)). As Wood (2007, p.7) points out, "if the logic behind the rules prohibiting discrimination and burden ons interstate commerce were carried through in the remainder of U.S. law in this field, U.S. law might not look too different from the law that exists in Europe". But there is a lack of consistency in the Supreme Court's holdings. It did not object certain State programs intended to foster business activities by means of subsidies, but rejected some State programs which tried to achieve the same goal by means of tax incentives (Hellerstein and Coenen, 1996; Wood, 2007).

2.2.3 The Massachusetts tax on milk

The case West Lynn Creamery, Inc. v. Healy is a landmark case with regard to subsidies[12]. It is also noteworthy that in its final ruling, the Supreme Court stated that the constitutionality of subsidies is yet undecided, but that they are usually not in conflict with the negative Commerce Clause:

> "We have never squarely confronted the constitutionality of subsidies, and we need not do so now. We have, however, noted that '[d]irect subsidization of domestic industry does not ordinarily run afoul' of the negative Commerce Clause. New Energy Co. of Ind. v. Limbach, 486 U. S. 269, 278 (1988); see also Hughes v. Alexandria Scrap Corp., 426 U. S. 794, 815 (1976) (Stevens, J., concurring). In addition, it is undisputed that States may try to attract business by creating an environment conducive to economic activity, as by maintaining good roads, sound public education, or low taxes. Zobel v. Williams, 457 U. S. 55, 67 (1982) (Brennan, J., concurring); Bacchus Imports, Ltd. v. Dias, 468 U. S., at 271; Metropolitan Life Ins. Co. v. Ward, 470 U. S. 869, 876878 (1985)."

[12] *West Lynn Creamery, Inc. v. Healy*, 512 U.S. 186 (1994)

This statement summarizes the state of affairs in the United States. The case concerning the Massachusetts tax on milk – and the controversy it stirred among the judges – is a good example of the ongoing policy debate which has not yet reached a clear result. It is also worth reading for its application of economic thinking to legal rules.

In the early 1990s, the price of milk plummeted in Massachusetts. As a measure to protect its dairy farmers, the Massachusetts Department of Food and Agriculture imposed a tax on all raw milk sold by milk dealers to retailers in Massachusetts. The revenue of this tax was then given as a direct subsidy to in-state dairy farmers. The overwhelming majority of the milk was produced out of state and the in-state farmers received a portion of that revenue based on their contribution to the state's total production of milk.

Two milk dealers negatively affected by the tax then brought it to court (after first refusing payment, they were seeking an injunction against enforcement of the order based on its alleged violation of the Commerce Clause).

The case first went to the Superior Court of Suffolk County which denied relief and as a result of which the dealer's licenses got conditionally revoked. The Supreme Judicial Court of Massachusetts concurred with the lower court, finding that the benefits of the tax to the state's dairy industry outweighed the incidental burden on interstate commerce. Yet, when the case came to the Supreme Court, it was ruled unconstitutional:

> "Its avowed purpose and its undisputed effect are to enable higher cost Massachusetts dairy farmers to compete with lower cost dairy farmers in other States. The 'premium payments' are effectively a tax which makes milk produced out of State more expensive. Although the tax also applies to milk produced in Massachusetts, its effect on Massachusetts producers is entirely (indeed more than) offset by the subsidy provided exclusively to Massachusetts dairy farmers. Like an ordinary tariff, the tax is thus effectively imposed only on out-of-state products. The pricing order thus allows Massachusetts dairy farmers who produce at higher cost to sell at or below the price charged by lower cost out-of-state producers [Footnote giving a numerical example omitted, PH]. If there were no federal minimum prices for milk, out-of-state

> producers might still be able to retain their market share by lowering their prices. Nevertheless, out-of-staters' ability to remain competitive by lowering their prices would not immunize a discriminatory measure. *New Energy Co. of Ind. v. Limbach*, 486 U. S., at 275. In this case, because the Federal Government sets minimum prices, out-of-state producers may not even have the option of reducing prices in order to retain market share. The Massachusetts pricing order thus will almost certainly 'cause local goods to constitute a larger share, and goods with an out-of-state source to constitute a smaller share, of the total sales in the market.' *Exxon Corp. v. Governor of Maryland*, 437 U. S. 117, 126, n. 16 (1978). In fact, this effect was the motive behind the promulgation of the pricing order. This effect renders the program unconstitutional, because it, like a tariff, 'neutraliz[es] advantages belonging to the place of origin.' *Baldwin*, 294 U. S., at 527."[13] [Footnotes omitted]

The case caused some controversy within the Supreme Court. The majority opinion (written by Justice Stevens, joined by Justices O'Connor, Kennedy, Souter, and Ginsburg) argued that the milk tax and subsidy scheme was tantamount to a tariff imposed on out-of-state producers.

Justice Scalia concurred but disagreed with the reasoning of the court (and was joined therein by Justice Thomas). He saw the judgement in line with the jurisprudence of the Supreme Court, but disagreed with the reasoning of Stevens et al. He develops two criteria at least one of which has to be met in order to have the dormant commerce clause enforced against state law: (a) there has to be facial discrimination against interstate commerce, or (b) the measure is indistinguishable from a law previously held unconstitutional by the Supreme Court. The criterion met in this case was criterion (b), in his opinion. In his opinion, the Court takes too negative a view on subsidies in general though, and excessively expands the law.

Justice Scalia discusses four possible tools enabling a state to produce the economic effect that Massachusetts has produced:

1. a discriminatory tax upon the industry, imposing a higher liability

[13] *West Lynn Creamery, Inc. v. Healy*, 512 U.S. 186 (1994)

on out-of-state members than on their in-state competitors

2. a tax upon the industry that is nondiscriminatory in its assessment, but that has an “exemption” or ”credit” for in-state members

3. a nondiscriminatory tax upon the industry, the revenues from which are placed into a segregated fund, which fund is disbursed as “rebates” or “subsidies” to in-state members of the industry

4. with or without nondiscriminatory taxation of the industry, a subsidy for the in-state members of the industry, funded from the State’s general revenues

Cases one and two, Scalia argues, have been deemed unconstitutional for long. Case three is the setting of the Massachusetts milk tax. Case four would be an extension of existing jurisprudence and in Scalia’s view has already been rules constitutional in previous cases[14]. The difference between scenario 2 and scenario 3 is minimal - in the third case, money is first taken from the favored in-state firm and then returned afterwards, while it is not levied in the first place in case two. It therefore has to be rejected in order to be in line with Supreme Court case law. As for the difference between method 3 and method 4, the crucial point is the existence of discriminatory taxation. Scalia would consequently allow state subsidies to its domestic industries as long as they are being funded from a general revenue fund filled up by nondiscriminatory taxes. And here, Scalia makes a public choice argument: “A State is less likely to maintain a subsidy when its citizens perceive that the money (in the general fund) is available for any number of competing, nonprotectionist, purposes.” This is part of his analysis, but not his legal argument (see also Chief Justice Rehnquist’s similar view below).

Two justices – Chief Justice Rehnquist joined by Justice Blackmun – dissented. Similarly to Scalia, Rehnquist takes the public choice aspect into account.

> “Consistent with precedent, the Court observes: “A pure subsidy funded out of general revenue ordinarily imposes no burden on interstate commerce, but merely assists local business.” Ante, at 199. And the Court correctly recognizes that

[14]He refers to *Hughes v. Alexandria Scrap Corp.*, 426 U. S. 794, 809810 (1976)

> [n]ondiscriminatory measures, like the evenhanded tax at issue here, are generally upheld" due to the deference normally accorded to a State's political process in passing legislation in light of various competing interest groups. Ante, at 200, citing Minnesota v. Clover Leaf Creamery Co., 449 U. S. 456, 473, n. 17 (1981), and Raymond Motor Transp., Inc. v. Rice, 434 U. S. 429, 444, n. 18 (1978). But the Court strikes down this method of state subsidization because the nondiscriminatory tax levied against all milk dealers is coupled with a subsidy to milk producers. Ante, at 200-201. The Court does this because of its view that the method of imposing the tax and subsidy distorts the State's political process: The dairy farmers, who would otherwise lobby against the tax, have been mollified by the subsidy. Ibid. But as the Court itself points out, there are still at least two strong interest groups opposed to the milk orderconsumers and milk dealers. More importantly, nothing in the dormant Commerce Clause suggests that the fate of state regulation should turn upon the particular lawful manner in which the state subsidy is enacted or promulgated. Analysis of interest group participation in the political process may serve many useful purposes, but serving as a basis for interpreting the dormant Commerce Clause is not one of them."

Additionally, he makes a regulatory competition argument familiar to the law and economics discipline by citing the famous former member of the Supreme Court, Justice Brandeis[15]:

> "To stay experimentation in things social and economic is a grave responsibility. Denial of the right to experiment may be fraught with serious consequences to the Nation. It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."

[15] New State Ice Co. v. Liebmann, 285 U. S. 262, 311 (1932), cited in *West Lynn Creamery, Inc. v. Healy*, 512 U.S. 186 (1994)

Finally, Chief Justice Rehnquist mulls the divergence between policies chosen by Congress and the court-imposed policy. "The wisdom of a messianic insistence on a grim sink-or-swim policy of laissez-faire economics would be debatable had Congress chosen to enact it; but Congress has done nothing of the kind. It is the Court which has imposed the policy under the dormant Commerce Clause, a policy which bodes ill for the values of federalism which have long animated our constitutional jurisprudence."[16]

2.2.4 New Energy Co. of Indiana v. Limbach

The Supreme Court has previously held that direct subsidies to in-state industry are constitutional. In the case of New Energy Co. of Indiana v. Limbach (which has been referred to in the Supreme Court judgements above), the Supreme Court at the same time held Ohio's discriminatory tax on ethanol unconstitutional, but approved Indiana's new scheme. In this new subsidy scheme, Indiana had replaced its tax exemption on ethanol with a direct subsidy to Indiana ethanol producers.

The Supreme Court explained:

> "It has not escaped our notice that the appellant here, which is eligible to receive a cash subsidy under Indiana's program for in-state ethanol producers, is the potential beneficiary of a scheme no less discriminatory than the one that it attacks, and no less effective in conferring a commercial advantage over out-of-state competitors. To believe the Indiana scheme is valid, however, is not to believe that the Ohio scheme must be valid as well. The Commerce Clause does not prohibit all state action designed to give its residents an advantage in the marketplace, but only action of that description in connection with the State's regulation of interstate commerce. Direct subsidization of domestic industry does not ordinarily run afoul of that prohibition; discriminatory taxation of out-of-state manufacturers does. Of course, even if the Indiana subsidy were invalid, retaliatory violation of the Commerce Clause by Ohio would not be acceptable. See Cottrell, 424 U.S., at 379-380, 96 S.Ct., at 931-932."

[16] *West Lynn Creamery, Inc. v. Healy*, p. 217

2.2.5 The market participant exception to the Commerce Clause

There are other cases in which the Supreme Court upheld subsidies or even proposed subsidies as a remedy to otherwise unconstitutional behavior, such as e.g. certain regulatory obligations (Wood, 2007). In Hughes v. Alexandria Scrap Corp.[17], the State of Maryland subsidized the car wrecking industry. At the same time, it imposed very high documentation requirements on out-of-state vehicle demolishers, thereby excluding them from the subsidy. By ruling that the in-state firms received an advantage stemming from "market forces, including that exerted by money from the State" (Hughes v. Alexandria at 805-810), the case is associated with introducing the so-called "market participant" exception (Wood, 2007). Contrasting it to previous cases, the Supreme Court found that in the case of Maryland's subsidy, the state did not seek to impede interstate commerce. Instead, it entered the market itself to bid up the price. Yet, the Commerce Clause does not prohibit a state from doing so, that is, to participate in the market and exercise "the right to favor its own citizens over others"[18].

There are two more cases in which the Supreme Court reaffirmed this principle, namely Reeves, Inc. v. Stake[19] and White v. Massachusetts Council of Construction Employers, Inc.[20] (Wood, 2007).

2.2.6 The legal standing of taxpayers: DaimlerChrysler v. Cuno

In the late 1990s, DaimlerChrysler was looking for a location for its new plant worth $1.2 billion and expected to create several thousand new jobs. A local coalition surround the City of Toledo, Ohio, provided an incentive package of around $280 million in tax benefits (a 10-year property tax exemption and an investment tax credit). This was legal according to Ohio state law (in fact, Ohio law lays out a framework as to the extent municipalities can hand out incentive packages). This

[17] *Hughes v. Alexandria Scrap Corp.*, 426 U.S. 794 (1976)
[18] Hughes v. Alexandria at 806
[19] *Reeves, Inc. v. Stake*, 447 U.S. 429 (1980)
[20] *White v. Massachusetts Council of Construction Employers, Inc.*, 460 U.S. 204 (1983)

Development Agreement was challenged by Charlotte Cuno, an Ohio resident, and seventeen other citizens. Their claim was that the subsidy violated the Commerce Clause. The United States District Court for the Northern District of Ohio first heard the case, but found no impermissible discrimination. It therefore dismissed the case. The case went on to the Court of Appeal for the Sixth Circuit, which ruled that the tax credit violated the Commerce Clause. The reason was that it coerced businesses already subject to Ohio's franchise tax to expand locally rather than out-of-state, at the expense of interstate commerce. Cuno argued that the tax credit would hinder the free flow of investment across the country. The municipality countered that tax incentives are lawful "as long as they do not penalize out-of-state economic activity"[21]. The municipality and the court agreed that "the only State tax credits and exemptions prohibited by the Commerce Clause were (1) those that function like a tariff, and (2) those that penalize out-of-state economic activity by relying on both the taxpayer's in-state and out-of-state activities to determine the taxpayer's effective tax rate"(Wood, 2007, p. 6). Yet, the Sixth Circuit sided with Cuno et al. The reason was that – although economically speaking a tax benefit is the same as a the equivalently reduced tax burden – according to Supreme Court jurisprudence (e.g. New Energy Co. of Indiana v. Limbach) there is a distinction between tax credits and subsidies. The court did not find any coercion with regard to the property tax exemption and therefore did not rule it unlawful as the tax credit was directly linked to the use of the property. Through a writ of certiorari, the Supreme Court got involved in this case. Unfortunately though, the Supreme Court, again, did not squarely confront the constitutionality of subsidies. In fact, the Court ruled that the plaintiffs actually had no legal standing in this case: previous Supreme Court decisions that federal taxpayers cannot sue against a particular expenditure of use of federal funds also apply equally to state taxpayers. This doctrine follows from Article III of the Constitution and its case or controversy requirement, which is far beyond the scope of this book. In order for the Supreme Court to answer the question substantially, the plaintiff would have had to be a disadvantaged out-of-state firm or an out-of-state municipality able to show an actual injury (Wood, 2007).

While the Supreme Court was deciding *DaimlerChrysler v. Cuno*,

[21] *DaimlerChrysler v. Cuno* at 745

Wake County Superior Court Judge Robert Hobgood dismissed a lawsuit challenging a state and local incentive package worth $279 million granted to Dell Inc. in order to build a manufacturing plant in Forsyth County, North Carolina, again because the plaintiffs were not able to show that they suffered direct harm. The appeal was dismissed by the North Carolina Supreme Court in 2008[22].

2.2.7 Enforcement of state aid agreements and rules

Since there is no central authority monitoring the legality of state aids in the United States, the issue of enforcing the promises made by the recipient of the aid looks differently. Wood (2013) identifies four means how state and local governments make their state aid deals enforceable.

First, governments can require upfront exactions in exchange for certain aids, such as changing the zoning rule. E.g. a skyscraper might be allowed to exceed the height ordinance if, in exchange, it provides for a pedestrian walkway or a public plaza.

Secondly, the contracts can include claw-back provisions. With these provisions, governments can take back the aids granted to the firm if the latter does not fulfill its promises (such as creating a pre-determined amount of jobs). American NGOs continuously point out that this is often not the case in the U.S. (see also chapter 4 for reports on the situation in Europe). In a recent study, Mattera et al. (2012) show that 90% of the development programs they examined (worth a total of $70 billion) require companies receiving subsidies to report to state government agencies on job creation or other outcomes. Yet in 31 percent of those programs (spread throughout 35 states), this reported data is not independently verified by an agency. Around 75% of the programs contained a penalty provision of some kind, including recapture of benefits already provided and the recalibration or termination of future subsidies. Around 17% of programs are performance-based, that is, the firm does not receive benefits until it has satisfied the requirements of the program. This means that, all in all, 8% of these programs come with little or no recourse against firms failing to fulfill their job creation and other promises. Furthermore, in almost half of the programs with claw-

[22] http://www.wcsr.com/news/nc-supreme-court-upholds-victory-for-dell-in-incentives-case

back provisions, it is up to the discretion of the aid-granting government whether it wants to actually make use of them. It is very uncommon for development agencies to disclose whether such enforcement took place.

Thirdly, firms can enter agreements not only directly with the local government, but also with the community at large through so-called community benefit agreements (CBA). For instance, a firm can enter a CBA with the local labor union (promising certain minimum wages), embrace labor peace agreements, pledge to build environmentally friendly, or adopt local-favoring hiring practices in exchange for political support (Schragger, 2009). This happened for example with Wal-Mart in Chicago (Wood, 2013).

Fourthly, local governments might use extra-contractual judicial tools. They may attempt to prevent a firm from relocating by making use of eminent domain. For instance, a sports[23] team which received subsidies but now threatens to leave to a different city might be declared a public asset. These attempts are usually not successful though (mainly for 5th Amendment reasons, that is, the right to just compensation in the case of government takings). Another, even less useful tool is to seek promissory estoppel, that is, using a court to force a firm to keep its promise. This method only works if the government can show that there was a sufficiently concrete promise. In *Charter Township of Ypsilanti v.*

[23]Sports teams are notorious recipients of subsidies in the United States. This seems to have much to do with the fact that National Football League and Major League Baseball teams can be quite mobile and threaten to relocate. For instance, very recently, Cobb County in Georgia announced that it would spend $400 million (with an additional $200 to be borne by the team itself) to build a new stadium for the Atlanta Braves, a team originally founded in Boston, which first moved to Milwaukee and then to Atlanta (see Atlanta Journal-Constitution of 11 November 2013, `http://www.ajc.com/weblogs/political-insider/2013/nov/11/atlanta-braves-moving-cobb-county/`). The governor of Minnesota, Mark Dayton, was recently quoted as saying "I'm not one to defend the economics of professional sports ... Any deal you make in that world doesn't make sense from the way the rest of us look at it." after handing out $500 million to the Vikings, a privately-held football team, without any disclosure requirements (see The Atlantic, October 2013, `http://www.theatlantic.com/magazine/archive/2013/10/how-the-nfl-fleeces-taxpayers/309448/`. It has been estimated that 70 percent of the capital cost of NFL stadiums has been provided by taxpayers, not the owners of the teams (ibid.). The 1961 Sports Broadcasting Act and Public Law 89-800 of 1966 basically exempt the NFL from provisions against price collusion (with regard to negotiating TV broadcasting agreements).

General Motors Corp.[24], the question was whether General Motors was obliged via promissory estoppel to continue production at a plant in the Charter Township of Ypsilanti, Michigan, after seeking and obtaining tax abatements, which had the intention to incentivize General Motors to remain in the township. The Michigan Court of Appeal found that General Motors had used "hyperbole and puffery" when it sought state aids, but that this did not constitute a promise.

It almost comes without saying that sometimes criminal law can come into play. Rules against felonious misconduct and fraud can be relevant in some extreme cases when public officials wrongfully transfer funds from the state to private firms.

2.2.8 Prevalence

Gathering data on subsidies handed out by U.S. jurisdictions proves to be rather cumbersome. As there is no federal monitoring body, research has to rely on third-part aggregations delivered mostly by anti-"corporate welfare" NGOs. More than a decade ago, Thomas (2000) estimated – for the first time in the U.S. – the total cost of subsidies of around $50 billion. More recent estimates seem to indicate that some states indeed spend several hundreds of millions of dollars on individual subsidy programs.

How states subsidize firms varies from state to state. According to Mattera et al. (2010), the main types of state subsidies are:

1. corporate income tax credits,
2. designated enterprise zones featuring multiple tax breaks,
3. sales tax exemptions,
4. cash grants,
5. low-cost capital financing and loan guarantees,
6. reimbursement for worker training expenses.

In addition, local governments also hand out subsidies, often bundled with state subsidies:

[24] *Charter Township of Ypsilanti v. General Motors Corp.*, 201 Mich. App. 128, 506 N.W.2d 556 (1993)

1. property tax abatements,
2. tax increment financing,
3. sales tax rebates,
4. infrastructure improvements,
5. land parceling or land write-downs .

Since taxes are allocated to different levels of government in the United States than in Europe, the instruments used vary (they also do so between European countries). For instance, in the U.S., the corporate tax is levied at the state level, while the property tax and sales tax are apportioned to the localities. By comparison, the value-added tax is allocated to the national governments in European countries and harmonized at the EU-level (EU countries are free to set their VAT rates, but are limited in using reduced VAT rates, thereby rendering it difficult to aid specific sectors or firms using this instrument).

2.2.9 Conclusion on the legal status of subsidies

Subsidies are generally permitted in the United States. From an economic point of view, the Supreme Court is contradictory when it prohibits discriminatory taxes but permits subsidies with the same economic effect. By applying the market participant exception to the Commerce Clause, private and public firms are not treated equally as it is done in Article 107 of the TFEU and the other State Aid provisions in Europe.

While the EU has an administrative body charged with enforcing state aid rules, the enforcement in the U.S. is exclusively private through court litigation on the basis of the Commerce Clause. Wood (2007) notes that the courts, in construing the constitution, tend to be cautious in restricting state power and that therefore an agency (which might be Federal Trade Commission or a new agency in the Department of Commerce) might have greater flexibility and might address those issues in a more economically rational way than has been possible at the constitutional level. The problem with private litigation is also the question of proper standing in order to actually be able to sue. Currently, the plaintiff has to be injured more than the general public which is concerned about the proper use of tax money. Furthermore, the Eleventh

Amendment to the U.S. Constitution[25] grants immunity to States. Private parties cannot sue a State without its consent, but can only sue the responsible State official (in his official capacity) for injunctive relief. Since damages cannot be collected from states, there is a judgement proof problem involved (that is, the public official cannot realistically compensate for the harm done by the state aid).

The application of the Commerce Clause and the distinction between taxation and subsidies is subject to academic legal debate. Zelinsky (1998) criticizes the Supreme Court's endeavor to apply generalized rules and advocates case-by-case decisions. In Zelinsky (2002) he argues that the times has come to abandon the dormant Commerce Clause prohibition on discriminatory taxes. The idea is that this would shift the controversy from the courts to Congress and would therefore restore politics and doctrinal coherence to the Commerce Clause. Denning (2007) counters that this would mean the end of the dormant Commerce Clause doctrine itself. Much is still left to decide: "courts must clearly distinguish between discrimination of the sort that the Framers [of the U.S. Constitution] sought to eliminate and healthy competition among states" (Denning, 2006, p. 174). Hellerstein and Coenen (1996) observe that the distinction between discriminatory taxation and subsidies resonates with that they consider "the law's deep regard for considerations of form" (Hellerstein and Coenen, 1996, p. 793) and that the distinction may "grow out of the same 'cautionary function' that helps explain many rules that require use of specified formal structures to achieve legally enforceable results in the private-law context" (ibid.).

2.3 Canada

Canada's system is very similar to the United States'. It is included as an example here though because in some aspects it lies in between the U.S. and the EU. While aids to firms are generally unregulated at the federal level, they are regulated at the provincial level of government. The ten provinces were able to come up with and sustain a "Code of Conduct on Incentives" (CoC) regarding pirating (or poaching, as it is

[25] "The Judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by Citizens of another State, or by Citizens or Subjects of any Foreign State."

commonly referred to in Canada). This code is an annex (608.3) to the 1994 Agreement on Internal Trade (AIT) and bans provincial subsidies to induce the relocation of existing facilities from one provence to another Thomas (2011). The Agreement on Internal Trade (AIT) is an agreement signed by the First Ministers of the Canadian provinces (all except the North Canadian province Nunavut) that came into force in 1995. As its preamble states, the purpose of the AIT is, among others, to reduce and eliminate, to the extent possible, barriers to the free movement of persons, goods, services, and investment within Canada and to establish an open, efficient, and stable domestic market; promote equal economic opportunity for Canadians; enhance the competitiveness of Canadian business; promote sustainable and environmentally sound development; consult on matters related to internal trade; recognize the diverse social, cultural and economic characteristics of the provinces (Preamble to the AIT, p. 1).

Article 608 (Incentives) of the AIT stipulates that "no Party shall, in the provision of incentives to enterprises located in its territory, discriminate against an enterprise on the basis that: (a) the enterprise is owned or controlled by an investor of another Party; or (b) the head office of the enterprise is located in the territory of another Party." (AIT, p. 69). It also says that nothing in the AIT "shall be construed to require a Party to provide incentives for activities undertaken outside its territory" (AIT, p. 70) and that the CoC applies to the parties of the agreement.

The CoC itself applies to incentives provided to enterprises (actual wording of the CoC) by any signatory province or any entity acting on its behalf. The provinces are explicitly banned from advising municipalities or regional development authorities to circumvent the intent and provisions of the code. The word "incentive" is defined widely and encompasses all sorts of subsidies and grants, discriminatory taxes specific to one firm, and "any form of income or price support that results directly or indirectly in a draw on the public purse" (CoC, p. 82). All incentives that lead to the relocation of a firm from one province to another, unless the province can show that the firm might have moved out of Canada (e.g. because it might receive incentives from a U.S. state). It is noteworthy that this rule applies only to existing operations. The signatories of the CoC also pledge not to give incentives to firms with

the intention to enable these firms to win contracts in another province by undercutting competitors from other provinces.

The purpose of the CoC is not to eliminate incentives altogether. In fact, the provinces even “affirm that economic development within their territories may include the provision of incentives” and “acknowledge that certain incentives may harm the economic interests of other Parties”. Nevertheless, the provinces “shall take into account the economic interests of other Parties in developing and applying their incentive measures” (all citations in this paragraph: AIT, p. 82 and 83).

There are also some weaker provisions (“shall endeavour”) to restrict state aids support economically non-viable firm operations that harm another province’s firms, state aids that increases capacity in ailing industry sectors, and “excessive” subsidies (this term is not defined in further detail). Furthermore, the provinces are asked not to engage in “bidding wars” (AIT, p. 83).

There are two provisions that increase transparency. For one, provinces can inquire with other provinces on specific incentive programs that that might be inconsistent with the ban. Secondly, the Working Group on Investment is asked to prepare an annual report summarizing the incentive programs in place, as well as the total amounts of incentives handed out to firms. This also includes subsidies granted by the federal government of Canada. This report requirement applies only to cash grants of more than $500,000 and loans, loan guarantees or equity injections of more than $1,000,000.

Recent research finds that the incidence of “poaching” and the size of relocated facilities have indeed declined with the introduction of the CoC even though significant instances of poaching remain. Interestingly, this reduction is not due to the effects of the CoC, but rather to changes in provincial governments (Thomas, 2011).

Since the CoC only covers relocation subsidies, the approach taken seems to follow Axelrod (1984): cooperation can be promoted by dividing a problem into smaller pieces, which allows parties to verify that the others are cooperating while not exposing themselves to excessive risk.

2.4 The WTO

Based upon the General Agreement on Tariffs and Trade (GATT), the World Trade Organization (WTO) was formed in 1995, accompanied by two new agreements: the Agreement on Subsidies and Countervailing Measures (SCM) and the Agreement on Agriculture[26]. The text of the GATT (last amended in 1994) is still in effect, but now under the auspices of the WTO.

The WTO is an interesting case as it combines fully sovereign nations (even more so than the EU) and merges the above-mentioned systems. The existence of WTO rules puts into perspective the claim above that there is almost no state aid regulation in the United States. Due to the stringent rules at the EU level, the WTO rules only have limited impact on European countries. It has a reporting requirement and authorizes so-called countervailing duties, but does not define the terms well (Sykes, 2010).

2.4.1 Definition of subsidy

A subsidy exists if there is a financial contribution by a government or any public body within the territory of a WTO member state (i.e., loan, loan guarantee, grant, equity infusion, tax credit, provision of goods other than infrastructure, purchase of goods, indirect transfers through a funding mechanism), or there is any form of income or price support in the sense of Article XVI of GATT 1994, and if a benefit is thereby conferred. As in European State Aid Law, the subsidy has to be specific in order to be deemed problematic. In principle, the criterium of specificity is wider at the WTO level than in EU State Aid Law. It not only applies to subsidies for specific individual companies, but also to industry-specific and even regionally specific subsidies. Yet, through its extensive case law, the EU has developed a more precise definition of specificity (Sykes, 2010).

Most importantly though, the GATT, on which the WTO is based, exclusively applies to the trade of goods. Rules regarding the international trade of services are found in the General Agreement on Trade in

[26]This thesis mostly ignores matters of agriculture as the issues at hand in this area are of a relatively special nature.

Services (GATS). Article XV GATS establishes a very weak anti-subsidy mechanism, which only advocates negotiations between WTO member states:

> "1. Members recognize that, in certain circumstances, subsidies may have distortive effects on trade in services. Members shall enter into negotiations with a view to developing the necessary multilateral disciplines to avoid such trade-distortive effects. The negotiations shall also address the appropriateness of countervailing procedures. Such negotiations shall recognize the role of subsidies in relation to the development programmes of developing countries and take into account the needs of Members, particularly developing country Members, for flexibility in this area. For the purpose of such negotiations, Members shall exchange information concerning all subsidies related to trade in services that they provide to their domestic service suppliers.
>
> 2. Any Member which considers that it is adversely affected by a subsidy of another Member may request consultations with that Member on such matters. Such requests shall be accorded sympathetic consideration."

2.4.2 Prohibition

New and unanticipated subsidies are prohibited. The classification of subsidies works with a system of three classes: green, yellow, and red light. "Red" subsidies are prohibited and refer mainly to export subsidies (especially agriculture) and import-substitution subsidies. A subsidy is prohibited if it is "contingent, in law or in fact, whether solely or as one of several other conditions, upon export performance" (Art. 3(a), SCM) or "contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods" (Art. 3(b), SCM).

"Yellow" subsidies are actionable through countervailing duties at the national level or through the WTO dispute settlement procedure if they cause adverse effects and are *de jure* or *de facto* specific. A subsidy may not cause adverse effects to the interests of other WTO member states, which is the case if (a) there is injury to the domestic industry of another state, (b) the subsidy would nullify or impair benefits accruing directly or

indirectly to other WTO member states under GATT 1994, in particular the benefits of concessions bound under Article II of GATT 1994; or (c) serious prejudice (or threat thereof) to the interests of another member state (Art. 5, SCM).

Non-actionable ("green") subsidies were those included in the transitional provisions and allowed some specific measures. This class which was introduced only on an experimental basis has been discontinued.

2.4.3 Remedies

Remedies against subsidies are only available if a WTO member state (that is, not a private party such as a competing firm) starts a procedure against the aid-granting state. The case is then heard by the Dispute Settlement Body (DSB), which can seek assistance by the Permanent Group of Experts (PGE). If the PGE comes to the conclusion that the subsidy in question is indeed prohibited, then it will recommend to the subsidizing state that it withdraw its support without delay. If, after a possible appeal, the subsidizing state continues its practice, then the complaining state can enact appropriate measures.

If it is determined that a certain state aid subsidizes imports, causes injury to a domestic industry and that there is a link between the subsidized imports and the injury, then a member state may impose countervailing measures.

An aspect that this is quite particular to the WTO rules is that countervailing measures can also be taken if the effects of subsidized imports from more than one member state cumulate (Art. 15, SCM). In European State Aid Law the adverse effects are calculated for a specific measure. Yet, an EU member state could be suffering from the combined effects of various state aid measures in different other member states.

2.4.4 How do WTO rules relate to and affect the EU and the U.S.?

As mentioned earlier, the regulation of subsidies in the U.S. has to be seen in light of the WTO rules. Per se, the rules indeed prohibit certain subsidies. What limits this restriction though is that subsidies are only actionable if they subsidize exports and injure domestic producers in the importing country. Furthermore, the fact that the only remedy are

countervailing duties makes it sometimes impossible to other countries to take action against American subsidies. This also explains why the EU needs its own state aid law, as tariffs between EU member states are strictly prohibited and against the spirit of European integration. Art. 110 TFEU restricts discriminatory taxes and Art. 112 TFEU prohibits countervailing duties between EU member states.

At first it might seem that the WTO system is of no concern to the EU as the latter already implements a strict subsidy control regime. In spite of this, the EU "has been one of the primary targets of countries challenging foreign subsidies before the WTO and of countervailing duty measures" (Ehlermann and Goyette, 2006, p. 695). The reason for this paradox – one would expect the EU as the organization with the more ambitious goals and higher level of integration to be the primary source for state aid prohibition – lies in the details of how subsidies are defined. Unlike WTO law, European state aid law only applies to measures that cost the government money (for instance, regulations that force private regional electricity suppliers to buy from producers of electricity from renewable energy sources do not place a financial burden on the government, yet they are measures to aid certain firms[27]). On the other hand, it seems that the concept of specificity is applied similarly in both legal systems. It also has to be noted that Article 107 only prohibits aid that affects trade between Member States and therefore does not apply to aid that might not affect other EU firms, but international trade (e.g. subsidies to Airbus do not affect trade between Member States as there is no direct competitor to Airbus in the EU). The main difference though lies in the procedure. First, the notification requirement at the WTO is only poorly enforced, and challenges by other governments are inconsistent, since states will only take action against a subsidy once the affected private parties successfully lobbied their government to do so. The EU has a pre-authorization procedure. There are some exemptions that can apply and possibly run counter to the SCM agreement (Ehlermann and Goyette, 2006)

All in all, the WTO defines subsidies relatively similarly to the EU. Since there are some exceptions to European State Aid rules that do not exist in the SCM (e.g. so-called launch aid), the EU can nevertheless

[27]See for instance Case C-379/98 PreussenElektraAG v. Schleswag AG, [2001] ECR I-2009

be subject to retaliation against certain subsidies, especially when it is the EU itself which is handing out subsidies (the state aid rules only apply to the member states, but not to the EU as an institution). For almost ten years now, the continuous dispute between the European plane manufacture Airbus and its American competitor Boeing has kept the WTO busy.

The enforcement of WTO rules lacks some teeth though. While at the EU level, state aids are assessed without any action of any other parties and the decision can include the repayment of the subsidy, such a measure is very uncommon at the WTO level (Slocock, 2007). The opacity of incentive programs makes it difficult to observe for competitors whether a firm has received aids. Additionally, the enforcement takes place exclusively at the national level. A firm which feels disadvantaged by subsidies of another country first has to convince its own government to take action and cannot complain to the WTO directly. Yet, this government will balance the interest of this disadvantaged firm against other political considerations before countering the subsidies. Slocock (2007) notes that it is commonplace in the EU that complaints about certain state aids come from within the accused EU member state.

Damro (2013) sketches a private-interest theory of the interaction between EU state aid policy and the WTO instruments against subsidies. Once a state aid measures inhibits market access, non-European countries can respond by making use of the WTO's Subsidies and Countervailing Measures Agreement or bring the matter before the organization's Dispute Settlement Mechanism (DSM). At this stage, the decision becomes politically charged and the interactions confrontational. "The EU is very much involved in these interactions as one of the most active users and primary targets of such measures" (Damro, 2013, p. 160). Private interests lead to the imposition of countervailing duties (CVDs) against foreign subsidies. Firms and the EU prefer CVDs due to their likelihood of satisfying domestic interests, higher speed, greater ease, and because they are perceived as a better remedy against past subsidies. Firms in the EU can also be in favor of the foreign subsidy (e.g. because they are suppliers to the subsidized non-European firm), in which case they will oppose a dispute settlement procedure. Dispute settlements are preferred over CVD if the private interests affected by the subsidy operate in global markets – for instance, Airbus has an in-

terest to prevent subsidies to Boeing, while CVDs would only protect Airbus from Boeing in the European market and not in, say, the Asian market (Damro, 2013).

2.5 Other regimes

Some other, albeit informal, arrangements can be found – within countries and internationally through regional and/or international organizations.

The OECD's Arrangement on Officially Supported Export Credits is – even called that way on official documents – a "Gentlemen's Agreement" reducing subsidies related to said credits. The current participants in this arrangement are Australia, Canada, the EU, Japan, Korea, New Zealand, Norway, Switzerland and the United States.

It aims at providing a level playing field in the sense that competition is based on the price and quality of the exported goods as opposed to the financial terms provided. It applies to all "official support provided by or on behalf of a government for export of goods and/or services, including financial leases, which have a repayment term of two years or more" (Art. 5 OECD AOSEC)

The arrangement is based on the export credit consensus among some OECD member countries of 1976 and was formalized in 1978. Its main achievement is to place limitations on the terms and conditions of officially supported export credits, by for instance setting minimum interest rates, risk fees and maximum repayment terms, as well as on the provision of tied aid. "It includes procedures for prior notification, consultation, information exchange and review for export credit offers that are exceptions to or derogations of the rules as well as tied aid offers."[28]

EU Regulation No. 1233/2011 makes it mandatory for EU countries to apply the OECD arrangement. Council decisions 73/391/EEC and 76/641/EEC establish a system that harmonizes the export credit system within the EU. Intra-EU export credits are, of course, prohibited.

The Asia-Pacific Economic Conference (APEC) has come up with a set of non-binding investment principles. Similar efforts have been made in the Association of South-East Asian Nations (ASEAN) and the

[28] http://www.oecd.org/tad/xcred/arrangement.htm

Caribbean Economic Community (CARICOM). There is also a 1971 Andean Model Treaty calling for harmonization of fiscal policies and harmonization of taxes on foreign investments. The effects of these agreements are rather limited though. To assess them, a difference should be made between agreements aiming at harmonization of incentive policies and those aiming at reduction of inter-jurisdictional competition for FDI. The EU approach, for instance, is one that effectively curbed state aids, but did not harmonize the policies themselves. Harmonization leads to more transparent policies, which might reduce competition Guisinger (1995).

Finally, it should also be noted that both the International Monetary Fund (IMF) and the World Bank have taken anti-subsidy stances in the past.

CHAPTER 3

Competition between firms and between jurisdictions

Should governments be allowed to hand out state aids? If yes, to what extent? Can the various legal rules in place be justified economically? Why and under what circumstances should state aid to firms be prohibited? This chapter reviews the literature on the rationales for state aid control.

The literature on state aids is divided into three main views, which build a continuum. Some argue that there shall be a "level playing field," meaning that states must not interfere with the competition between firms and not engage in a competition for those firms. The opposite view has a more positive view of the Tiebout model and emphasizes the benefits of inter-jurisdictional competition – given that people can always "vote with their feet" if they do not like their jurisdiction's decisions. The middle ground between these views is one that believes that "well-structured incentives can produce beneficial regional economic development" (Markusen, 2007, p. viii).

At first glance, the answer to the questions formulated earlier that suggests itself is that countries with their natural differences in endowment should enter into a competition undistorted by the state's interventions. Under the condition that there is free trade, the total welfare of

all participants is maximized following the theorem of comparative advantages. Firms should be located in the place that provides the optimal endowment in resources needed for the production of the good or service. Then, only the presence of market failures justifies granting state aids (see e.g. Meiklejohn, 1999; Trebilcock and Howse, 2005, p. 282).

The European State Aid Control mechanism currently in place reflects this view. As seen in the previous chapter, Article 107 of the Treaty on the Function of the European Union stipulates a ban on state aids, which can be relaxed under certain circumstances by the European Commission.

Whether there are sufficient economic grounds to deviate from the general prohibition in a particular case can be discussed from a variety of perspectives. The most important streams of literature in that regard are institutional/constitutional economics (e.g. Kerber, 1998), strategic trade policy (e.g. Besley and Seabright, 1999; Brander, 1987), and industrial economics (e.g. Fingleton, 2001; Fingleton et al., 1999). While institutional/constitutional economics is mainly concerned with the competition order as a whole, the theory of strategic trade and industrial economics focus more on the efficiency of state aids with regard to specific industries and firms. One could also say that the two latter approaches are more instrumental than the one of institutional economics. In the end, all perspectives try to assess whether a certain market failure shall be considered serious enough in order to justify state aids.

While the above-mentioned theoretical approaches could be considered mainly critical of state aids and justify state aids only in case of a market failure, the approach emphasizing the inter-jurisdictional competition taking place takes a more relaxed stance. In that view, state aids might considered an integral part of the location factors of a country or jurisdiction, just as the level of education or the tax system (Bhagwati, 1997; Trebilcock and Howse, 2005, p. 284). State aids then create the specific comparative advantage of a country, which powers the trade to the mutual benefit. This in no way whatsoever precludes the necessity for a supra-jurisdictional state aid control since such a system can help prevent subsidy races between jurisdictions. But in this view, state aids can also be justified without the presence of a specific market failure. This leads to the view that state aid control be a part of the competition order for the competition between jurisdictions in order to enter

a welfare-creating competition (see Kerber (1998) for a more detailed description).

One can thus split the economic analysis of state aid (control) into an analysis from the perspective of competition between firms and into an analysis from the perspective of inter-jurisdictional competition. Subsidies can come in different variants and in different market settings. Depending on those circumstances, their effects will vary. Legal intervention may be justified if there is an externality or other kind of market failure produced. This externality must be more than a simple transfer – it must produce an *inefficiency*. This chapter explains that there is indeed a debate as to whether there is an externality and comes to the conclusion that this is not an easy question to answer – and that therefore the views about the possible legal remedies differ.

3.1 Competition between firms

The economic analysis of state aid control can draw from several fields, which each affect the competition between firms. Public economics analyzes the purpose and effectiveness of state intervention in the national economy. It explains why national governments resort to state aids in order to intervene in the economy, but ignores the aspect of inter jurisdictional competition. Competition economics focuses specifically on competition, and international or strategic trade theory studies the effects of state aids in an international setting (Friederiszick et al., 2007). Different views on the efficiency and market effects of state aids are expressed in all views.

3.1.1 A remedy against market failures

The public economics view has a social welfare function as its starting point and tries to maximize it. Using the two fundamental theorems of welfare economics, namely that (i) competitive markets tend toward an efficient allocation of resources, and (ii) of all possible Pareto-efficient outcomes, any particular one can be achieved by enacting lump-sum wealth redistribution, the welfare elements can be split into aspects of efficiency stemming from the first theorem and aspects of equity relating to the second theorem (Mas-Colell et al., 1995).

A state aid is efficiency-increasing when the total welfare increases more than what the measure costs. This can indeed be the case in the presence of market failures. The literature typically identifies four types: externalities, public goods, information asymmetries, and market power (Ledyard, 2008). These market failures can be addressed by state aid in various forms. Meiklejohn (1999) even lists nine types that are relevant to state aid: public goods, merit goods, increasing returns to scale, externalities, imperfect or asymmetric information, institutional rigidities, imperfect factor mobility, frictional problems of adjustment to changes in markets, subsidization of foreign competitors.

Negative externalities are present when there are environmental effects of which the costs are not taken into account by the producers. The typical case of positive externalities is investment in research and development. Since other firms can profit from the innovations produced by the firm investing in R&D, there is a difference between the private benefits from R&D expenses and the social gain. The state then has to intervene in such a way that all externalities are internalized. This means that the state either has to punish producers of negative externalities, or subsidize compliance. State aids for R&D are necessary to ensure the appropriate level of innovation.

When an undertaking cannot exclude anybody from consuming the good it produces, as it is the case with so-called public goods, the market for this good will fail as well. Goods such as national defense or certain services of general economic interest, can therefore only be supplied through state intervention.

The information available is not always the same to all market participants. For instance, providers of finance cannot easily assess the quality of a company demanding loans or equity. As shown by Akerlof (1970), quality uncertainty can lead to market failure. As a result, state aids to firms might be justified in order to facilitate their entrance to the market.

If, for some reason, a firm has achieved notable market power, then this failure of competition is a cause for concern. While state aids can contribute to generating market power (that is, by giving an undue advantage to a firm), they can also facilitate market entry and thereby improve competition in the market.

3.1.1.1 Pro-competitive state aids

Assume a setting in which there are two firms in Bertrand competition. For some reason, one of the two firms gets into turmoil. In this case, a subsidy to this firm might be welfare-enhancing if the deadweight loss of taxation is smaller than the deadweight loss caused by the market power of the other firm if that firm becomes a monopolist after the troubled firm's exit. To illustrate this scenario, consider the following model.

3.1.1.2 A short model of pro-competitive subsidies

General Motors filed for bankruptcy and subsequently for Chapter 11 reorganization in June 2009 at the apogee of the financial and economic crisis - the fourth-largest such filing in U.S. history. In order to do so orderly (and thereby stay in business), it had previously received $13.4 million from TARP funds. Furthermore it received loans and guarantees worth tens of billions of U.S. dollars from various European and American governments. Thanks to those bailouts, the company was able to continue its operations and gained a position in 2010 from where it was able to repay some of the loans (see also section 6.3.3).

This short model formalizes the trade-off between letting an important company fail and suffering the burden of taxation necessary in order to finance the government intervention. It thus merges the standard model of Bertrand competition with the model of excess burden of taxation on the labor market.

The main result is that state aid is efficient if the dead-weight loss arising from less competition (because GM failed) is larger than the dead-weight loss (or excess burden) caused by the new tax.

The setup is as follows. For reasons of simplification and without loss of generality, I consider a market for cars with two firms in Bertrand competition: firm 1, for better clarity henceforth called GM, and firm 2, which shall be called Toyota[1]. There are 1+T+N periods.

In the first period ("pre-crisis", p), GM and Toyota both produce at marginal cost, entailing no profits for either firm and generating the maximum possible consumer surplus. Price and quantity are p_p and q_p. The indirect demand function is $P = a - bq_p$.

[1] The fact that Toyota is Japanese has no effect in this model but could have in an extension of the model.

The second period is the beginning of the crisis. The quantities here are always given per year, but the crisis might actually take longer: it lasts T periods. Depending on the government action, there are two different outcomes[2].

If there is no intervention, then Toyota is a monopolist (thus the index m) for the whole duration of the crisis. It sets the price equal to its marginal revenue, with the usual result: $p_m > p_p$ and $q_m < q_p$.

The total dead-weight loss is thus $\frac{1}{2}(p_m - p_p)(q_p - q_m)T$.

If the government rescues GM, then it stays in business during the crisis. The outcome is thus the same as in the pre-crisis period.

The only effect is on another market. I assume that the government needs to finance itself through a new income tax.

The labor market is characterized by labor demand $L^D = \alpha - \beta P_L$ (L being labor) and a labor supply $L^S = \delta P_L$. In equilibrium, without the tax, $P = \frac{\alpha}{\beta+\delta}$.

Because the government can still make use of financial services, it can take up a loan and repay later. Thus, the tax needs not be levied only in the first period of the crisis, but can be split over X periods.

With the tax τ, the new supply function[3] is $L^S = \delta P_L - \tau$ and the equilibrium then is: $P = \frac{\alpha+\tau}{\beta+\delta}$. The total tax revenue is $\tau(\delta\frac{\alpha+\tau}{\beta+\delta} - \tau)X$, that is the per-unit tax times the equilibrium quantity times X periods.

The excess burden of taxation is one half of τ times the difference in quantities[4]. The difference in quantities is $\delta(\frac{\alpha}{\beta+\delta} - \frac{\alpha+\tau}{\beta+\delta}) + \tau$. Thus the total excess burden is $\frac{1}{2}\tau(\delta(\frac{\alpha}{\beta+\delta} - \frac{\alpha+\tau}{\beta+\delta}) + \tau)$.

While letting GM crash allows Toyota to earn monopoly profits, this situation is nevertheless only temporary. Once the crisis is over, some other firm will take the place of GM and engage in competition with the monopolist. This assumption is fair given that the pre-crisis market did not favor any natural monopolies (at least not in this model) and given that it is implicitly assumed here that GM leaves the market not for endogenous reasons, but because it was suddenly and for exogenous

[2]Since the government only mitigates the effects of the crisis and does not address the actual market failure, the government action has no effect on the length of the crisis.

[3]The new supply function has the same slope as the old one but is shifted upwards, that is, supply has decreased.

[4]Graphically, it is the triangle built by (i) the old equilibrium point, (ii) the new equilibrium point, (iii) the point on the old supply curve at the new quantity

reasons not able to engage in market activities (e.g., it needed a loan and did not receive it due to the failure of the financial market).

If the government chooses an X larger than T, then there will be an excess burden for $(X - T)$ periods after the crisis.

In order to achieve the second-best solution (first best would be no state aid and no monopoly profits, but this is not achievable in this model), the government has to decide whether it prefers a monopoly or taxation.

It will choose state aid if the total monopoly dead-weight loss is larger than the total excess burden from taxation. More precisely, the tax revenue necessary to save GM must be such that the resulting excess burden is lower than the dead-weight loss.

Let $\bar{A}$ be the required amount of state aid (given exogenously). Given $\bar{A}$, the optimal tax rate τ can be calculated. The calculation of this tax rate is less trivial than it seems and needs further assumptions if we allow the tax to be levied throughout several periods. A high tax during one period leads to more total distortion than a low tax during two periods with the same total tax revenue. The choice of X could be considered to be determined by political considerations as well as availabilities of very long term loans on the financial markets. If X is set to one, then the problem becomes easier. Solving for τ as a function of $\bar{A}$ gives the following results (the tax revenue function is quadratic and therefore can be equal to $\bar{A}$ at two points - any reasonable government would chose the lower tax rate of the two, of course)[5]:

[5]The result of equation 3.1.3 can be obtained by solving the tax revenue equation for τ: $\tau(\delta\frac{\alpha+\tau}{\beta+\delta} - \tau) = \bar{A}$

The maximum income tax revenue that the government can levy is given by the first derivative of the tax revenue function.

$$\tau(\delta\frac{\alpha+\tau}{\beta+\delta} - \tau) \tag{3.1.1}$$

This gives the following first-order condition:

$$\frac{\alpha\delta}{\beta+\delta} + \frac{2\delta}{\beta+\delta}\tau - 2\tau = 0 \tag{3.1.2}$$

Solving for τ: $\tau = \frac{\alpha\delta}{2\beta}$

$$\tau_1 = \frac{\alpha + \sqrt{\alpha^2 - 4\bar{A}\frac{\beta(\beta+\delta)}{\delta^2}}}{2\frac{\beta}{\delta}} \tag{3.1.3}$$

and

$$\tau_2 = \frac{\alpha - \sqrt{\alpha^2 - 4\bar{A}\frac{\beta(\beta+\delta)}{\delta^2}}}{2\frac{\beta}{\delta}} \tag{3.1.4}$$

In this case, state aid is legitimate if:

$$\frac{1}{2}(p_m - p_p)(q_p - q_m)T > \frac{1}{2}\tau(\bar{A})\left(\delta(\frac{\alpha}{\beta+\delta} - \frac{\alpha+\tau(\bar{A})}{\beta+\delta}\right) + \tau(\bar{A})) \tag{3.1.5}$$

Article 107 of the Treaty on the Functioning of the European Union (TFEU) generally bans aids to firms. The situation described in the model is an example of a state aid where an exception might be legitimate. The question is thus: if a country is willing to bear the excess burden of taxation, then why should it not use the revenues from the tax to enforce pro-competitive measures?

This model emphasizes the possible pro-competitive effect of state subsidies to firms. Here, the main motivation is to avoid a monopoly by levying a tax of which the proceedings are given to a competitive firm that is unable to enter the market. Depending on the costs of this subsidy (as expressed by the excess burden), this policy can be efficiency-enhancing or not.

Some more aspects could be included. For instance, a "patriotic" U.S. government might not take Toyota's monopoly profit into account and thus be more prone to give state aid. The main setup, that is, GM failing directly because of the financial crisis is historically inaccurate. The model would capture the events better if it looked at the demand-side of the problem. It also ignores that the GM crisis was also solved thanks to contributions and joint efforts of employees, suppliers, car dealers, and others - all of which being indicators that GM might just not have been competitive enough for the market (and thus should have gone bankrupt in order to be replaced by a more efficient firm).

The setup using 1+T+N periods might at first glance complicate things unnecessarily. In a possible extension, this "feature" might come

handy to relate the problem to legal requirements such as that state aid be targeted and only temporary (an important EU requirement).

This model offers only a partial equilibrium analysis in the sense that it does not address the actual market failure. Here, the connection to the law becomes interesting. For instance, EU law on state aid requires answering the question whether a different policy measure remedying the market failure would have produced a less distortive effect[6].

3.1.1.3 Distribution arguments

Apart from the efficiency arguments, governments might want to hand out subsidies to achieve distributional aims. This is usually the case with aids to individuals (e.g. housing benefits, welfare payments, etc.), but is also of importance for aids to firms. The paramount mechanism to achieve redistribution by means of state aids to firms is regional aid, which, according to EU data, accounts for about a quarter of all state aids[7]. The problem with these redistribution measures is that they are hard to achieve without causing a loss of efficiency. Friederiszick et al. (2007) emphasize that the price of state aids to improve living standards in disadvantaged regions is the distortion of competition in product markets. That is, they can cause, rather than remedy, market failures. The cost of taxation and the negative incentive effects on the subsidized region (the moral hazard caused by the availability of subsidies) add to this problem. By moving funds towards the periphery, the advantages of agglomeration economies are not used to the full[8].

Whether redistribution between regions may in some cases lead to an increase in efficiency is subject to debate. Besley and Seabright (1999) looked at the relationship between efficiency and equity in the regional aid context. In their model, the relocation of a firm to another region can give benefits to other firms in that region. These benefits are not taken into account by the relocating firm. From an efficiency point of view, the region where these spillovers will be highest should obtain the

[6]See for instance the State Aid Action Plan

[7]EU State Aid Scoreboard 2012

[8]"Agglomeration economies" is a term from urban economics describing the benefits firms acquire from locating close to each other. In that case, the costs of production can decrease, because there could be several competing suppliers, they attract highly-skilled labor, or because there are knowledge spillovers between firms (see e.g. Strange (2008), O'Flaherty (2005)).

investment. An auction among regions would be the optimal way of achieving this. Yet, since some regions are resource-constrained, richer regions will outbid the poorer ones, independently of whether the richer regions will reap more from the relocation than the poorer ones. Through redistribution, the efficiency of the process can be improved.

Graph 3.1 shows the efficiency and the equity rationale for a situation where a state aid affects the wealth of two distinct groups in a society (e.g. geographical entities, social groups, etc.).

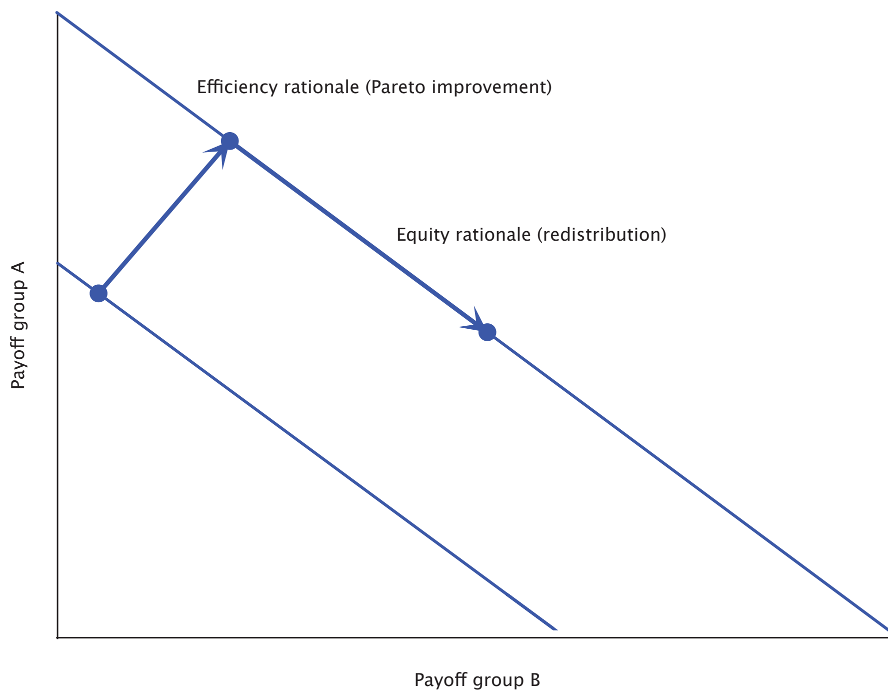

Figure 3.1: Efficiency and equity rationales

3.1.2 State aids as a cause of market failure

3.1.2.1 Strategic trade literature

The literature on strategic trade theory looks at policies taken by countries with the aim of influencing the outcome of competition between firms in an international oligopoly. The policy instruments investigated are usually import tariffs and quotas, as well as subsidies for exports, investment, or research and development. An important result is the presence of prisoner's dilemmas, which justify the existence of trade agreements in order to rein in the use of policy interventions (Spencer and Brander, 2008).

Much of the strategic trade literature emphasized the importance of governmental non-intervention. Subsidizing exports meant that the exporting country is paying for the importing country's consumption. These subsidies, in a certain way a form of altruism, were considered unproblematic, although not beneficial to the subsidizing country - on the other hand, tariffs on imports were the policy which would benefit a country more than subsidizing its exports.

In Brander and Spencer (1981), Spencer and Brander (1983), and Krugman (1984) national governments help domestic firms expand market shares in profitable geographical areas. In Basevi (1970), Frenkel (1971), and Pursell and Snape (1973), a domestic monopolist benefits from exporting and being subsidized. Bhagwati (1971) looks at the question from the angle of the potential distortions, of which imperfect competition is a kind.

With the advent of the so-called new trade theory, Brander and Spencer (1985) established the view that export subsidies can be beneficial to the subsidizing country. Although the subsidy moves the terms of trade against it, its welfare can increase if the price exceeds the marginal cost of exports (assuming imperfect competition). The export subsidy is a means to shift the profits from one country's firm to another country's firm. As a consequence, countries might want to enter into agreements not to make use of subsidies.

Martin and Valbonesi (2006a) describe how market integration leads to more state aid. In their Cournot oligopoly setting with one firm per country, firms face fixed costs and constant marginal costs. Based on this, it is possible to derive the equilibrium number of firms (the efficient

number is such that the firms' revenues exactly cover their costs). It is then possible to show that market integration, which prevents firms from price-discriminating by country, leads to a lower equilibrium number. In order to maintain the revenues from their respective national firm and reap the profits from selling the firm's products in other countries as well. In total, there is a welfare loss because the number of firms in the market is inefficient.

3.1.2.2 Distortion of competition

Subsidies can distort competition between firms. If a firm receives subsidies from the government, it has an advantage over its competitors and will thus accrue market power. The efficiency loss encompasses three aspects: first, there is the dead-weight loss of taxation (because the government has to levy taxes to finance the subsidy), second there is the opportunity cost of those monies, and third there is the dead-weight loss due to the firm's market power.

When a firm receives a subsidy from a government, it can more easily increase the quantity of goods offered or decrease the price it charges. At first – and for the moment only considering a static model[9] –, this is not necessarily a bad thing. After all, subsidies might only increase the firm's profit without affecting prices and quantities. In this case, the state aid is simply a transfer from the government to the firm with no loss in efficiency, no adverse effect on the competitive process, and therefore not requiring legal intervention.

A firm choses the quantity it produces by equating marginal cost with marginal revenue. If the state aid affects either one of them, then there is an effect on market prices and quantities. This "artificial competitive advantage" (Zampetti, 1995) is considered the core of the distortion of "the normal competitive process" (ibid.).

In a Cournot duopoly of two firms A and B with constant marginal costs (c_A and c_B) and a demand function $P = a - b(q_A + q_B)$, the two equilibrium quantities with no subsidies will be $q_A = \frac{a-2c_A+c_B}{3b}$ and $q_B = \frac{a-2c_B+c_A}{3b}$. The total quantity produced is $Q = q_A+q_B = \frac{2a-c_A-c_B}{3b}$ and the price is $P = a - \frac{2a-c_A-c_B}{3}$.

[9] "Static model" means that we look at the efficiency effects without taking into account the long-run changes in players' behavior.

If a state now awards a subsidy to, say, firm A which, say, reduces its marginal cost by s, then the new equilibrium quantities will be $q_A = \frac{a-2c_A+2s+c_B}{3b}$ and $q_B = \frac{a-2c_B+c_A-s}{3b}$ and the total quantity produced is $Q = q_A + q_B = \frac{2a-c_A-c_B+s}{3b}$ and the price is $P = a - \frac{2a-c_A-c_B+s}{3}$. Thus, the total quantity is higher and the price is lower. The efficiency gain *in this market* is positive. It can be shown that it is equal to $sq_A^s + \left(\frac{P^s+P}{2} - c_B\right)(Q^s - Q)$, where superscript s designates values of variables after the introduction of the subsidy.

The cost of this subsidy to the awarding government is $q_A s$. The true cost of this subsidy to society is equal to the dead-weight loss of taxation incurred through the funding of the subsidy. Only if the efficiency gain in the duopoly is higher than the dead-weight loss of taxation, then the state aid is efficiency-enhancing. Whether this is actually the case depends on a variety of factors, mostly about the manner in which the government is able to fund the subsidy. In fact, there is a distortion of competition, but it is not necessarily detrimental to the market or to society as a whole.

The insight from this brief model is that the concept of "distortion of competition" might need a more dynamic approach in order to understand why subsidies and the ensuing distortions of competition produce efficiency losses in the market for goods (and not only dead-weight loss of taxation).

David Collie produced a series of articles which analyze state aids in oligopolistic settings, with sometimes ambiguous results with regard to the need for supra-jurisdictional state aid control.

Collie (2000) analyzes the effects of banning state aid in an integrated market in a symmetric Cournot oligopoly. In this model, there is one firm in every member state and state aids are financed by a distortionary tax, causing a trade-off between the dead-weight loss of the oligopolistic market structure and the dead-weight loss of taxation. With some values for the opportunity cost of the tax, some member states will give subsidies and therefore a European prohibition of state aids will be efficiency-enhancing.

Collie (2002) expands the analysis to a market structure of either a Cournot or a Bertrand oligopoly in an integrated (European) market. His results are that with sufficiently close substitutes, a ban on state aids might increase aggregate welfare (depending on the opportunity

cost of the tax revenue used for the state aid), whereas with sufficiently differentiated products, it may decrease aggregate welfare.

Yet, the aspect of remedying market failures is not missing in Collie's series of papers. In Collie (2005), he notes the importance of exempting funding for research and development from the prohibition of state aid if the technological spillovers are large enough to outweigh the dead-weight loss of taxation.

Møllgaard (2003) analyzes the competitive effects of state aid in an oligopolistic setting, in which firms first invest in vertical product innovation and then compete in a differentiated Bertrand fashion. In this model, state aid might harm competitors even when not affecting pricing directly. The reason is that the recipient – profiting from a lower capital cost (and not of a decreased marginal cost as other models assume) – ends up in a dominant position.

Garcia and Neven (2005) analyze how state aid affects and distorts competition and trade within and across jurisdictions. They define distortion as the effect on the competitors' profits. Their model is noteworthy for comparing *different kinds* of state aids, namely subsidies affecting (a) marginal cost, (b) entry, and (c) quality. In order to quantify distortions, they check which market characteristics might be robust indicators of the magnitude of the distortions. The results are the following: "(i) it appears that concentration is a fairly robust indicator; (ii) A high degree of substitution across differentiated products is not a robust indicator of the magnitude of the distortions. Its effect depends on the type of state intervention; (iii) The substitution among domestic products may have opposite effects respectively on domestic and foreign firms. In particular, when the market is not concentrated and state aid takes the form of a production subsidy, a stronger substitution among domestic products will reduce the distortions felt by the foreign firm (but increase that felt by domestic rivals); Finally, (iv) the paper demonstrates that the impact of selective State aid on market prices and competitors can depend on the particular characteristics of the market" (ibid., p. 1).

Katsoulacos (2005) discusses specifically state aid to foster research and development and proposes a methodology for the economic assessment of its effects.

Jegers and Buts (2011) build a model analyzing the competition effects of state aid in the case of perfect competition and for a Bertrand-

Nash duopoly. They show that in the case of perfect competition, the effect of a state aid depends on certain market characteristics, such as size and cost structure as well as on the amount of the subsidy. In the case of a Bertrand-Nash duopoly, subsidies lead to a more competitive market. The conclusion from this is that there should be a case-by-case analysis by a supranational authority investigating the effects on competition.

Using a sample of 13,000 Belgian firms, Buts and Jegers (2013b) and Jegers and Buts (2012) show that the firms that receive state aids see their market share increase. This effect is only visible after two years. This means that, despite the Treaty's aim to prevent distortions of competition, the current state aid control regime is not effective in achieving this goal.

London Economics (2004) measured the effect of rescue and restructuring aid on international competitiveness. They draw a rather positive picture (for the recipient firms): their results suggest that firms which receive state aids end up increasing their market shares as well as their fixed assets.

To summarize preliminarily, subsidies can have anti-, but also pro-competitive effects. Thus, state aid control needs to incorporate a degree of differentiation in its prohibition of subsidies.

3.1.2.3 Fairness considerations

As sketched above, a distortion of competition might only be a set of transfers between a government, a state aid recipient and its competitor or competitors. Banning state aids in this situation is then only done out of motives of fairness. I.e., it is considered "unfair" that firm A receives an advantage and firm B does not. "The notion of 'fair' competition is the evocative, more voiced than explained, mantra of lobbying industries seeking protection. The problems come when it is necessary to give some substance to this idea and make it operational. In this respect, the concepts of 'normal' or 'workable' competition combine realism with a solid anchorage to theory. Most importantly, they give full meaning to a discipline that should counteract the negative effects of subsidies *on* (normal) competition, and not protect less efficient operators *from* (normal) competition" (Rubini, 2009, p. 384, emphasis in the original).

What remains unanswered is why a state aid is considered to be giv-

ing a firm an "artificial competitive advantage" (Zampetti, 1995) while it is not considered "unfair" that some firms, e.g. due to their location, have better access to natural resources or to skilled labor (which in itself is often also a result of government policy). If a firm receives subsidies and its competitors do not, then maybe this firm is simply *better* at reaping benefits than others – why should it not be rewarded for that? In some views on inter-jurisdictional competition, state aids are indeed considered an integral part of the jurisdiction's characteristics.

Maybe the answer for that lies in the rent-seeking literature: we simply do not want firms to waste resources in order to attract rents and to lure governments into wasting their taxpayers' money. At an international level, the answer might be that countries simply do not consider appropriate to harm other countries' firms. There could also be policy objectives such as avoiding "unfair" competition between rich and poor countries (Rubini, 2009), given that it is easier for rich countries to fund subsidies.

None of these arguments, nonetheless, are in line with the considerations usually done in law and economics. Unless, of course, we gear our perspective towards a more dynamic approach, which adds more stages to the strategic decisions involved - asset specificity can be the paramount variable determining lobbying activities.

3.1.3 A special case: bailouts

Some of the literature on state aids (for an overview, see e.g. Głowicka (2008)) revolves around public support of firms in distress. The main issue, of course, is the moral hazard involved: if a firm can count on being bailed out, then it has lower incentives to be efficient and might take higher, non-necessary risks, an aspect to be discussed in in detail in chapter 6. Głowicka (2008) also reports and finds some empirical results: Bailouts delay exit instead of preventing it. In the first four years, 29.3% of bailed-out firms leave the market. Governments favor state-owned firms even though they do not outperform private firms. The choice whether rescue aid or rather restructuring aid is granted is endogenous. Higher market shares lead to higher expectation of bailouts (as reflected by ratings of banks).

As for the political economy, there are some interesting institutional results reported in Głowicka (2008). Over 90% of variation in allocation

of state aid to manufacturing in the EU, so the claim, can be explained by political variables.

So should governments bail out firms to save jobs? In standard models with homogeneous goods and a mostly uncharacteristic workforce, the answer is clearly no. Because of the efficiency loss due to taxation, a bailout would be a costly way to save a firm which would easily have been replaced by another one. The reason why states nevertheless frequently recur to bailing out ailing firms thus lies in the political considerations involved - chapter 5 will therefore review the public choice involved in these kinds of decisions. From the inter-jurisdictional point of view, what matters are the externalities. For instance, the relative size of countries then is a relevant variable (ibid.). In typical models of a “home” firm and a competing “foreign” firm, there are also effects on third countries.

Job market rigidity can be an argument in favor of bailouts. If the workers of a bankrupt firm cannot reenter the productive process quickly, the loss of welfare due to unemployment might be higher than the cost of the bailout. But what if the failing firm employs highly specialized workers who would not find a job elsewhere? And what about the capital investments which might be lost if the firm goes bankrupt? The degree of asset specificity, a concept studied *inter alia* by Oliver Williamson (1975; 1985), plays a role in the assessment of the efficiency effects of a bailout. Furthermore, job market rigidities (that is, how difficult it easy for the job market to adjust to a new equilibrium), determine the amount of loss of efficiency.

The crucial point about bailouts is that, on the one hand, according to economic theory, inefficient, non-competitive firms should leave the market. But, on the other hand, depending on the characteristics of the firm, the adjustment costs might be high, that is, the costs of moving a productive factor (be it specially trained labor or custom-made machinery) from one economic activity to another. European state aid control has traditionally taken a lenient stance towards rescue and restructuring (R&R) aid, considering them as rather unproblematic. The Community Guidelines on State Aid for Rescuing and Restructuring Firms in Difficulty (2004/C 244/02) are the relevant document. It asserts that “the exit of inefficient firms is a normal part of the operation of the market. It cannot be the norm that a company which gets into difficulties is res-

cued by the State. Aid for rescue and restructuring operations has given rise to some of the most controversial State aid cases in the past and is among the most distortive types of State aid. Hence, the general principle of the prohibition of State aid as laid down in the Treaty should remain the rule and derogation from that rule should be limited" (para 4). It defines a firm in difficulty as a firm which "is unable, whether through its own resources or with the funds it is able to obtain from its owner/shareholders or creditors, to stem losses which, without outside intervention by the public authorities, will almost certainly condemn it to going out of business in the short or medium term" (para 9).

Yet, the guidelines explicitly reinforce the previously established 'one time, last time' principle. According to this principle, a firm may not receive any additional rescue or restructuring aid during a uniform period of ten years. This rule does not apply though when restructuring aid follows the awarding of rescue aid as part of a single restructuring procedure.The guidelines also set a cap on the state contribution to the restructuring costs. Large firms have to come up with 50% of the costs on their own, medium-sized firms with 40%, and small firms with 25%. In other words, the rules make it more difficult to rescue a large firm than a small firm. The reasoning is that with large firms being rescued, the distortionary effects on competition are higher. It does not answer the question why saving small firms would be less of a waste of taxpayers' money than saving a large firm from an efficiency point of view (in relative terms).

While *prima facie* some arguments could be made in favor of this approach, the public choice view developed in the following chapter draws an even more differentiated picture.

The financial and economic crisis has had a significant impact as to how R&R aids were dealt with. The "Temporary Community framework for State aid measures to support access to finance in the current financial and economic crisis" (notice 2009/C 16/01) allowed EU member states to award a maximum flat-rate aid of €500,000 per company during the first two years to help companies overcome the current difficulties, state guarantees for loans accompanied by a premium reduction, subsidized loans, in particular for the production of green products (meeting environmental protection standards early or going beyond such standards), and aid in the form of risk capital, which may be up to €2.5

million per SME and per year (instead of the previous limit of €1.5 million) provided that at least 30% (instead of the previous 50%) of the investment costs are met by private investors.

The "Communication from the Commission on the application of State aid rules to measures taken in relation to financial institutions in the context of the current global financial crisis" of (2008/C 270/02) clarified the application of state aid rules to emergency measures aimed to offset losses due to the financial crisis. It stated that public intervention should be decided at national level within a coordinated framework and on the basis of a certain number of European Union common principles (para 2).

3.1.4 The openness and integration of the economy

In an open economy, subsidies to firms might give them a competitive advantage over foreign firms. Thereby the domestic firm's profits increase to the detriment of the foreign firms (and of domestic competitors if they do not receive the same subsidy). If the increase in profits outweigh the costs of the subsidy (assuming that the profits stay within the home country), then the subsidy is welfare-enhancing **for the home country**. This is the core of the prisoner's dilemma: foreign countries now have a big incentive to give a subsidy to their firms. Eventually, there is no gain in efficiency, but there are the costs of the subsidies that remain.

Gröteke (2007) reviews theories about the degree of market integration and their implications for firm subsidies: Subsidies have a different effect in a closed than in an open economy. In the former, they can be used to correct market failures (e.g. due to technological externalities or natural monopolies) and increase efficiency, but have a negative effect because of the deadweight-loss of taxation. Often it might then be better to directly address the cause of the market failure instead. In the latter, the negative externalities onto other economies should be taken into account. The European Union went through several successive stages of economic integration: (i) free trade, (ii) common tariffs vis-à-vis third countries, (iii) free movement of factors of production, (iv) harmonization/unification of economic policies (the current, still developing stage). The more economies integrate, the bigger the possible externalities due to subsidies and the lower their ability to countervail them.

It is therefore vital to not only view the question of state aid con-

trol from the perspective of the competition between firms, but also to consider the externalities imposed on other countries, as well as the fact that there is a competition also between jurisdictions. In this latter case, the externality is not an externality anymore, but an inherent part of the inter-jurisdictional competition game played by countries or entities in a federal or quasi-federal system.

3.2 Competition between jurisdictions

In order to understand the problem of state aids, it is crucial to see that there are two different competitions taking place. First, firms compete for customers and try to maximize their profits. The other kind of competition is more delicate to describe. It is the competition of jurisdictions at various levels. These levels can be local (e.g. cities, counties, communities), regional (e.g. German Länder, U.S. states, Canadian provinces), national (countries), international (regional groupings of countries, such as the European Union[10]). The goal in this competition is to attract firms, capital, and/or jobs. In theory, the desired outcome is that politicians are incentivized to offer bundles of laws, public goods, and tax rates which optimally reflect the preferences of individuals. As Hans-Werner Sinn said, "It has often been argued that systems competition is comparable to competition in private markets. [...] Governments are seen as firms which compete with one another by offering attractive packages of services and tax prices and, although they are driven by national goals, competition makes them behave in a way compatible with an international welfare optimum" (Sinn, 1997, p. 248). But Sinn was also aware that the analogy between firms and governments does not work perfectly: "[...] governments undertake a variety of economic activities which cannot be handled satisfactorily by competitive markets. Since governments have stepped in where markets have failed, it can hardly be expected that a re-introduction of a market through the backdoor of systems competition will work. It is likely to bring about the same kind of market failure that justified government intervention in the first place" (Sinn, 1997, p. 248)

[10]The Airbus v. Boeing saga shows that the EU has indeed become an actor on a global stage with regard to subsidies and inter-jurisdictional competition

One important efficiency-related effect stems from inter-jurisdictional "bidding wars" and the subsidization of inefficient firms. In the former, jurisdictions (say, EU member states, German *Länder*, or American state, county or municipal governments) spend resources to incentivize firms to relocate. Society as a whole does not gain from this competition (in order to keep the provision of public goods the same, the subsidizing jurisdiction needs to levy higher taxes, thereby producing a higher dead-weight loss of taxation). Society might gain from a relocation of a firm - but if a firm is really more productive in a different location, it would have moved on its own, even without the subsidy. As an example of such a "bidding war", Facebook announced on October 27, 2011, that it would immediately begin building a new data center (a so-called server farm) in the Swedish town of Lulea, near the Arctic Circle. The location was chosen because of the suitable climate for environmental cooling and clean power resources. The farm will require 300 full-time positions during the first three years. The Swedish government meanwhile announced that it would subsidize the project with 103 million Swedish kronor (approximately €11.4 million). "The investment in a data center will give the area expertise in a future growth industry and, not least with the proximity to the Lulea Technical University, will create possibilities for more companies and activities in the region going forward", the Swedish Enterprise Minister Annie Loeoef said. Lulea's mayor welcomes the opportunity to turn the Lulea region into a major node for European data traffic, dubbing the region "The Node Pole." He adds that "We hope other global companies see the innate climate qualities and benefits of the Node Pole region, and choose to follow in Facebook's path." All quotes are from National Post (2011). Through the pretext of regional aid (presumably), the Swedish government participated in what was most likely a "subsidy race." Knowing that other IT firms such as Google or Microsoft already built similar server farms near the Arctic Circle, it was very probable that Facebook would choose a similar location. Thus, the Swedish government subsidy only affected the choice of location. The efficiency loss (on the global scale) in this case is the deadweight-loss of taxation born by Swedish taxpayers in order to finance the subsidy. This is at least true if we assume that the benefits of the server farm are the same in Canada, Norway, Sweden or Finland. A more pessimistic view might say that the efficiency loss is

even bigger: namely, if the Swedish location performed worse than, say, the Canadian alternative, but that this difference was compensated by the subsidy.

But subsidies occur also when relocation is not an issue. States have repeatedly engaged in the support of inefficient firms or whole sectors. As Martin and Valbonesi (2006b) point out, "much state aid in the EU is driven by the sunkenness of capital - capital immobility - in integrating markets and the reluctance of member state governments passively to accept that market integration implies a reduction in the equilibrium number of firms[11]."

On a purely intra-jurisdictional level, this is simply a waste of taxpayers' money. It becomes a concern to other jurisdictions though as well if this subsidy distorts competition in the inter-jurisdictional commerce.

In any case, the money used for bidding wars and inefficient firms or sectors, wastes resources that could have been used for things more useful to economic growth. The losers of competition in this Tiebout'ian setting, as Sinn (1990) notes, are the immobile workers and landowners on one hand, and the poor on the other hand because governments will not be able to maintain the same degree of redistribution.

The previous section showed that state aid decisions affect the goods markets. They can either alleviate an existing market failure, or be the cause of one - even both at the same time. The strategic trade literature linked goods markets to states acting on an international stage. This means that an aid decision will not only affect domestic firms, but also foreign firms, and, as a result, foreign societies. Yet, the view that trade should only be based upon the endowment of natural resources of countries without interference by the state would be too fast a conclusion. In fact, not only firms are in a competition, but there is also a competition between jurisdictions *for* firms. The competition is fierce indeed. In 1996, it was estimated that around 15,000 investment attraction agencies competed for only 200 to 300 large-scale projects Loveridge (1996). The externality identified earlier might then just be an inherent outcome of this second type of competition. Whether this inter-jurisdictional com-

[11] "Equilibrium number of firms" here refers to a Cournot model in which firms make enough revenue in order to cover their fixed costs and thus stay in the market in the long-run. If two Cournot oligopolies merge due to economic integration, then this number will be less than the sum of the numbers of firms in the two formerly separate oligopolies.

petition produces efficiency problems is the subject of this section.

As a first approach, Charles Tiebout's positive theory of the free rider problem in local governance comes in useful.

Tiebout (1956) identified several conditions for the efficient provision of public goods: (a) unrestricted mobility of consumer-voters, (b) perfectly informed consumer-voters, (c) large number of communities, (d) unrestricted employment opportunities. (e) no externalities in between communities, (f) communities have a non-infinite optimal size, and (g) communities try to reach this optimal size.

Taking those assumptions and applying them for instance to the situation in the EU (or other economically integrated regions) seems to make sense to a certain degree. The EU allows – at least legally – uncomplicated and free movement of people, firms, goods, services and capital. It is probably also safe to say that EU citizens are increasingly aware of developments in other member states (see for instance recently the Europe-wide coverage of the sovereign debt crisis, especially in Greece). Some non-legal restrictions, mainly the language barrier, still exist, nevertheless. Also, employment opportunities vary a lot between countries and there clearly are externalities between countries. The model most definitely works better in the United States.

The inter-jurisdictional competition angle of the law and economics of state aids to firms needs to address issues like (i) the incentives governments have to grant subsidies, (ii) under what conditions those subsidies are efficiency-enhancing, (iii) under what conditions inefficiencies arise (creating the need for a higher-level subsidy-control), (iv) what the problems of subsidy control in an institutional setting might be and what the alternatives thereto might look like (Gröteke, 2007).

When designing a federal structure, there has to be a constitutional choice addressing the so-called "assignment problem" (Oates, 1972). The question is, how competences should be allocated and responsibilities among governments divided in a federal system in such a way that the efficiency of the public sector be maximized. The core idea is the heterogeneity of citizens: if decisions are made at the local level, the preferences of all citizens can be better reflected than if decisions are made at a federal level. Furthermore, decentralization enables learning and experimentation. The local community can try different bundles until it finds an optimal one.

Problems arise, of course, if there are positive of negative externalities, which cause either under-investment or over-investment, respectively. In terms of state aids, it means that a e.g. a subsidy allowing a firm to produce at a lower price will benefit the entire market, although only the citizens of the local jurisdiction pay for the subsidy. European Union law would consider such an aid problematic, as it affects trade between member states. The question, though, is: if citizens of a jurisdictions democratically choose to subsidize a firm and thereby provide a good at a lower price to citizens of other localities, why does this warrant a government intervention? The answer, in fact, is that state aid control serves not the purpose of avoiding this free-riding problem. It serves the purpose of over-coming a prisoner's dilemma situation. In a certain way, state aid control could be interpreted as a cartel of sorts, in the sense that the participants in a market (in this case: the local jurisdictions) agree jointly on tax-benefit bundles and thereby reduce inter-jurisdictional competition. Unlike cartels of firms, localities can overcome the commitment problem inherent to cartels by establishing a central authority which enforces the agreement. The examples of failed regional agreements in parts of the United States (in the Midwest and in the New York/Connecticut/New Jersey tristate area) show that the prisoner's dilemma colluding firms face is also present in agreements between political entities.

The so-called "second generation of fiscal federalism" (Weingast, 2013) incorporates concepts from political economy into federalism theory. Politicians are seen as self-interested, and federalism gives them the incentives which will maximize the welfare of the federation as a whole. Federalism, so the claim, will let politicians not only choose an efficient bundle of taxes and public goods, but the politicians will have an interest to also provide rules and frameworks which guarantee a functioning market for goods (such as enforcement of contracts and maintaining private property).

3.2.1 Is there a level playing field? Problems with the definition of state aid/subsidy

The declared aim of state aid regulation is to create a so-called level playing field (the term appears in many policy documents, see for instance

European Commission (2012)), in which firms compete for markets without assistance from their governments. Yet, is this a realistic scenario? Snape (1988) notes that, to a certain degree, every government action may be regarded as a subsidy: for example, a requirement to fly domestically manufactured flags on government buildings is *de facto* an aid to flag makers. This measure gives them a secure home market and lets them achieve economies of scale, thereby giving them an advantage also on the worldwide market. Furthermore, the term state aid is difficult to define. It is in fact not obvious what the term specific (which is used in many legal documents regarding state aids) means. Is an environmental regulation affecting only one firm in an industry (e.g., because it is the only firm) a specific aid? Is building infrastructure close to a business park a specific aid to the firms locating in said business park? What if the government decides to promote computer science in its high schools, thus benefiting the large computer company in the country – could that be an indirect export subsidy?

This problematic, of course, has an effect on the possible regulatory solution. The paramount question is: if it is not trivial to define state aids and jurisdictions compete through so many parameters, is state aid control then actually feasible? And is the current state aid control mechanism in place in Europe – banning specific aids to firms, but not competition through other factors – really the best solution? Might it not be conceivable that inter-jurisdictional competition is less harmful when it takes place through subsidies than through labor or environmental law?

As de Cecco (2013) puts it: "... State aid is incapable of targeting strategic regulatory differentiation among Member States, but can only target asymmetric regulation within individual Member States. Yet, in the perspective of locational competition, the latter type of differentiation may often be a more effective and financially less onerous tool to achieve the result sought by the former sort of regulatory differentiation. Selective regulatory incentives are, in fact, more effective in that they target those undertakings that are more likely to respond to the appeal of public incentives, or undertakings that belong to a specific sector that the Member State seeks to attract to its jurisdiction; moreover, selective regulation also reduces the impact on public finances, in that it does not cover all undertakings across sectors, but only those undertakings that

it seeks to attract."

3.2.2 Recent trends

It is important to stress recent trends in the development of the phenomenon. The lack of comprehensive data, a returning issue in this book, renders an exact analysis of trends difficult. Yet, at least anecdotal evidence seems to indicate an increase in worldwide competition for capital (see e.g. Friedman (2006) for a global view, and LeRoy (2005), Chirinko and Wilson (2006), Fisher (2007), and Tannenwald (2001) for the increase in availability of incentive packages in the United States). Markusen and Nesse (2007) give a brief historical overview that draws the competition for mobile capital in the U.S. even back to the nineteenth century, in which Californian cities competed for military bases. So-called "bidding wars" for plants or facilities have increased since the 1960s.

The automobile industry has for long been an important battlefield for bidding wars. A reason for that is that it employs large numbers of blue-collar workers at relatively high pay. Already in the 1970s, there were major relocation decisions made based on state aids. Pennsylvania and Ohio competed for Volkswagen's first American assembly plant. Volkswagen accepted a package that included $100 million from Pennsylvania, as well as federal funds to train the workers. This led Lee Iacocca, president of Ford Motor Company, to declare that the location of major Ford plants would henceforth by determined by the highest incentive package. Only weeks later, Ford received a $70 million subsidy from Canada, leading it to build a $533 million engine plant employing 2,600 workers. At the same time, DeLorean, which achieved some fame for building the DMC-12, the sports car-turned-time machine from the *Back To The Future* movie trilogy, received $100 million from Northern Ireland, thereby outbidding offers from Detroit, Puerto Rico, and others (Flint, 1978).

Of course, this competition takes also place in many other institutional settings. Australia, for instance, has a history of inter-jurisdictional competition for capital with rather unsuccessful attempts of states to restrict themselves. Europe's state aid control mechanism, on the other hand, dates back to the 1950s. In other parts of the world, especially developing countries, "American-style regional competition for capital"

(ibid, p. 6) is proliferating. Accordingly, fiscal competition between jurisdictions is rampant in Brazil, India, and China, with various legal regimes trying to either cool down the competition (Brazil) or accelerate it (China, India). It is also taking place in small independent countries competing for American, European, or Japanese plants – Poland and Bulgaria (before EU accession), Cambodia, Lao, and Vietnam would be examples thereof.

There are some reasons why the competition for firms has increased in the last decades.

Falling transportation and communication costs, vertical disintegration Technological progress has constantly reduced the costs of transporting goods between plants and to customers. At the same time, advances in telecommunications have facilitated the communication and coordination between various stages of the supply chain spread through the world. The macroeconomic literature tells us that economic development and technological progress go hand-in-hand. Technological progress also had another effect: it reduced transportation and communications costs and thus, jointly with the removal of trade barriers and the establishment of regional trade agreements increased capital mobility. Firms thus have a bigger choice of locations (and for various reasons are better able to cooperate) while coordination between jurisdictions has become more difficult because their number increased[12] and many of their attempts to coordinate failed (see below). As a result of lower transportation costs (in the wider sense), firms disintegrated vertically, that is, separated the headquarters from their manufacturing plants, R&D centers, and other functions (Fröbel et al., 1979). Quite paradoxically, falling transportation and communication costs have diminished the role of location, clustering, that is, geographic concentrations of interconnected firms, is an increasing phenomenon in advanced economies (Porter, 2000).

[12] Without customs unions, jurisdictions could just compensate another jurisdiction's subsidies by levying a tariff on the product manufactured by the subsidized firm to remedy the distortion of competition. Therefore, with increasing economic integration, the number of jurisdictions in direct competition to a given jurisdiction rises.

Political devolution Devolution is the process in which central government cede powers to a lower-level government. These powers can nevertheless *ultimately* rest reside in the central government, which distinguishes devolution from federalism, in which federal entities rejoice statutory, constitutional rights. The consequence of devolution is that even unitary, that is, non-federalist countries now face inter-jurisdictional competition between their lower levels of government. Major devolution process can be observed in Spain with its system of autonomous regions, in France (enfranchisement of its *régions*), or the United Kingdom with the 1998 establishment of the Scottish Parliament, the National Assembly for Wales, and the Northern Ireland Assembly (England remaining un-devolved). In federal states such as the United States, Australia or Germany, individual states can devolve internally and cede powers to the local governments. Some American countries have devolved and also granted special powers to indigenous people (e.g. Mexico). Devolution has a problematic side-effect with regards to the competition for firms. It can be argued that through this process, local and regional governments are entrusted with the task of economic development, without receiving the adequate resources or revenue-raising authority (Llanes, 1998) and without the necessary expertise, worsening the information asymmetry problem (Markusen and Diniz, 2005; Schneider, 2004)). As Markusen and Nesse (2007) point out, governments in, say, Brazil and India are inexperienced when it comes to negotiating deals with multinational corporations, which end up taking advantage of their position. This is amplified by the advent of site consultants, who facilitate incentive competition by identifying potential rents and selling this information to companies. The problem, as they identify it, is that these consultants – whose trade is unregulated – often work for both sides (drawing double commissions), which can lead to a lower quality of information available to the bidding jurisdiction.

Rise of the site consultancy industry Over the last decades, the process of matching firms with jurisdictions has been significantly professionalized. In the United States, the site location industry was fueled in the 1950s by the federal government's policy of dispersing its military manufacturing plants for fear of strategic bombing by the Soviet Union. In 1975, the first "business climate" ranking was compiled by Fantus

Corporation, which contributed to bidding wars among American states (LeRoy, 2005).

Politics and political calculus Another recurring theme in this book and in the more public-choice-oriented literature on state aids is asset ownership and their specificity. Groups within jurisdictions with local assets or benefiting from there directly lead to the development of what Molotch (1976) calls "growth machines". These groups lobby for the attraction of population and mobile factors in order to avoid having to move themselves. Local rent-seeking coalitions and the specificity of assets are discussed again in the next chapter.

3.3 Regulating the competition

It has been mentioned earlier that it seems paradoxical that the more centralized a federal system, the less likely it is to show strict state aid control. The United States has a relatively stronger federal government than the European Union, yet it does not have a strict regulatory state aid control system (see chapter 3). On one hand, the European Union, a vague, *sui generis* association of states, on the other hand, sports a very sophisticated control mechanism.

3.3.1 States' rights and discrimination

Whether there is indeed a paradox can be disputed. In fact, this situation might not be as paradoxical as it seems. In certain aspects, American states enjoy much wider discretion than EU member states. The EU by now has in place a very strict regime prohibiting all kinds of discrimination against Europeans by national states. The U.S. constitution's so-called Privileges and Immunity Clause bans a state from treating U.S. citizens of other states in a discriminatory manner (U.S. Constitution, article IV, section 2, clause 1). The scope of this clause is disputed, though. In a landmark case in 1978[13], the Supreme Court upheld the state of Montana's right to charge higher fees for out of state elk hunters. The common interpretation of the clause (which is still being followed

[13] *Baldwin v. Fish and Game Commission of Montana*, 436 U.S. 371 (1978)

today) is thus that there is no constitutional requirement for states to treat residents and non-residents equally for all purposes. The majority's opinion in this case was that the purpose of the clause is to prevent discrimination concerning fundamental matters, but not to prevent all distinctions between state residents and non-residents, e.g. in matters such as recreational opportunities like hunting (Linder, 2012). Most importantly, the State-Immunity Doctrine also applies to anti-competitive conduct. In a recent decision, the Supreme Court re-affirmed the doctrine that "federal antitrust laws do not prevent States from imposing market restraints 'as an act of government'." (Federal Trade Commission v. Phoebe Putney Health System, Inc, et al., 568 U. S., 2, citing Parker v. Brown, 317 U. S. 341, 350?352)

In the European Union, the functional equivalent to the Privileges and Immunity Clause is Article 18 of the Treaty on the Functioning of the European Union. It prohibits any discrimination on grounds of nationality (which is equivalent to the concept of state residency in the U.S.). It could be argued that the European Court of Justice is stricter in its application of Article 18 than the Supreme Court is in applying the Privileges and Immunities Clause.

After all, the European Union might have already developed into a federal structure which – at least in some aspects – might give less sovereignty to its federal entities than what is subsumed under the term "state rights" in the United States. This might be a part of the answer to the question whether a EU-style state aid control mechanism might be a realistic perspective in the United States. State rights, their interpretation in constitutional law, and the sometimes very strong ideological views about them might in fact be a crucial factor hampering the kind of development in the United States that has been taking place in Europe.

3.3.2 The number of actors

As emphasized in various parts of this book, there is a varying degree of inter-jurisdictional coordination. Comparing the regimes on public subsidies in the European Union, the United States and Canada yields puzzling results. The federal structure with the lowest regional strength of central government (the EU) is the only one with central monitoring

and control of investment competition[14], while the United States with its relatively strong central government has no monitoring or enforcement. Canada, which is in-between the two in regards to centralization, has a Code of Conduct among the ten provinces (the equivalent of states in the U.S. and countries in the EU). The enforcement is assured through complaints, but not through a central entity's own initiative (as it is the case with the European Commission).

A possible explanation for this result might be the number of actors. While the United States has to solve a prisoners' dilemma with 50 states and a federal government, Canada needs to coordinate a mere ten provinces[15] and European state aid control has its origins in times when the EU consisted of its six founding members. There were two attempts by some American states to create regional anti-piracy[16] agreements. In the 1980s, the agreement of the Council of Great Lakes Governors failed even before it was signed (Schweke et al., 1994; Thomas, 2000), whereas in 1991 the agreement in the Connecticut-New Jersey-New York tri-state area did so a few months after the Governors signed it (Mahtesian (1994) cited in Thomas (2000)).

But the number of actors is not a satisfying explanation as to why a country like the U.S. never implement a state aid control system, while the EU seems to have done so with great ease. What the next chapter will highlight, is that there can be substantial political pressure on leaders at the lower level in a federal system to not enter agreements.

The discussion on inter-jurisdiction competition goes far beyond the mere granting of subsidies to firms. States or regions have other instruments, which might even be more powerful than subsidies. It therefore would also have to encompass questions of competition through labor law, industrial relations (e.g., the role attributed to labor unions–see for instance the distinction between "right-to-work" states and non-"right-

[14]The EU controls state aid in order to avoid distortions of competition and bidding wars between member states/regions. The Council of Ministers though has the authority to approve an aid scheme by unanimous vote. Interestingly, for some reason, this almost never happens (ibid.). Are there really never any aid schemes that might constitute a Pareto-improvement for all members?

[15]Canada's situation became more complex though with the customs union with the U.S. and the founding of NAFTA. Henceforth, the ten provinces are in a direct competition with the several United States and Mexican states.

[16]"Piracy" in the U.S. or "poaching" in Canada is the term designated for a jurisdiction's attempts to make a firm relocate there from another jurisdiction.

to-work" states[17]), or environmental policies.

3.3.3 European state aid control as the total welfare maximizer

The European Commission could be considered a benevolent principal which tries to maximize the total welfare of all jurisdictions. The EC is considered a benevolent principal in the sense that it does not follow private benefits, but one and only one objective: maximizing the total welfare of the union. Its welfare function is thus the sum of the individual member states' welfare functions minus the total amount of externalities produced. One way of interpreting this scenario is that the EU levies a sort of "Pigou tax" on state aids. As with real taxes, politicians in the member states have incentives to avoid them. This is particularly true since there is no punishment system in the EU beyond the requirement to recover state aids deemed unlawful. Unlike in models on corruption with benevolent governments and corrupt tax collectors, the agent cannot be threatened with losing their job. The only one who can punish politicians in democracies are the voters. Yet, their motives might be different than the motives of EU bureaucrats. For example, voters might care more about protecting jobs than about the externalities on other countries produced. Of course, if public choice theory is to be applied at the state-aid-granting level, it should also be applied to the sphere of the regulator. Regulation of state aid would fall into the domain of international economic law, and public choice theory thereof has been controversial although good arguments have been made in favor of it (see e.g. Stephan, 1995).

As a regulator, the European Commission is limited by its regional boundaries. It can address state aid that is awarded by EU Member States, but not aid that is awarded to firms that do business in the EU or compete with European firms outside the EU. The airline industry is an example where this is subject to a political debate. For instance, in 2010, Dubai-based airline Emirates ordered an additional 32 Airbus A380 planes, taking its total orders for Airbus' new high-capacity plane to 90 aircraft. In November 2011, it also announced the order of 50

[17]Right-to-work laws prohibit agreements between labor unions and employers that would make membership in a union a condition of employment.

Boeing 777 planes. These planes will be used to expand the airline's intercontinental network. The hub of this network is Dubai. Through Dubai, American and European passengers connect to flights to Asia, Africa and Australia. After years of high growth, it has become the second largest airline in the world in available seat kilometers (ASK). European legacy carriers like Lufthansa consider Emirates a threat to the European airline industry. Their claim: Because of in-kind subsidies that Emirates allegedly receive (mainly at their base in Dubai), they are able to offer long-haul flights at a very low cost and thereby destroy the European airlines' long-distance network (and thereby also harming the intra-European feeder network attached to it). In order to restrict Emirates' ability to route passengers through Dubai, European airlines lobby their national governments to restrict the number of permitted flights between their country and the United Arab Emirates. This example tries to illustrate the difficulties of trade between countries with a state aid control regime and countries without one. Not receiving subsidies, be it because of the austerity of the government or because of state aid control, can severely restrict of firm's ability to survive in the market. While some would demand action against these subsidies, others would take the position that, from a competition order point of view, there is not necessarily a problem with shifting production from a non-subsidized to a subsidized firm

3.4 Towards an extended view

Most of the justifications of state aid control focus on establishing a constitutional order under which economic competition takes place. State aids to firms intervene in the competition between firms. At the same time, they are an instrument for the competition between jurisdictions. Unlike firms, which usually have as an only goal to maximize profits[18], jurisdictions follow different and various objectives. The way the competition between jurisdictions can be seen is as a utility-maximizing behavior, in which jurisdictions enact laws and policies that maximize the utility of their citizens. This might be overly idealistic, though. Another

[18] Indeed, this is not true for all firms as there are special cases. Firms providing services of general economic interest (SGEI) are often state-owned and are designed as non-profit firms.

view might emphasize more the principal-agent problems involved, characterized by the fact that jurisdictions are governed by politicians who might mainly seek personal benefits, of which re-election is one of them.

State aid control does not take place in a political void, in which benevolent politicians care only about the welfare of all citizens. In fact, there are firms and interest groups which demand state aids, although there is no economic justification for that, and there are politicians who, led by their personal interests, will provide such state aids. Therefore it is also worth approaching the subject from the public choice angle. Such studies can give paramount insights as to how a state aid control mechanism shall be designed institutionally and legally in order to be less vulnerable to serving economically non-justified interests (e.g. Mueller, 2000; Haucap and Schwalbe, 2011).

The conclusion from this section – and this will be a general assumption in the subsequent chapters – is that there is *some kind of* need for the regulation of how jurisdictions award subsidies to firms and engage in inter-jurisdictional, regulatory competition. Indeed, there is a consensus among most parts of the literature to at least prevent the excesses of inter-jurisdictional competition.

The previous chapter showed how various federal or international settings deal with subdivisions' granting of subsidies (or tax abatements) to firms and that paradigms vary grossly around the globe. The variety is not only present in a single dimension, but in regard to many aspects (e.g. disclosure, enforcement, etc.). Hypothetically, some other varieties could be conceived (for instance a regime mandating full disclosure, but no formal rules banning state aids to firms, or a regime that requires a certain minimum in the quality of jobs created), but are not observed in the existing world.

Interestingly, not only the regimes regulating subsidies differ among regions, but also the political alignments in their support or opposition, which also says something about how subsidies are structured. For instance and broadly over-generalizing, the European left traditionally is tolerant of or actively supports state aids to firms. This is especially the case when a "national champion" firm is in crisis and needs subsidies in order to maintain its employment. The European right rather opposes the "waste of taxpayers' money" and has a stronger *laissez-faire* approach towards firms in need of support. In America on the other hand,

the left denounces what they call "corporate welfare", that is, what they see as a public support of big, often very profitable corporations. The American right cares less about this equity concern, but more about the efficiency aspect (for the left-right debate see e.g. LeRoy (2005) and Thomas (2000)). The reason for this contrast in political alignments might be that subsidies are more discussed in the context of relocations in America, and rather in the context of support one's "own" national firms or even champions in Europe. It shows that the public choice, the collective decisions (the processes and their substance) matter.

Because state aid decisions are political, it is worth the effort to take a closer look at how these agreements are made. There are three aspects which need to be seen jointly. First, state aid decisions are made under uncertainty. Governments do not always know the return to their investments and might therefore make unnecessary or insufficient investments. Information asymmetries between firms and governments play an important role. Secondly, state aid decisions are made by politicians who have their own, personal agenda. This personal agenda could be reelection (by taking popular decisions, that is, usually those creating more jobs) or other private benefits (such as outright grafts, but also borderline or perfectly legal motives like preventing firms to fall into bankruptcy in order to be able to take up senior executive positions after the political career). They hand out subsidies to firms which are controlled by self-interested managers who do not necessarily act in the best interest of the shareholders. Thus, the agency problems need to be taken into account. Thirdly, all state aid decisions in North America and Europe, but also in other reasonably open economies, take place in a setting of fierce inter-jurisdictional competition. The following chapters will therefore discuss this conundrum in further detail, emphasizing the public choice and inter-jurisdictional competition aspects. The principal-agent problems within companies will then be addressed in chapter 6.

CHAPTER 4

Evaluations of state aid measures

The effectiveness of specific state aid measures has been analyzed by several studies, both in the EU and in the U.S. The following chapter gives an overview of the findings.

The literature sometimes refers to the terms "vertical aid" and "horizontal" aid. The former refers to aids given to specific sectors of the industry or dependent on firm specifics, as in the case of rescue and restructuring aid. Horizontal aid, on the other hand, is aid awarded for general objectives, independently of industry affiliation or firm specifics. The typical horizontal aids are aid for research and development, the development of small and medium-sized enterprises (SMEs), or environmental protection. It has been noted though that this distinction is not very clear and that horizontal aid is sometimes tantamount to vertical aid (Gual and Jódar-Rosell, 2006). For instance, primarily horizontal aid is often restricted to a certain industry or sub-sector (the EU State Aid Scoreboard, that is, the main source on state aid in Europe, does not distinguish between horizontal aid for the entire economy and horizontal aid for certain industries only). Furthermore, while vertical aid to the manufacturing sector has decreased steadily in the last two decades, almost all of state aid in Europe for horizontal objectives is awarded to

the manufacturing sector.

For instance, although aid to the manufacturing sectors is currently dwarfed by aid to the financial sector, the automobile sector is still an important recipient of aid in the manufacturing industry. It is subject to two specific framework agreements for state aid. In the years 1990 to 2008, sector aid to that sector decreased, but the motives for such aid shifted from the sectoral development motive to a regional development motive (Nicolini et al., 2013).

4.1 Sectoral aid

Sectoral aid is aid given to specific sectors. There are not many studies with comprehensive descriptions of the effects of sector state aid, and even fewer recent ones.

The Danish Competition Authority performed some assessments of the shipbuilding industry in Denmark, which received the lion's share of Danish sectoral state aid in the period 1995 to 2005. Their conclusion was that the total turnover of Danish shipyards, their number and the workforce in this industry has been declining over the last decades while the share of state aid in wages increases to a level of over 70% in 2001. The productivity of these shipyards has increased less than in the rest of the Danish manufacturing industry, while wages for workers at shipyards have been 8 to 20% higher than for their colleagues in the metal and iron industry in the same regions (Gual and Jódar-Rosell (2006) see this as evidence for rent seeking). At the same time, the profits of these companies were low, which might indicate that, at least, the state aid was not used for accruing profits (Danish Competition Authority, 2002). The authority, in Danish Competition Authority (2001), also estimated the effects of state aids on total factor productivity and growth. They find that subsidies often go to sectors with limited competition, and that the profit rates in those markets that received a large amount of state aid were generally larger than in markets that did not. Sectors with low competition exhibit higher amounts of received state aid. After comparing the growth rates of 1,500 Danish firms, which received some kind of state aid in the period 1994 to 1997, with the growth rates of 20,000 other firms that did not, they find mixed results. There is no evidence that state aid increased growth rates in the short run. For

aids awarded in the business sector through regional development and environmental programs, they observe decreasing growth rates. R&D aid in the business sector also seemed to decrease productivity growth rates. The speculated reason for that is that state aid can cause inefficiency in the receiving firms due to the administration of support programs, but also that state aid can cause technical inefficiency. This, so the claim, is the case when financial support mainly goes to one production factor.

4.2 Rescue and restructuring aids

The study by London Economics (2004) notes that only one out of three firms survive in their original form after receiving rescue and restructuring (R&R) aid. One third of the firms will be acquired by another firm and another third disappears completely. Given that usually the idea is that firms downsize in the process of restructuring, the study provides evidence that the contrary is the case. Unfortunately, the study does not assess in detail the negative effects on the competitors of these rescued firms. According to the study, restructuring aid cases yield a higher probability of survival than rescue aid cases. Many variables do not have a significant impact on the chances of survival: size, age, legal status of the firm, sector growth after the aid measure, condition of the firm at time of receiving aid, and relative amount of aid awarded. The reasons why a firm got into trouble determine the effectiveness of the R&R aid. If the reasons are a general market decline or poor management, the chances of survival after restructuring are higher than if the turmoil is caused by external failure, liquidity problems, low competitiveness or financial liabilities. The way how the firm is rescued seems not to matter either, with the following features not producing a significant impact on survival rates: duration of restructuring, capacity reductions, personnel reductions, focus on core business activities, cost-cutting, financial consolidation, selling or closure of plants and assets, new investment, training and upgrading and plant relocation. Furthermore, after receiving the aid, these firms were not able to significantly outperform their competitors despite their cost advantage. Nevertheless, the aid seem to make them at least partially close the gap regarding profitability and productivity.

Głowicka (2008) conducted a study with a similar thrust. Using data from 86 cases during the years 1995 to 2003, she finds that the chance of survival increases during the four years immediately after the bailout, but drops afterwards – an indication that bailouts might merely delay exit and do not prevent it.

4.3 R&D aids

Not every R&D aid actually leads to more research and development. Several studies analyzed whether R&D aids act as a complement or rather as a substitute to private research. One survey of the econometric evidence comes to the conclusion that about one third of R&D grants given to firms replaced existing research projects instead of inducing or complementing them (David et al., 2000). Drawing upon evidence from Israel, Lach (2002) finds that R&D aids act as complements for small firms (even at at a rate of 1 to 11), but induces no statistically significant own R&D in large firms (more than 300 employees). The policy problem here is that it is predominantly large firms that receive aid (the largest 25% receive about 70 to 80% of all subsidies). This result can be explained by the fact that smaller firms have a more difficult time acquiring funds on the capital market, but it could also be a case for a public choice approach (see next chapter). Gelabert et al. (2009) address the question from a different angle. Using Spanish data from the Community Innovation Survey, they estimate how appropriability, that is, the degree to which firms can reap benefits from their innovation, determines the effect of research subsidies. They find that the higher the degree of appropriability, the less research aid stimulates additional, privately financed R&D. This is an alarming result as it means that research aid is less effective where the need for it is lower.

A recent study of Austrian companies which received funding through the *Österreichische Forschungsförderungsgesellschaft* (FFG) asked recipients of R&D funds whether they would have conducted their research without the aid. Only 20% of the research projects receiving funding would not have been conducted at all without said contribution. 6% say that they would have done the project to the same extent without any external funding, 15% say that they have done the project to the predominantly same amount, and 59% claim that they would have sig-

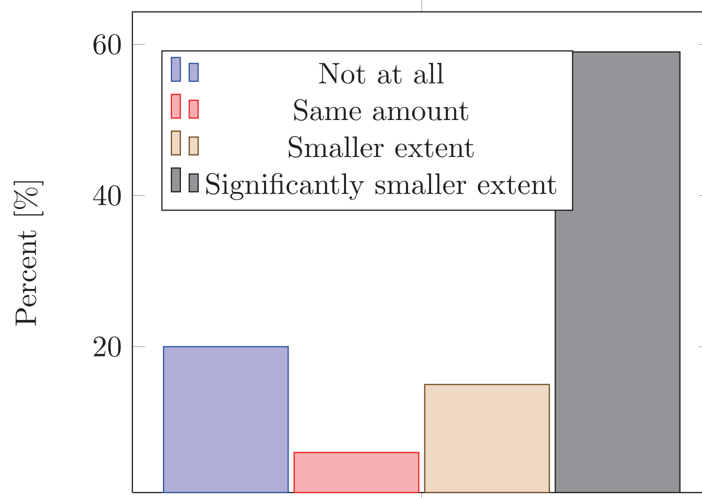

Figure 4.1: Would firms have conducted their research without R&D aid?

nificantly reduced the size of the research project (Kaufmann and Wolf, 2011). Of those firms that said "yes", 80% say that they would have delayed the project. This does not necessarily mean that R&D funding is inefficient, but it shows that not all R&D aid actually produces additional research and development. To a certain extent, it nevertheless means that some R&D aid could be seen as a hidden business development aid. Burger (2013) points out that additionality should not be the only measure, though - R&D support can increase the quality of the projects and lead to better planning of research at the firm level (as it requires firms to submit a very specific proposal and funding agencies provide certain consulting services).

4.4 Regional aids

The main purpose of regional aid is "cohesion", that is, bringing the economically less-developed regions up to the standards of the richer ones. Traditionally, Europe has a much higher income disparity between regions than the United States. Regional aid is therefore generally

considered unproblematic by the European Commission and the aid for Eastern Germany and bordering regions after the German reunification is even explicitly exempt from state aid control in Art. 107(2)(c) of the Treaty on the Functioning of the European Union.

Regional aids can be used to attract mobile investment. They must compensate for the disadvantages linked to relocating to an under-developed region. According to neoclassical theory, the abolishment of barriers to trade and capital mobility should lead to a leveling of regional differences. Mostly due to agglomeration effects (of richer regions), this does not happen in some regions.

The literature on economic growth stresses the importance of research and development. A successful cohesion policy would thus foster R&D in the cohesion countries. This does not seem to happen. EU-provided data seems to suggest that cohesion countries spend a below-average amount of their manufacturing aid on R&D. The gap in technological factor endowment of regions thus seems to widen (Thomas, 2000). In fact, the question here is actually more complicated than that. If we distinguish between innovation leaders (countries at the frontier of technological progress) and innovation followers (countries transferring technology from the innovation leaders), then it can be argued that the innovation leaders need to invest more in R&D in order to stay on top of innovation, while innovation followers only need to adapt technologies and therefore require less R&D expenditure. The next step here is to have a closer look at the EU data[1] and further evaluate the impact of R&D aid on growth.

Ramboll and Matrix (2012) evaluated the European Commission's regional aid guidelines for the period 2007 to 2013. In line with the EC's in-depth assessment approach, the criteria of analysis were whether aids fulfill the need to be:

- "well-targeted so as to provide incentive effects for investors and attract investment in less developed regions
- proportionate to the challenge faced by ensuring value for money

[1]The reason why most empirical approaches and results relate to the EU is that - because of the state aid control regime and the notification requirement that comes with it - it is the only region to provide comprehensive data on public subsidies to firms. A comparison with the United States would provide a great counterfactual, but is not really possible due to the lack of data.

in terms of employment and other benefits to the region and to account for potential externalities

- well-designed so as to minimize negative effects on competitors, other sectors and other Member States and to ensure that positive impacts outweigh negative impacts." (Ramboll and Matrix, 2012, p. 2)

This ex-post evaluation reached some findings that are of relevance to the next chapter.

First, depending on what level of government grants awarded the aid, the aid level increased. "... [R]egions that were competing to attract investment within the same country could find themselves in an upward spiral that increased aid levels" (Ramboll and Matrix, 2012, p. 3). The authors of the study also found that there was a high variation in the ex-ante project evaluation processes and criteria applied among granting authorities.

Secondly, although in most countries projects are assessed against a set of qualitative criteria, they found no evidence of cases "where the incentive effects of aid on the investment or location decisions were systematically assessed as part of the ex-ante process carried out by the granting authorities" (ibid.), which indicates that "[t]he obligation for the investors to prove that regional aid was necessary for their investments appeared largely to be dealt with as a matter of formality" (ibid.). The various assessment methods are summarized in table 4.1. Quite noteworthy, Germany considered the additional administrative burden of producing cost-benefit analyses as too high.

Thirdly, the study also surveyed how the amounts of aids were set. In all investigated countries but Poland, the granting authorities negotiated the level of financial incentives with the potential beneficiaries. Although the regional aid guidelines set a ceiling on the outcome of such negotiations, it is important to note that bargaining power seems to play a role in such deals.

Fourthly, countries deal differently with the non-achievement of goals set out in the aid agreement. While in some countries (Ireland, Poland, Slovakia), the payment of the aid is conditional on the achievement of objectives in terms of the number of jobs created, other countries (Spain, Portugal, Germany) paid the subsidies even if the goals were not met.

Country	Assessment method
Poland	Multi-criteria analysis
Ireland	Cost-benefit analysis (CBA)
Slovakia	CBA + Financial and socio-economic analysis
Germany	No CBA

Table 4.1: Some examples of ex-ante assessment of regional aids, Source: Ramboll and Matrix (2012), compilation PH

Fifthly, regional aid seems to have "at most a marginal impact on the initial decision for a company to initiate an investment program" (ibid, p. 5). While aid was never reported to be irrelevant, "no investor consulted during this study considered such aid to have been a decisive factor in their decision making process" (ibid.). In some projects, aid did influence the size of the project, though. An important factor is also that the availability of regional aid facilitates access to external funding. The study also notes that they could not observe any evidence of lock-in in effects of state aid on the investments.

Whether regional aid affects location is not clear. Ramboll and Matrix (2012) report cases in which projects would have taken place in a different place if it had not been for regional aid, while in other cases the beneficiaries acknowledged that regional aid had little effect on their location decision.

From a theory of federalism point of view, control of regional aid restricts the autonomy of subnational jurisdictions in the EU. Streb (2013) argues that is in stark contrast to the "widely held presumption in the EU literature, as for example by proponents of multi-level governance, that European integration works invariably to empower and strengthen regions in Europe" (p. 129).

4.5 Incentive packages: Cost per job created

The United States, which does not know the kind of state aid regime that the European Union has, provides a fertile ground for estimating the costs of incentive packages to attract firms. In the U.S., it is heavily

debated whether incentive packages have any effect and to what degree (section 6.1 addresses location decisions at the firm level).

Some studies differentiate not according to the type of aid as done in the earlier sections of this chapter, but use different classifications. For instance, there are several studies that calculate the amount of state aid necessary to create (or maintain) one job. Farrell (1996) calculates a cost of up to $2.4 million per newly created job in the United States.

An important criticism is that these calculations do not assess whether these jobs would have been created without the subsidies. McEntee (1996), for instance, claims that most jobs created through financial incentives would have been created anyway and quotes a statement of the Council of State Governments in Economic Development in the States from 1989: "A comprehensive review of past studies on the effects of incentives reveals no statistical evidence that business incentives actually create jobs."

4.6 Firm productivity

Due to the ultimate relationship between productivity and economic growth, Gual and Jódar-Rosell (2006) assess the effects of vertical aid (which, in their definition, goes beyond sectoral aid; see above) on productivity in the manufacturing sector (a sector more prone to vertical aids because of its relatively higher mobility). They find a positive effect of vertical state aid on productivity growth and thereby contradict the view that the efficiency rationale behind sectoral and rescue aid are quite weak. This nevertheless supports the task of the Commission to effectively monitor potentially distortive aid.

Bergström (2000) calculated the effect of Swedish state aids (various specific aids) to be used for investment in machinery and buildings. Even though he observes a productivity increase in the short run in subsidized firms (as compared to firms that did not receive state aid), they exhibit a relatively lower productivity after three years than their non-subsidized counterparts. The firms that received aid were equally productive before the subsidy as the firms that did not, so there is no selection bias in the sample. His conclusion is that state aid might produce allocative inefficiencies (a suboptimal mix of labor and capital) and/or technical (X-)inefficiencies (the difference between efficient behavior of

firms assumed or implied by economic theory and their observed behavior in practice). More specifically, the productivity loss, the author conjectures, might stem from slack or lack of effort on the part of the management and/or the fact that the managers might have become more engaged in subsidy-seeking activities than productive activities.

4.7 The 2011 evaluation by the European Court of Auditors

In the year 2011, the European Court of Auditors evaluated the Commission's procedures to ensure effective management of state aid control.

The Court made several observations. With regard to identifying relevant state aid cases, it noted the insufficient Commission checks to ensure Member States are complying with their obligation to notify state aid and that the Commission is not proactive enough in raising Member States' awareness of this obligation. Regarding the handling of cases, the Court lamented that the Commission is hampered by a lack of reliable management information and organizational problems. Furthermore, new procedures for managing notifications have not resolved the problem of timeliness and cumbersomeness. Complaints continue to take a long time to resolve and the procedure is not transparent. It criticized that the state aid data provided by the Member States is incomplete and insufficiently reliable, and that the number of ex ante evaluations has been limited and the Commission does not have an ex post evaluation function.

It concluded that the Commission has insufficient assurance that it deals with all relevant state aid cases. State aid procedures, especially for complaints, still take a long time and lack transparency. It recommends that the Commission assess the ex post impact of its state aid control in a comprehensive way.

This report was produced in 2011. The Commission responded by committing to certain reforms that address the criticism put forward by the auditors. Meanwhile, some of them have been implemented.

4.8 Conclusions

The previous chapters described how the European Union is concerned about distortions of competitions between member states and not so much about the waste of taxpayers' money. This chapter tried to provide some evidence that critical evaluations of state aid measures sometimes come to the conclusion that there is wasteful spending. This is not to say that state aid in general is wasteful, but rather to emphasize the importance of the terms and conditions under which aid takes place, as well as the eventual outcome of such spending decisions. It should be reminded that the European Commission's mandate (responding to the European Council's call) is "less, but better targeted state aid". Yet, what exactly constitutes "better targeted" aid remains elusive.

With this important result in mind, it is worthy to look at the dynamics involved in such state aid decisions in order to better understand the reasoning behind them. It also leads to important policy conclusions which question the approach taken by the EU and call for stricter control of aids in other federal settings.

CHAPTER 5

The public choice of state aid to firms

5.1 Introduction

State aids to firms are more than just technocratic decisions. They are sometimes at the very center of political discussions and the result of lengthy political processes. Only recently, Vice-President Joe Biden coined a new mantra for the 2012 presidential re-election campaign of the Obama administration: "Bin Laden is dead and General Motors is alive."[1] In what might be the harbinger of a future tax money debacle, Azmi Samaan, the new regional director of recently reestablished Palestinian Airlines declared "This is part of the independent state, to have an airline, no matter what it will cost us" (AP, 27.5.2012).

The public choice of state aid to firms is a wide field encompassing many aspects. Mueller (2000) for instance briefly reviews four of them: (a) redistribution within the community, (b) redistribution across communities, (c) redistribution from consumers to producers, (d) governmental inefficiency (budget-maximizing bureaucrats and irrational collective decisions).

[1] http://content.usatoday.com/communities/theoval/post/2012/04/biden-bin-laden-dead-gm-is-alive/1#.T8N4w-2kK5c

This chapter tries to explore issues of collective decision-making in regard to awarding subsidies to firms. The decision makers can either be jurisdictions (countries, states, provinces, local or county governments, supra-national institutions, etc.) or individual citizens who have to decide on their government's or governments' policies. Additionally, firms make decisions on entry into market, exit, or relocation.

The underlying assumption of this chapter is that voters hire politicians. These politicians maximize their own utility, which is mainly characterized by the private benefits they receive form the job (this would be basically tantamount to corruption) and by the mere fact of being in office (in other words, they permanently seek re-election). This is in line with the usual framework of public choice, as described e.g. in Mueller (2003). To put it in the words of (Behboodi, 1994, CHECK, p. 33), politicians are "entrepreneurs selling policies for votes".

Firms' incentives to seek economic rents are stronger than the incentives to the taxpayer to prevent such a redistribution. As a result, large benefits are provided to a small number of people, causing a very great number of consumers a small loss (see e.g. Pareto (1927) on protectionism in general).

State aid can also be seen as a form of economic patriotism. It can serve as a tool to advance a perceived economic self-interest of players defined according to a shared territorial status (Clift, 2013). Unlike the term "nationalism", "patriotism" is more flexible as to which territorial unit it refers. It can refer to the regional level just as well as to a supranational (e.g. European) feeling of unity.

And indeed, states – at least the ones this book is about – are not islands anymore. They are part of a larger, global economy and in a perpetual competition with others. The stream of information in this competition is not perfect. Not all state aid deals are made public, and especially not in a systematic way. Firms, seeking new locales for their factories or headquarters, will induce not just a competition, but a race between jurisdictions.

Even if states enter into agreements – a cartel of sorts – not to waste resources on such races, many practical problems arise. The comprehensive monitoring of compliance with the agreement is an almost insurmountable task and can lead to excessive enforcement costs, especially in the absence of penalties that might act as deterrents. What this

chapter shows is that even if there are agreements and sanctions, the incentives to breach are high. Oddly, federal settings with similar characteristics can exhibit different equilibria with regard to the prevalence of state aid.

5.2 Different understandings of capitalism and the role of the state

The European Union unites countries with somewhat different approaches to the relationship between the state and the economy. In a seminal book, Hall and Soskice (2001) developed the *Varieties of Capitalism* approach. Although their approach suffers from shortcomings with regard to explaining the origins of market economies, their taxonomy can be used to highlight a fundamental problem in the collective choice of state aid rules.

In their view, capitalist economies are grouped around two opposing poles, namely liberal market economies (LME) such as the United Kingdom and the United States, and coordinated market economies (CME) such as the Scandinavian countries. Obviously, this approach is subject to change over time, with the financial and economic crisis contributing significantly to its overhaul (see e.g. Bruff and Horn (2012)). Within the CME-type countries, additional distinctions can be made. France, for example, is usually considered a particularly statist (that is, emphasizing the role of the state) variant of a CME. State aid has always been an important instrument of *dirigisme* (Schmidt, 1996) and (Schmidt, 2003). The state had an important role in providing funds for industrial investment, and intervened in the economy through price, credit, and exchange controls, through *tutelle*, that is, hands-on supervision over industries, both private and public (Clift, 2013). These differences are also reflected in the general role that a firm plays in society. In the United Kingdom, company law sees firms primarily as independent entities with no or little requirements vis-à-vis society as a whole. The French and German approaches are very different. French company law incorporates the concept of *l'intérêt social*, which simply does not have a functional equivalent in English company law (Clift, 2007; Viénot, 1995). Similarly, "[r]ather than a British 'private association' approach, German

lawmakers constitutionalized shareholder representation through public authority" (Jackson, 2001, p. 132), by requiring two-tier board arrangements that draw upon all sides of the companies and reflect the variety of the stakeholders in a firm. Corporate governance, aiming at protecting the public interest, then spans not only company law, but also market regulation, and financial regulation (Clift, 2013; Jackson, 2001).

This role that is attributed differently to firms across countries is reflected in the data on state aid expenditure in the EU. The more a firm is seen as a public good, the higher, it can be assumed, the propensity to aid it using public money than if it seen as a private good. For instance, the United Kingdom consistently spends less on state aid in percent of GDP (0.259% in 2012) than France (0.737%) or Germany (0.449% in 2012, but with values around 0.77% in the mid-2000s and even higher amounts in the 1990s)[2].

This poses a problem to European state aid control, as it has to set a common framework for competition in a single market for all Europeans. *Dirigiste*-style industrial policy is challenged by a more LME-oriented approach favored by the Commission (Clift, 2013). Yet, the crisis has led to a surge in Keynesian or post-Keynesian thinking and might also be reflected in the Commission's lenience towards crisis-related measures. Authors like Clift (2013) observe a development of "new forms of political intervention in economic activity, notably in response to the financial crisis, in order to protect their industrial patrimony. Sarkozy's anachronistic 'neo-liberal economic patriotism' economic strategy (Clift, 2008) is but one example of a wider European phenomenon. It combines neoliberal and protectionist elements in pursuit of advancing the economic interests of particular territoriality defined groups – at times French, at time European" (p. 115).

5.3 Protectionism and rent-seeking coalitions

In economics, the word rent can have two meanings. It can be defined as a return in excess of the resource owner's opportunity cost. In this sense, rent-seeking is tantamount to profit-seeking; rents emanate naturally in the price system. Yet, the sense in which rent is used in this book is

[2] Source: European State Aid Scoreboard 2012

one in which rents emanate artificially through government action. This fact does not mean that they are exempt from competition. Rent seeking is therefore a competitive process. The vast literature on rent seeking has shown the inefficiencies involved. The activity of spending resources in competing for artificially induced transfers is considered inefficient (Tollison, 1982). All parts of society can seek for rents. Several seminal articles focus on firms seeking to obtain a monopoly granted by the government (see e.g. Harberger (1954), Tullock (1967), Krueger (1974), Posner (1975), Buchanan (1980), Tullock (1980)). The consumer though needs not be entirely passive. Although the consumers are usually portrayed as unorganized and dispersed, some authors note the increase in number and size of organized consumer groups. The more the regulator focuses on votes and less on private benefits such as bribes, the more he or she has to trade off between consumer prices and firm profits (see e.g. Evans (1980), Peltzman (1976)).

The main difference between politics and the market is that the latter is a proprietary setting in which actors bear themselves the consequences of their actions. The former, on the other hand, is non-proprietary setting marked by a principal-agent problem. An agent – the politician – performs a service to a principal – the voters. Both are wealth-maximizers, and controlling the behavior of the agent is costly. Furthermore, the principals, who are not a homogeneous group, face different incentives to control the behavior of their agents. Managers of political entities (such as states, bureaucracies, or regulatory agencies) do not benefit personally from cost savings they accrue in favor of their organization. For instance, the head of a competition authority does not earn more if he or she dissolves monopolies or uncovers cartels. They therefore have different incentives than the managers of a private firm (Tollison, 1982). Furthermore, the principals in politics, that is, the electorate, are more constrained relatively to the owners of a firms as they are not able to liquidate their ownership rights: a person cannot sell his or her citizenship to a foreigner in case he or she is not satisfied with the government (ibid.). The only option is to vote by feet (Tiebout, 1956).

Institutional settings matter with regard to the possibility for a society to make transfers between individuals or groups. If there is an unanimity rule and voting is costless (and this also applies to gathering the necessary information to cast an informed vote), then there cannot

be any Pareto-inferior transfers Tollison (1982). Of course, unanimity rules are virtually nonexistent in the political sphere. European integration has also constantly reduced the number of policy fields in which unanimity is required in the European Council (the Treaty on the European Union, which results from the Lisbon Treaty, introduces to so-called double majority from November 2014 on – such a qualified majority is defined as at least 55% of the members of the Council, representing at least 65% of the EU population; see Article 16 TEU and Article 238 TFEU). Unanimity has been restricted gradually over the last decades and remains only for policies deemed to be sensitive, specifically the Common Foreign and Security Policy, taxation, the accession of new member states, social security and social protection, and operational police cooperation between the member states[3]. Notably, the WTO operates on a unanimity rule and foresees votes only if consensus cannot be reached (Ehlermann and Ehring, 2005). There is no power delegated to a board of directors or secretariat. Most importantly, this also applies to its sanctioning mechanism. Critics argue that although there is equality in law between the member states, not all states have the same capability to sustain a veto due to differences in power. Pareto-improvement are therefore not always achieved (Steinberg, 2002).

The likelihood of transfers – and state aid, with the exceptional case of a Pareto-improving kind of subsidy, constitutes such a redistribution – is linked to the information costs with respect to seeking them. Winners and losers could either both be easily identified or not. It could also be that only one side is readily identifiable, but not the other one. It follows that transfers can be expected especially in a situation in which the winners are specific, but the losers are diffuse. Politicians, seeking to be associated with clear benefits but elusive costs, will want to actively scout for such projects (Tollison, 1982). Aiding specific firms and advertising the number of jobs saved is the archetype of such an easily identifiable transfer – the exact burden borne by society and the precise distribution thereof remain intangible (Haucap and Schwalbe, 2011).

Rent-seeking requires organization, which is obviously more costly the more diffuse the interest group is. State aid can align the incentives of two well-organized types of institutions: the firm and labor unions.

[3]See EU glossary at http://europa.eu/legislation_summaries/glossary/unanimity_en.htm

The managers of a firm and its senior employees are hired, among other tasks, to also engage in rent-seeking. They can use the firm's infrastructure as a launch pod for their activities. An individual taxpayer who is concerned about the potential waste of his or her payments is in a natural disadvantage. In the same way, labor unions have strong incentives and the means to lobby for their member base[4]. The firm as a rent-seeker also has an advantage over other lobbying groups: it is not a victim to free-riding by members of the organization. If a firm successfully acquired a state aid, it reaps the entire benefit of its rent-seeking activities. Other institutions – labor unions and consumer organizations are examples – face the problem that many regulations they successfully lobby for will also apply to non-members. Free-riding ensues. This advantage persists at the level of specific state aid measure, but the result is more ambiguous when lobbying for state aid policy *in general*. Firms might be able to free-ride on the rent-seeking activities of other firms. An assessment is more difficult and would have to be done on a case-by-case basis as it is not straight-forward which state aid policy firms favor *in general*. From a firm's perspective, a more relaxed policy towards state aid might after all also mean that its competitor finds it easier to acquire subsidies to the detriment of the firm.

One way to obtain rents is by encouraging protectionism against foreign competition. Interest-group models have been applied, for instance, to the U.S. Tariff Act of 1824 (Pincus, 1975), or the tariff protection granted to Canadian industries (Caves, 1976). Mayer (1984) shows formally that "small, important producer groups can be quite successful in securing import protection" (p. 971). Hillman (1982) models a situation in which the government pursues their own self-interested motives in order to maximize political support and therefore support declining industries (that is, industries facing a decrease in the world price of its output). The reduction of protectionism over the last decades might be an explanation for the recent reduction in academic interest in this topic.

Grossman and Helpman (1994) point out the frequency of the question "why free trade is so often preached and so rarely practiced" and notes that "most international economists blame 'politics' " (p. 833).

[4] As a side note, there has been a debate on the legal standing of labor unions in state aid cases. Although labor unions are *de facto* interested parties in state aid decisions, they are only very rarely considered as such by the ECJ (Jonker-Hoffrén, 2012).

In their model, they endogenize trade policy and describe how influence groups influence it. It also explains why lobbies may prefer trade policy as a means to transfer income instead of more efficient policy tools. Generally, it remains a puzzle in the study of trade policy why governments resort to it instead of, say, direct income transfer, tax cuts, or subsidies (Mueller, 2003; Rodrik, 1995).

State aid can be seen as a remnant of protectionism. With the increasing integration of modern economies, many of the tools of protectionism have become unavailable. The WTO agreements set boundaries for the levying of tariffs. They also reduced the ability of states to impose so-called non-tariff barriers to trade (NTBs). At the same time, the expansion of the European Union has lead to a more countries having to abide to the anti-interventionist rules of the European internal market. Bhagwati (1988) called it the "Law of Constant Protection": industries will always seek some kind of protection, and adjust according to the availability of instruments. For instance, a reduction in tariffs can lead to lobbying for NTBs.

5.3.1 Local coalitions

Urban policy has become a driving force behind industrial policy. Crouch and Le Galès (2012) noted that in services-oriented economies of the early 21st century, urban policy has replaced industrial policy of the 20th century. Governments spend heavily on infrastructure projects and enter competitions to attract major events, such as the Olympics. This is an important paradigm shift, as it means that state aid (the term being used here in a broader, more general sense than the sense of articles 107-109 TFEU) then fulfills the function of supporting "champion" regions that are already well-developed instead of fostering the catching-up of regions or industrial sectors that are lagging behind. This comes not without conflict, since "[s]hifting resources to favour national champion cities always generates massive opposition from political interests representing the rest, i.e., the majority of the population and regions." (Crouch and Le Galès, 2012, p. 412).

A city, or, more generally, any locality can be interpreted as a "growth machine" (Molotch, 1976). In these settings, a local elite is seen as profiting from the increasing intensification of the local land use. These elites then compete with other elites of different localities for growth-inducing

resources. This growth target is assisted by governmental authority, on which these elites have an important influence. As Molotch puts it:

> "I speculate that the political and economic essence of virtually any given locality, in the present American context, is *growth*. I further argue that the desire for growth provides the key operative motivation toward consensus for members of politically mobilized local elites, however split they might be on other issues, and that a common interest in growth is the overriding commonality among important people in a given locale [...]." (Molotch, 1976, p. 310)

But already in 1976, as he points out, growth was not undisputed. Indeed, coalitions built with the intention to reduce growth and its adverse effects. The core of these coalitions is "a leisured and sophisticated middle class with a tradition of broad-based activism, free from an entrenched machine" (ibid, p. 327). For instance, he observed support from professionals from research and electronics firms in Santa Barbara, California, as well as from certain very wealthy people "who continue a tradition [...] of aristocratic conservation" (ibid, p. 328).

Thus, local coalitions in sub-national entities can be a driving force behind economic development, and thus fuel inter-jurisdictional competition. Nevertheless, such policies are subject to a political debate on the shape and goals of economic policy.

5.3.2 The effect of state aid

The result that government spending facilitates re-election can also be found when focusing on a special kind of government spending, namely state aid. In a study using Flemish data on a local state aid spending and the performance of local politicians at the regional elections in Flanders (Belgium), Buts et al. (2012) find that the total amount of subsidies as well as subsidies per capita granted in the year 2008 positively correlate with support for incumbent parties in the year 2009.

An important driver behind state aid decisions is the securing or creation of jobs. Buts and Jegers (2013a) look at the effect of subsidies to Belgian firms on their levels of employment. This study has a severe limitation though: it ignors the opportunity cost of state aid decisions.

That firms which receive state aids are more likely to create jobs does not come as a surprise. The relevant question though is the effect on total employment if there is no state aid (and, e.g. the taxes are lower due to lower government spending and there is no distortion of competition).

State aids can be a powerful tool for politicians to secure re-election. As Haucap and Schwalbe (2011) point out, the burden is divided among the entirety of the taxpayers, leaving each individual taxpayer with a fairly small, barely noticeable amount; yet, the granting of a large sum to one company is quite noticeable. The taxpayers will therefore not take any significant action against state aids, while those with economic ties to potential beneficiaries of state aids will exert a high level of effort in order to acquire state assistance and to help favorably-minded politicians get (re-)elected.

Aydin (2007), using data from the OECD for the period 1989 to 1995 (a data set unfortunately not available for more recent years), finds that (a) unemployment is correlated with higher levels of subsidies; (b) governments will tend to hand out more state aid in pre-election periods, (c) openness of an economy leads to lower subsidies, and (d) governments of EU countries exhibit lower levels of state aid than non-EU countries, showing the effectiveness of the state aid control mechanism.

The advantage of state aids is that they can easily target select voters. The success of firms seeking state aids is dependent on how easily they can mobilize voters in their favor. This gives an advantage to established firms and industries and disadvantages new firms and industries. Established firms or industries in need of state aids are more likely to be in decline and thus threaten the destruction of jobs. The danger of this threat is that inefficient sectors of the economy will receive funding Gröteke (2007).

By supporting shrinking markets, governments produce an externality onto other jurisdiction with similarly struggling firms. The role of state aid control is two-fold. It is supposed to prevent the prisoner's dilemma situation. But the underlying reason for that is that – because of the political processes involved – individual member states are not able to credible commit to abstaining from state aids. The question now is how far state aid control should go: should it only prevent externalities or should it, more generally, prevent any efficiency-reducing state aids (even if the impact is only felt locally)?

The problem even goes further. The European Union, and hence its state aid control mechanism, is, too, run by politicians and maybe self-interested bureaucrats. Simply demanding a state aid control mechanism does therefore not automatically eliminate all problems of public choice, rent-seeking, and agency, but only deflects the issue to a different level of government (Gröteke, 2007; Besley and Seabright, 2000). Since decision-making rules at the EU-level are different than at the national level, this might make a difference nevertheless.

In a recent op-ed, Zingales makes the point that banks are politically influential because of the feared catastrophic consequences to the economy that a bank crash might have. This idea can be expanded to other industries as well. For the political decision, it is irrelevant whether the policy makers having those fears are right or not.

> "Suppose a large asteroid is hurtling toward Earth and has a 5 percent chance of hitting us, creating $10 trillion worth of physical damage to the U.S. Should the president authorize a $700 billion mission to destroy the asteroid and stave off disaster? If you reason in purely statistical terms, the expected cost of failing to act (0.05 * $10,000 billion = $500 billion) is much less than the cost of acting."[5]

The point though is that the consequences are not really known. If the president in Zingales' example decides – wrongly, if we assume risk-neutrality – to take action, then nobody will know what would have happened if he or she had not taken action. If he or she, on the other hand, decides not to authorize the mission, the president is taking the risk of knowingly letting a catastrophe happen (in this case, at a 5% probability). From the point of view of the president, choosing to take action is more appealing.

5.3.3 Transparency

There is a central problem facing anybody who tries to study the phenomenon of state subsidies to firms empirically: the difficulty of acquiring reliable and complete data. But this is not only a problem to the researcher. It is also an issue for all those involved in making private or

[5] Bloomberg, 29.5.2012

collective decisions on that matter. Thanks to the European state aid control mechanism, the 27 EU member states need to notify every aid granted to firms to the European Commission. Those notifications are made available to the public on a yearly basis, giving aggregate numbers of public subsidies by country, industry and type. Even though European jurisdictions are caught from time to time trying to hide state aid and not notifying it, these data (with some limitations[6]) can be used for analysis.

The various forms of subsidies vary in their transparency and detectability. For instance, in its Second Survey on State Aids in the European Community (European Commission, DG Competition, 1990) and re-iterated subsequently, the European Commission ranks them as follows (in decreasing transparency): grants and direct tax reductions (since they do not require any information on the recipient of the aid, such as its creditworthiness), soft loans and tax deferrals, guarantees, and equity injections. From the published data it is possible to infer trends: by comparing the developments in the use of various forms of state aid, it will be clear whether there is general movement towards more or towards less transparency.

The situation presents itself completely differently on the other side of the Atlantic. The United States and Canada, both highly federal structures, follow an alternative approach. Not only is there no regulation of state aid at the federal level, but there is also no systematic collection of federal, state or province, county, and local subsidies to firms. In fact, "control" and "information" are handled by other actors, namely NGOs. Whereas NGOs opposing state aid are non-existent in Europe, the U.S. (and to a lesser degree Canada) has a vivid scene of NGOs campaigning against what they call "corporate welfare." The political orientation of those NGOs can be leftist (when opposing subsidies on grounds of equity considerations) or rightist (when doing so for efficiency reasons). It is also an indicator of the fact that there might be a dis-alignment of incentives between voters and politicians. The different situations also reflect the differing approaches towards "checks and balances" present in political systems.

[6]As the whole notification and authorization process involves some informal negotiations between the Commission and the member states granting the aid, some figures, such as the percentage of approved aids, do not give much insight.

Mueller (2000, p. 356f) notes that "citizens make less rational choices when they vote" because "they have poorer incentives to gather information about collective decisions than about their own private decisions", giving the example of the Danish citizen who "is much more likely to be informed about the possible benefits and costs to her of the Danish government's subsidizing a Danish firm than about those of the European Union's subsidizing a Spanish firm." This is true for the EU. But as the analysis of data availability suggests, in the U.S. and many other countries, it is not just a matter of likelihood, but also even a matter of impossibility.

In addition, the wording can be ambiguous. What constitutes a tax and what a subsidy is not always as clear-cut as it might seem. For instance, there was a debate within the Republican Party (of the U.S.) whether abolishing the tax credit for ethanol constitutes a spending cut or a tax increase. Conservative Senator Tom Coburn favored ending the tax credit as it would constitute a spending cut, while Grover Norquist, a prominent anti-tax activist accused Coburn for breaking his no-tax-increase pledge (Burman and Slemrod, 2012).

Dewatripont and Seabright (2006) take the information problem into account in their model of "wasteful" public spending and state aid control. In their setup, politicians will fund projects that are wasteful in order to signal to their voters that they are exerting an effort by providing public goods. These latter will then rationally re-elect them. As a result, some state aid control (at an unspecified level of government) is necessary to avoid this waste of taxpayers' money. The model has some shortcomings though. It does not explain in any detail why voters will take the politician's effort to acquire investment projects as a reliable signal of the overall "quality" of the politician. The authors claim that politicians' accountability to the electorate is the source of the inefficiency here. It might be argued though that, to the contrary, increased transparency might induce voters to rely less on state aid as a signal for politicians' efforts.

Another aspect of the information problem is that there is an asymmetry. Firms can keep their information, especially their cost structure, their degree of mobility and - when hiring location consultants - even their identity, secret. Governments on the other hand hardly have any secrets. So the two parties negotiating subsidies each have a different

level of information about the other (Thomas, 2000).

Firms are in an easy position to conceal their cost structure through (perfectly legitimate) accounting methods. For example, say, there is a small town with a vibrant industry and a local airport. Because it is a small town, it cannot sustain its own long-range airline connections, although the local industry and other interest groups strongly wish for being able to reach far-away destination. The solution is that an airline provides a regular connection to its main hub, from where passengers can journey onward on the carrier's long-haul network. In order for the airline to know whether serving the local airport is profitable, it somehow has to apportion the airfare it receives from the passengers to the two segments of the trip (the short-distance flight to the hub and the long-distance flight from there). This is a complicated computation, requiring very detailed information about the airline's cost and revenue structure. In its accounting, the airline has all incentives to apportion a higher share to the long-distance segment and represent the regional connection to the small town as loss-generating. As a result, the politicians in said town, pressured by the interest groups, might then be more inclined to support the airline. This can be done, for instance, through an auction, in which the municipality awards a monopoly on a specific route to a certain airline and pays a price for an obligation on the airline's part to serve this allegedly unprofitable route. In the European Union, the legal instrument for this mechanism is called "public service obligation" (PSO) and is governed by Regulation (EC) No 1008/2008 on common rules for the operation of air services in the Community. In the United States, a government program called "Essential Air Service" hands out an average of $74 per passenger (NYT, 6.10.2006), with some subsidies reaching $801 per passenger (Lowell et al., 2011).

5.3.4 Constitutional settings and state aid

State aids are usually justified with the goal to alleviate the negative effects of market failures. When states cannot eliminate the source of the market failure (e.g. through antitrust, patent laws, etc.), then subsidies can be a "second-best" solution. What empirical research can attempt to analyze is whether the desire to correct market failures is the main driving force behind state aids or whether it is the country's constitutional and political arrangements that drive its propensity to provide aid

to firms (as compared to countries with different such arrangements) or even to conduct more interventionist industrial policy. The research in this field is so far rather preliminary.

Nevertheless, there is literature on how constitutional and political institutions shape spending decisions of governments. Persson (2002) and Persson and Tabellini (1999) discuss how electoral rules with larger districts channel spending towards broad, non-targeted programs and how the majority rule (as it exists in the UK and the U.S.) leads to higher politician accountability than electoral systems with proportional representation (e.g. in the Netherlands or Israel). It is also claimed that larger districts lead to more competition among candidates or parties and that rent-seeking will be less because voters can oust corrupt politicians and easily replace them with candidates with similar political views (Myerson, 1993).

Furthermore, what Persson (2002) and related literature call the *regime type* matters. Herein, they distinguish between presidential systems (e.g. the U.S.) and parliamentary systems (e.g. the Netherlands). It is then argued that the more checks and balances there are, the more constraints on the abuse of powers by politicians there are. If power is concentrated, then rents and taxes will be higher (Persson et al., 1997, 2000). State aid can also be interpreted as a provision of public goods (e.g. Mueller, 2000). The model (and empirical test) in Persson et al. (2000) finds that presidential-congressional regimes exhibit fewer rents for the politicians. Yet, they tend to under-provide public goods.

Van Buiren and Brouwer (2010) try to find institutional determinants for state aid in Europe and test for several hypotheses: They **confirm** various hypotheses:

a. State aid occurs more intensively in countries with a higher share of net exports in GDP. This is in line with the theory that countries engage in subsidy-wars and try to capture profits to the detriment of foreign firms.

b. It is less (and policy more aimed at broad programs) in countries with a single national district than in countries with smaller districts and that this effect is reinforced by a plurality rule of election. The theory behind this is that with smaller electoral districts, their representatives have higher incentives to acquire public funds for their

home districts and majority-winning coalitions are more easily made (50% of voters in 50% of the districts).

c. State aid is higher in presidential regimes (where policy is more aimed at targeted programs) and less in parliamentary regimes (where policy is more aimed at broad programs). In presidential regimes, so the theory, powerful minorities can more easily attract funds because of the lack of confidence requirements of the government.

The following hypothesis, derived from the theory, have to be **rejected** though:

d. State aid is higher in countries with a lower level of public services than in countries with a higher level of public services. The reasoning behind this hypothesis was that net taxes (taxes minus subsidies) might be high in countries with a high level of public goods and services, reflecting the "price" of a location, and therefore, given a certain level of taxes, subsidies would be lower there.

e. State aid is higher in less concentrated countries ("periphery" countries) than in concentrated countries ("core" countries). This relates to the theories of clustering and concentration of firms, e.g. in Krugman (1991b).

Most importantly for any policy recommendation, they find that those economic, political and constitutional variables play a stronger role in the ten new EU member states, which are under state aid control for only a couple of years. This means that state aid control neutralizes the effect of those variables.

Vobolevicius (2008) investigated state aid decisions in Germany, Spain, and the United Kingdom. He finds that politically safe regions (that is, regions were the political party or candidate in power does not face serious competition) of Spain are more likely to receive state aid and that they exhibit better unemployment results than the rest of the country. In the UK, though, marginal districts (that is, districts that are politically contested) receive more state aid. The link to unemployment is less clear in Britain. Germany seems to behave similarly to the UK with regard to privileging industries in marginal districts. Regions of Germany with many marginal districts tend to experience greater reductions in the unemployment rate.

Ideally, European state aid control allows measures that aim at alleviating a certain market failure and bans all others. Although there are other factors that might explain state aid propensity (e.g. industry structure), the variation along constitutional setups could be an indication that state aid control still gives some leeway for state aid that is not in line with the general spirit of Article 107.

There is an emerging literature on the link between the level of regulation in place in a country and lobbying. Bernhagen and Mitchell (2009) investigate lobbying in the EU, which, so far, is less understood than corporate lobbying in the United States. Using a sample of 2000 large firms, they find that regulatory exposure positively affects firms' direct lobbying activities in the EU. It is quite intuitive that a firm subject to numerous regulations will have higher incentives to engage in lobbying than a firm that is not[7]. Calò (2014) takes the next step and analyzes the link between regulatory exposure and state aid. She theorizes that regulation affects the probability of a firm bailout: "While protecting the incumbents, high levels of regulation could lower the need for a direct intervention of the government in rescue of the firm, as captured by the net acquisition of financial assets. On the other hand, big and politically connected firms would have the incentive and the capacity of lobbying for State aid [...]" (p. 6). Her results indicate[8] that stricter regulation in the product markets leads to a higher likelihood of a bailout (defined here as a takeover by the government due to the complete failure of the firm), while it leads, at the same time, to less state aid in general (defined as aid to the firm without change in ownership and management).

5.3.5 Rent-seeking in the grey area

Rent-seeking per se, although often negatively associated, is not necessarily illegitimate or illegal. It is the natural result of the competition for redistribution in pluralist democracies. In some instance, rent-seeking transcends the boundaries of what is accepted by the constitutional and

[7] Future research could try to establish a link between direct lobbying in the EU and state aid. The hypothesis would be that firms that are present in Brussels and actively engage in rent-seeking will find it easier to have their state aid schemes approved. This obviously has to be controlled for a number of factors, such as firm size.

[8] Due to some issues with regard to robustness, the results are not definite.

legal order of a society – it becomes outright corruption. Parts of the economic development literature deal with rent-seeking and corruption. The allocation of state monies to state-owned or private firms is of course an important field for rent-seeking and in some cases maybe even fraud. For example, Rose-Ackerman (1999) reports the case of fake firms receiving export subsidy monies. Shleifer and Vishny (1998) provide many examples in which politicians make economically unsound subsidy and locational decisions in order to get reelected. This has much to do with the fact that creating jobs (especially in politically well-situated, but economically not always optimal places) is an important factor for reelection.

The United States and the European Union differ in their institutional setting for lobbying. The U.S. has a legal framework and culture assuring a high degree of transparency in lobbying expenses at the federal level. Lobbying expenses at the state level and the amounts of subsidies awarded by municipal governments, counties, states, or the federal level are essentially opaque though. In Europe, the situation is opposite: lobbying at the member state and EU levels is opaque, but the extent of state aid is highly transparent (Martin and Valbonesi, 2006b).

The United States has substantial transparency in lobbying expenses at the national level, while the extent of lobbying expenses at the state level and the amounts of aid granted at both the state and the national level are essentially opaque. In the EU, the extent of lobbying expenses at the member state and the Union levels are opaque, while EU efforts have made the extent of member state aid substantially transparent.

The problem of corruption is also addressed by practitioners. For instance, an IMF conference on FDI in South East Asia came to the result that incentive packages are expensive and ineffective (Fletcher, 2002) and that, since incentives are believed to be unavoidable, they should be streamlined and designed to limit the potential for corruption and drain on the budget (Tsang, 2002).

Just like rent-seeking with regard to state aid have to be analyzed in the context of federalism, so has corruption. The literature on corruption has repeatedly addressed the link between the degree of centralization and corruption. Fisman and Gatti (2002) note that the theoretical literature makes ambiguous predictions and this subject, but their empirical findings suggest that fiscal decentralization in government expenditure is

strongly and significantly associated with lower corruption (these results are also valid when decentralization is instrumented for by the origin of a country's legal system). More recent literature question this result (Fan et al., 2009): the more levels of government there are are, the more complex the government structures are and therefore the higher the danger of uncoordinated rent-seeking. Lessmann and Markwardt (2009) emphasize that devolution ensues a beneficial interjurisdictional competition only if there is a supervisory body such as a free press. They find that decentralization counteracts corruption in countries with high degrees of press freedom, whereas countries without effective monitoring suffer from decentralization. Grossmann (2013) has some important caveats. Firstly, a free press is not necessarily an independent press. If a country's press is closely linked to commercial and political groups, then it is not an efficient watchdog. Secondly, the smaller the territorial units in a decentralized country, the easier it is for interest groups to exert influence. Thus, decentralizing spending decisions are not necessarily an adequate instrument in small countries. Thirdly, free press only works if there is a minimum of transparency. If certain decisions are never disclosed, then the free press cannot discuss them. By transposing these insights to European state aid control, some conclusions can be drawn. Firstly, the press in the European Member States is not everywhere independent from political pressure and the state still plays an active role in the media politics of many countries (Hallin and Mancini, 2004). Secondly, state aid decisions in Europe can be made by very small localities prone to strong pressure from local interest groups. Thirdly, the lack of comprehensive transparency rules regarding state aid in most countries prevents the free press from exerting its control power.[9]

[9]This theory described above calls for an empirical test. If state aids act as rents to be "grabbed," then there should be a correlation between state aid spending and the level of corruption in a country. Measuring corruption, by its nature, is a difficult task and highly subjective. The arguably most well-established such measurement is the Corruption Perception Index (CPI) published yearly by Transparency International (TI). There does not seem to be any evidence for a link between state aid spending and corruption in Europe. Using state aid data provided by the European Commission (EU State Aid Scoreboard) and the CPI for the year 2010, there is a statistically significant (99% level) effect: "cleaner" countries hand out more state aids in absolute terms. This can easily be explained by the fact that less corrupt countries are usually richer and therefore they have more money to spend on state aids. Oddly, richer countries (in terms of GDP) also hand out more state aid in

5.3.6 Who receives state aid?

5.3.6.1 Characteristics

There are not many studies trying to characterize the set of firms that are more prone to receive state aid than others. Bergström (1998) developed five hypotheses based on size, age, industry, and performance of firms.

Larger firms could be expected to be more likely to apply for state aid as the cost of doing so is relatively smaller for them. They have more lobbying resources and can take advantage of scale economies in the production of pressure in the sense of Becker (1983). Political connections build up over time. Therefore, it can be conjectured that older firms are relatively more likely to be granted a subsidy[10]. Certain industries might generally be treated more favorably by the state because of the support they garner from other interest groups such as unions. This might especially work for basic industries that are very labor-intensive, such as shipbuilding, mining, forestry, and others. The firms' regional importance, and thus the support they receive in their respective region, could hence matter as well. Finally, firms in distress have a larger incentive to seek state aid. As Magee (1997) put it: "... the lowered rate of return from economic activity makes political activity a more attractive investment" (p. 537).

Using data on Swedish regional aid, he tests the five following hypotheses (result in brackets):

- Larger firms should be more likely to be granted supports. (not rejected)
- Older firms should be more likely to become supported. (rejected)
- Firms that belong to regionally important industries should be more likely to be granted supports than firms that do not belong to regionally important industries. (not rejected)

percent of GDP. Therefore, since CPI and GDP are highly correlated, less corrupt countries also hand out more state aid measured in percent of GDP. For the U.S., this kind of analysis is virtually impossible to conduct, given the limitations on data disclosure and the lack of corruption measures for individual states.

[10] Although not a part of Bergström's theorizing, the endowment effect might play a role. Citizens might be more tempted to support a firm that they have grown accustomed to.

- Firms that belong to declining industries should more likely to be granted supports. (ambiguous)
- Firms with economic problems should be more likely to be granted supports. (ambiguous, likely rejected)

5.3.6.2 Political connectedness, firm performance, and state aid

As the public choice literature suggests, a firm's political connections might have an effect on its propensity to receive state aid. In a study of government bailouts of 450 politically connected, but publicly traded firms from 35 countries during the period 1997 to 2002, Faccio et al. (2006) show that these firms are more likely to be bailed out than similar firms that do not enjoy such connections. Interestingly, such bailouts happen more often if the International Monetary Fund or the World Bank provides financial support to the firm's home government. This increases the likely of bailouts both for connected and non-connected firms. Among all bailed-out firms, those with political connections perform worse financially than those without during and after the bailout.

In a seminal paper, Shleifer and Vishny (1994) emphasize that politicians will extract some of the rents generated by political connections to firms. If the firm is private, that is, the managers control it and not the politicians, then politicians can use subsidies to convince the managers to pursue political objectives. If the firm is controlled by politicians, then the managers use bribes to convince them not to pursue political objectives. Firms benefit from such connections therefore only if the marginal benefit of the connection dominates the marginal cost. Fisman (2001), conducting an event study in Indonesia, and Faccio (2006) find a positive relation between political connectedness and firm value. The latter, using a sample of 20,000 listed companies from 47 countries, investigated the effect of political connections on firm value. She finds that such connections are less common in the presence of more stringent regulation of political conflicts of interest[11]. They are more widespread among large firms. An event study shows that if people connected to

[11] Connections are also more likely in countries with a higher degree of transparency - which is probably due to the fact that in those countries they are more easily uncovered.

the firm (large shareholders, board members, etc.) announce that they enter politics, there is a significant impact on stock value. Interestingly, there seems to be no significant price effect for appointments of politicians to corporate boards and might be a reflection of the hypothesis that politicians extract rents from companies they manage.

Agrawal and Knoeber (2001) investigated the political role of outside directors on the boards of American firms. They argue that outside directors with experience in politics and government provide advice and insight into the functioning of government, or exert influence on the government directly. They test whether politically connected directors are more important in manufacturing sector firms which are more dependent on politics[12]. They find that politics is more important to large firms and that the incidence of politically connected and lawyer-directors is higher. Firms that sell more to the government, export more, and lobby more (relative to other firms) are also more likely to have politically experienced directors on their boards. Where the firm is struggling *against* the government (e.g. firms that pollute more), the board will see more lawyers among their midst. Furthermore, the boards of electric utilities during the 1990s, when competition became stronger, also saw their numbers of politically experienced directors increase.

Tahoun (2014) examines how stock ownership by politicians contributes to enforcing non-contractible *quid pro quo* relations with firms. He shows that the ownership by members of the United States Congress in firms contributing to their election campaigns is higher than in non-contributors. "Firms with a stronger ownership-contribution association receive more government contracts. The financial gains from these contracts are economically large. When politicians divest stocks, firms discontinue contributions to the politicians, lose future contracts, and perform poorly. Politicians divest the stocks in contributors, but not in noncontributors, in anticipation of retirement" (Tahoun, 2014, p.86).

Niessen and Ruenzi (2010) use data from before and after the introduction of a new transparency law in 2007 in Germany. They also find that firms connected to parliament members (mostly from the political right) are larger, less risky and have lower market valuations than unconnected firms. They face fewer growth opportunities, but exhibit slightly better accounting performance. In terms of stock market valuation, they

[12] Unfortunately, the data they use is only from 1987.

outperformed unconnected firms before the introduction of the law, but this gap decreased strongly after the 2007 reform.

The considerations discussed here call for a specific, empirical research. Using data from the EU's State Aid register, it would be possible to calculate the share of firms with political connections in the total population of firms receiving state aid. If their share is higher than in the general population of firms, then this would constitute a serious problem with state aid in Europe.

Park (2012) theorized that vertical state aid has an inverted U-shaped relationship with the level of centralization of economic interests, while horizontal state aid increases monotonically with the level of centralization of economic interests. When the relevant lobby groups are organized centrally, they do not have incentives to aid *specific* firms, but rather want to spread the rent equally across firms and industries. If they are organized at a very decentralized level, they lack the strength to lobby effectively for subsidies and face more competition in the competition for rents. But if workers and firms are organized at the industry level, they have the incentives to actively lobby for specific aid and also the capability to coordinate their efforts in such a way that they do not harm each other. Using the EU state aid scoreboard dataset, he finds that countries where labor and firm interests are organized at the industry level are more prone to grant aid to specific firms or industries, while countries in which industrial relations are either decentralized or highly centralized are less prone to do so. Horizontal aid targeting a wider range of economic sectors, he finds, increases with the centralization of labor and business interests.

5.3.7 A simple model of state aid coalition-building

In the public choice literature, there is sizable amount of studies evaluating the link between general government spending and and the proximity of elections. They often find that there is a positive link.

If it is assumed that the main objective of a politician is to get reelected, then she has several policy choices and objectives:

- She has to provide for public goods, as demanded by her voters. These public goods are funded from tax revenues.

- Using state aids, she can attract new firms. These new firms produce jobs and increase the overall wage level. At the same time, these new firms are competing against existing firms in the area[13].

- Some of the firms in her jurisdiction are in distress. They are producing losses and threaten to disappear, leaving their workers temporarily unemployed. These firms can be saved by handing out subsidies.

- Of course, taxes (which fund the public goods and the subsidies) are unpopular measures. Her objective is therefore also to keep the taxes low.

If it is furthermore assumed that she cannot fund her policies through debt and that the tax rate is proportional to the income, then these conflicting objectives produce a number of problems.

- Increasing the supply of public goods increases the tax rate.

- Giving state aid requires tax revenues - a burden borne by the whole community. In this setting, let us assume that aids to firms in distress redistribute towards the employees of the firms. Aids given to new firms, on the other hand, increase the total income of the jurisdiction.

- People can move away. I assume that moving is very costly and only happens after the election.

- People might be attracted to move to the jurisdiction. Reflecting the principle that new immigrants do not immediately receive the right to vote, these people are not taken into consideration in this median-voter model.

- There is a fundamental difference between already existing firms in distress and new firms. The goods of new firms are generally more sought after than the goods of old firms.

[13]This is particularly true for retail companies. New retail companies take away business from pre-existing retailers. Manufacturing companies do so less, assuming that the jurisdiction is an open economy allowing imports and exports.

To make the optimal decision, she has several instruments. She can set the amount of public goods. Furthermore, she can select projects eligible for state aid. These projects vary in scope and kind. The firms can either be troubled firms already in the jurisdiction or they can be firms willing to move to the jurisdiction. If there is no deficit-spending and if creating a surplus is not a policy-goal, then the tax rate is not a variable of choice: it follows from the set of projects and the amount of public goods the politician selects. The voters, on the other hand, are a continuum of individuals with different preferences for public goods, tax rates, wages, and the goods produced by the firms.

With more than one firm to potentially support and, in addition, the possibility to provide public goods (that is, not through support a specific firm), the optimization problem gets quickly very complex. Whether the politician supports one or several firms will depend on the preferences of the voters and which majorities prevail.

To understand how and under what conditions majorities in favor of state aids to a specific firm are built, it can be useful to sketch a simple public choice model: if the community uses the majority rule, then a firm will receive subsidies if a coalition of the firm's owners (in case of publicly-held stock companies, this might be a large number), its employees and those voters with "close economic connections" constitute a majority of voters.

Unless there are constitutional rules preventing them from redistributing excessively, they could award state aids even without economic justifications. The crucial question therefore is the amount of economic ties that a firm has in a given community and the number of people.

The setting is as follows. There are two countries (domestic and foreign) producing goods x and y. y is produced in a worldwide competitive market by some unspecified firms. Good x is produced by a foreign firm[14] called F selling it at p_x^H. This firm sells this good (which it is also selling in other markets) at a price equal to its marginal cost. But x is also produced by a domestic firm called D. This firm though has a disadvantageous cost structure and produces losses. It is therefore on the verge of closing down. The government is considering to grant a state aid to the firm, which will allow it to produce at a lower price

[14]For this analysis it is not relevant whether there is only one foreign firm or if there is competition abroad.

than the foreign firm. Furthermore, the employees earn a wage w^H if they can keep their employment with the firm and a lower wage w^L if they get fired and have to find another job[15]. All other citizens eligible to vote earn a wage w^H.

Citizens maximize their utility $U_i(x, y)$, which is subject to $t + p_x x + p_y y = w(t)$, where t is lump-sum tax levied to fund a transfer to D. If $t = \tau$, then $w = w^H$ for everybody in the jurisdiction and $p_x = p_x^L$, that is, the new price of x is lower. If $t = 0$, that is, no state aid is given, then $w = w^L$ for the α percent of citizens who work for D and $w = w^H$ for the $1 - \alpha$ percent who do not. The employees of the firm will approve the state aid if the utility they reap from the lower price of good x and keeping the high wage outweighs paying the tax τ. On the other hand, citizens who are not employed by the firm will approve it if the benefits from the lower price outweigh the tax burden. The effects in place are thus the income effect (the income is lower because of the tax) and the substitution effect (the relative prices make shifting consumption from good y to good x more favorable). It is now possible to express the exact condition under which non-employees, that is, people whose interest in the firm lies only in the fact that they consume the good it produces (at varying degrees - even not at all in some cases), will favor granting the state aid.

We assume that all individuals have a Cobb-Douglas utility function of the form:

$$U_i(x, y) = x^{\beta_i} y^{1-\beta_i} \tag{5.3.1}$$

Without loss of generality, β_i shall be restricted such that $0 < \beta_i < 1$. This means that individuals value goods x and y differently. The higher their individual β, the more they would be willing to pay for the good of the troubled firm. If the state aid is granted, then the budget constraint for non-employees of the firm producing x will be $t + p_x^L x + p_y y = w^H$. By equating the marginal rate of substitution with the relative prices, it can easily be shown that:

[15] The rationale is that the lower wage incorporates the period of unemployment and thus loss in life income.

$$x_{t=\tau} = \beta_i \frac{w^H - t}{p_x^L} \quad (5.3.2)$$

$$y_{t=\tau} = (1-\beta_i)\frac{w^H - t}{p_y} \quad (5.3.3)$$

Conversely, it $t = 0$, then $p_x = p_x^H$, with

$$x_{t=0} = \beta_i \frac{w^H}{p_x^L} \quad (5.3.4)$$

$$y_{t=0} = (1-\beta_i)\frac{w^H}{p_y} \quad (5.3.5)$$

In a hypothetical referendum, voters who do not work for the firm and are only connected to the firm through their consumption of good x will chose the tax policy that maximizes their utility. Thus, they will vote for the state aid if:

$$U_i(x_{t=\tau}, y_{t=\tau}) > U_i(x_{t=0}, y_{t=0}) \quad (5.3.6)$$

This condition is met if

$$\tau < w^H \left(1 - \left(\frac{p_x^L}{p_x^H}\right)^{\beta_i}\right) \quad (5.3.7)$$

Thus, if the tax is high, the price drop must be big too. The more an individual values the good (high β), the more tax he or she is willing to pay.

For the employees, the condition is met more easily. Their utility function is the same as those of the non-employees, but their budget constraint is affected by the state aid decision. If there is state aid, then their budget constraint is $\tau + p_x^L + p_y y = w^H$, reflecting their higher income if the firm is saved, while if the firm goes bankrupt and the employees suffer from a period of unemployment, their budget constraint will be $\tau + p_x^L + p_y y = w^L$. As a result, employees will approve state aids if:

$$\tau < w^H \left(1 - \frac{w^L}{w^H} \left(\frac{p_x^L}{p_x^H}\right)^{\beta_i}\right) \tag{5.3.8}$$

Note that the right-hand side in equation 5.3.8 is larger than the right-hand side in equation 5.3.7, meaning that employees will be willing to accept a higher tax rate since they have more to lose than the non-employees. The total amount of tax levied nt must be sufficient for the firm producing x to stay in the market.

Numerical example If a person (not employed by the firm) has an income of $1000, and a state aid would reduce the price from $10 to $5, then she would be willing to pay nothing if her $\beta = 0$, up to around $159 if $\beta = 0.5$, and up to around $292 if $\beta = 1$.

The three following graphs illustrate the model. Straight lines represent budget constraints. The two parallel lines represent the budget constraint before and after the tax. The third line is the budget constraint after the state aid has altered the relative prices of goods x and y. The blue curve (tangent to one of the two parallels) is the initial indifference curve. Depending on whether the income effect or the substitution effect prevails, the indifference curve tangent to the new budget constraint can represent an equal, lower, or higher utility level.

5.3.8 Implications and necessary extensions

The model lays the framework of a more complex situation in which there is not only one firm in distress, but in which there are several goods in different sectors produced by firms in need of state aids. In this case, politicians will have to chose or rank different projects and there will be competing coalitions. Eventually, they will want to select them in such a way that they can gain reelection in the next elections – for this, they will need to know what could be called the “marginal contribution to reelection” of state aid projects.

The assumption in the model is that granting a state aid to a firm will have an effect on prices. This means that there is a world price for the good, which can be undercut locally by the firm if it receives subsidies. The model does not take into account that the state aid will

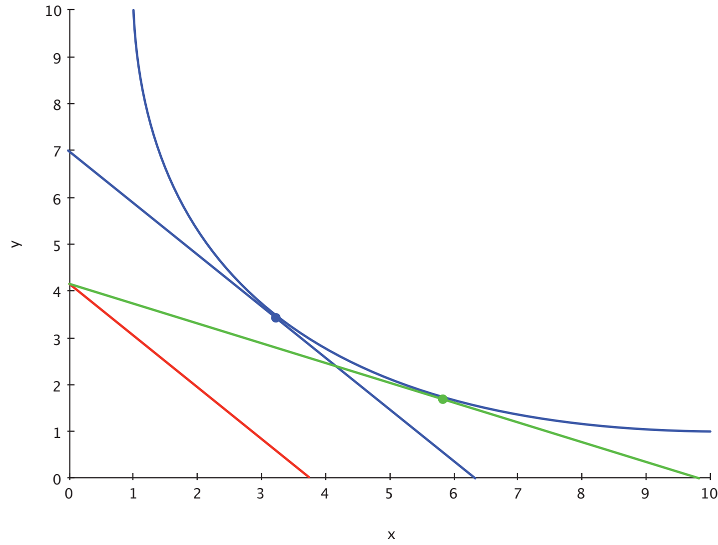

Figure 5.1: Individual indifferent about the state aid decision

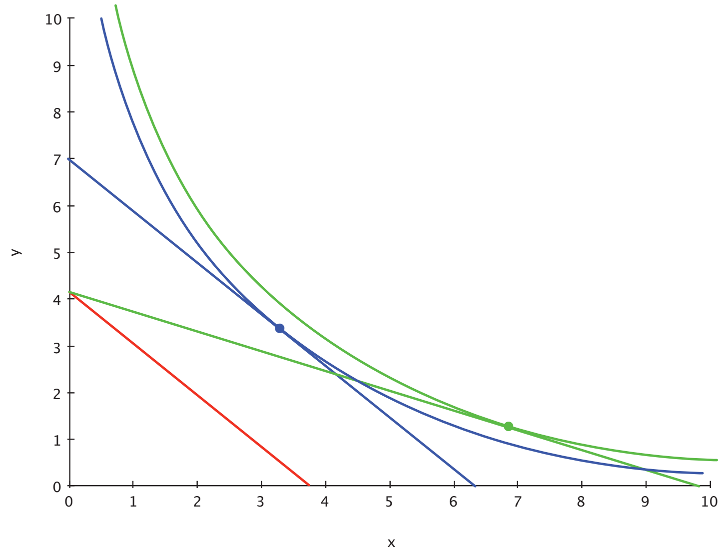

Figure 5.2: Individual approves the state aid decision

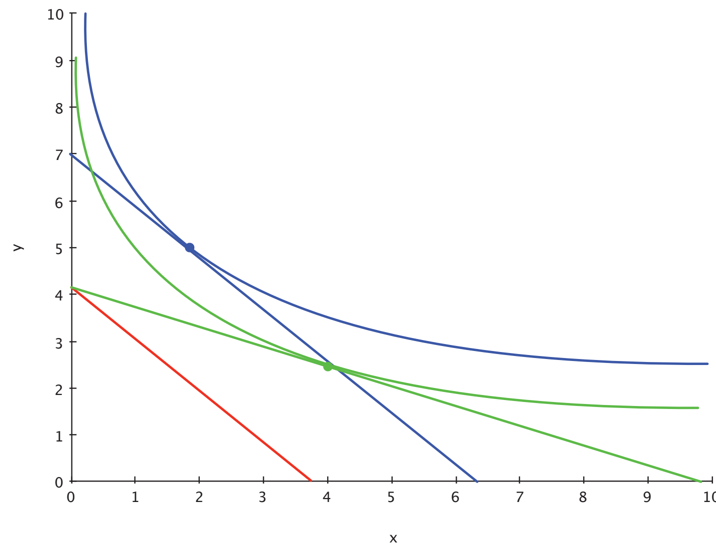

Figure 5.3: Individual opposes the state aid decision

also affect the prices outside of the jurisdiction (if the firm is sufficiently large), or that other firms might be able to price discriminate between countries.

Most probably, the ownership structure of the firm receiving state aids will play an important role. Ownership could be concentrated or dispersed – or the firm could be state-owned. Also firms can be for-profit firms or non-profit providers of services of general interest. Furthermore, whether the firm is owned by locals or is a foreign firm might make a difference. Another question to be addressed is the role of the management in this game (see also section 6).

The size of any given jurisdiction is an important category because it determines the number of people who would be forced to pay taxes if the majority decides to grant a state aid to a firm. At the same time, it also determines how broad a “coalition of the willing” would have to be in order to build such a majority. This leads to a preliminary result. The bigger a jurisdiction, the more difficult it is to build a majority coalition of people with economic ties to the firm. Thus, given a certain firm size

with given ownership structure and economic ties, it is more likely to receive state aids in smaller jurisdictions than in bigger ones. Federalism theory has dealt with the problem of the optimal size of a country or sub-entity. In Auster and Silver (1979), a U-shaped average total cost curve as a relation between cost per person (i.e. the cost of "producing" punishment and collective protection) and population is assumed. When combining those two theories, the dynamic aspect of the question should also be noted. Advances in transport and communication technologies lowered administrative costs for jurisdictions (thus allowing bigger jurisdictions) and made it easier for firms to operate on a larger scale (thus making them more likely to receive state aids).

People, in this case: voters, can face difficulties correctly estimating future outcomes. A new set of variables could therefore be introduced, namely $E_i(w_i^L)$ which represents the expectations of individual i about his or her future low income. If we call $E(w^L)$ the objective (true) future low income, then $E_i(w_i^L) - E(w^L)$ is the bias in i's perception. If individuals systematically estimate w^L too low, then this difference could probably best be described as a mathematical expression of a status quo bias[16]. If we allow for the existence of such a bias, then this might be a further argument for a technocratic, economic approach to state aid control. After all, a status quo bias will systematically produce too much state aid – not according to any inter-jurisdictional efficiency measure, but even when taking into account only the utility-maximizing criterion at the jurisdictional level.

5.4 The role of capital and citizen mobility

Globalization has lead to the increased mobility of capital and labor. Nevertheless, the worldwide integration process is not equally-paced everywhere. European integration led to legal institutions that allow for full mobility of capital and labor, but non-legal barriers to mobility still exist.

[16]The term "over-pessimism bias" could also be discussed, but this would require a theory that distinguishes it from the "over-optimism bias" also existing in the behavioral literature, that is, it is not clear when the over-pessimism bias is present and when the over-optimism bias appears. The status quo bias, on the other hand, is not in contradiction to any other bias prevalent in the literature.

In the discussion of inter-jurisdictional competition, much attention has been given to the role of mobility of citizens ("voting by feet") and to the taxation and attraction of mobile capital. This following section attempts to organize in a systematic way the implications stemming from variations in the degree of mobility on the side of the firms and the citizens/voters.

Both mobilities play a role in the attractiveness to tax or subsidize firms (Mueller, 2000). The analysis of constitutional and public choice of state aid to firms thus should take into account these contingencies. The main result is that depending on who is immobile and who is mobile (that is, capital and/or people), the problems of choosing rules restraining state aids and the solutions thereto will vary.

Subsidies have effects on several aspects of the firm. They determine the location of the firm and they decide whether a firm disappears into bankruptcy or is founded in the first place. As for the firm location, the efficient outcome is the one in which a firm is in the exact location where its capital is used most productively. In regards to firm exit and entry, it is clear that inefficient firms should leave the market.

A main feature of integrated markets is that there is mobility between jurisdictions. The original Tiebout model (Tiebout, 1956) had citizens "voting by their feet" and thereby sorting themselves according to their tastes for public expenditure and according tax rates. This model required a number of strong assumptions, of which the absence of externalities was one of them; the existence of at least as many jurisdictions as there are types of consumer-voters was another one. Oates and Schwab (1991) expanded this model to the mobility of firms.

Others looked at the competition for capital between jurisdictions with immobile citizens (Thomas, 2000). The following analysis tries to demonstrate that the choice of state aid rules (from a normative and a positive perspective) is contingent on the mobility of firms and voters and will and should look differently depending on the economic, institutional and legal environment. The analysis should also take into account another problem of constitutional choice, namely that those contingencies are not fully known at the time in which the rules are designed.

Full mobility of firms and voters Under full mobility, there is no need for state aid since firms are immediately replaced. There is only a limited willingness to pay for state aid as people could simply relocate to other jurisdictions to find employment or goods they seek (exit in the sense of Hirschman (1970)). As a consequence, regulation of state aids at a supranational level is not necessary. On the contrary, there might even be under-provision of public goods because of free-riding, that is, individuals might wait for another jurisdiction to provide and pay for the public good and then move there afterwards.

For other combinations of capital and labor mobility, the description is not so straight-forward. The main benchmark of most of the state aid literature and of European state aid legislation is probably the scenario of full mobility of capital and immobile people.

Mobile firms, immobile voters In this setting, state aids are used to attract firms and capital. Regulation might be needed to prevent inefficient subsidy wars. In the EU, the lack of mobility of workers is often an issue for policy measures (see e.g. IDEA Consult (2010) on the mobility of researchers and engineers in Europe).

Immobile firms, mobile voters If capital is immobile and people move, then the situation can be interpreted as a competition among people to live in the jurisdiction with the desired goods and tax bundle. It could be related to Buchanan's theory of clubs (Buchanan, 1965).

Immobility of firms and voters In the case that neither capital nor people are mobile, there might be a higher will to grant state aids, while people are more easily expropriated for state aid. The willingness of firms to move can be discussed in terms of asset specificity (Williamson, 1985). As Zahariadis (2008) points out, the cost and therefore ability of firm owners to move their assets to more profitable uses drives domestic lobby groups to request subsidies – the less exit is an option, the higher the relative payoff of voice in the sense of Hirschman (1970).

Zahariadis (2001) tested the hypothesis "that under threat of international competition disbursement of state subsidies varies systematically

with the degree of asset (factor) specificity employed in a national economy." He shows empirically that asset specificity and subsidy protection are related and that asset specificity helps determine the scope of subsidies.[17]

This set of distinctions can co-exist at the same time. For instance, some industries might show high degrees of mobility, while others do not (be it for capital or for labor).

The taxation of capital is linked to its mobility as well as to its consumption of local public goods (Mueller, 2000). If capital does not require local public goods in its production process, then it is more difficult to tax it as it can more easily move to a different jurisdiction (shown e.g. by Gordon (1986)). If, on the other hand, firms use local public goods in their production, then the local jurisdiction can charge capital a marginal tax rate equal to the marginal benefits from said public goods and services. This point has been made by Oates and Schwab (1988, 1991). The assumption of perfectly mobile capital leads to the result that there are no possibilities for exploitation: "capital will not be able to exploit local communities, nor will local communities be able to exploit capital" (Mueller, 2000, p. 342).

Subsidies to firms can be interpreted as the provision of public goods (see e.g. Mueller, 2000). Citizens might find particular value in one special firm, especially if it is unlikely that it will be replaced anytime soon. Members of a particular community might own assets specific to the firm (that is, they can only work with this one firm) or to the community. Moving would then come at the cost of giving up ties to this community, while at the same time maybe being forced to live in a jurisdiction that does not offer the same desired bundle of local public goods and tax rates. In this case, state aids might be efficiency-enhancing.

LeRoy (2005)–being a prominent voice of anti-subsidy grassroots organizations in the United States[18]– insists on the nexus between tax and

[17]He does so by using a data set of thirteen OECD countries in the period 1990-93 and two measures of asset specificity (physical specificity and human capital). As a proxy for physical specificity he uses R&D intensity. For human capital, he uses net job creation (loss) in the manufacturing sector as a percent of total jobs in manufacturing. It seems that this setup leaves space for some improvement and extension. The effects of asset specificity on specific subsidies and on horizontal measures could be tested on a broader sample. More generally, the concept of transaction costs could be introduced to existing state aid models.

[18]While LeRoy's book does admittedly clearly not meet scientific requirements

subsidy competition among states and local communities on one side and the ability of said jurisdictions to provide public goods that are adequate for economic development. Local governments compete for investments by giving away subsidies or granting tax breaks. These local governments levy property taxes from which they directly finance the local infrastructure and, most importantly, schools. Thus a community that fights fiercely in the "bidding wars" has less money at hand to invest in the "business basics", such as a qualified workforce, functioning infrastructure, and the like. The quality of attracted firms and jobs created by them will therefore also be lower.

In a setting where capital is mobile, it will relocate to regions that provide the best environment and highest incentives. This is bad news for poorer, more peripheral regions. Because of their low tax base, they have a relatively harder time to attract firms than the richer, central regions. They might have the advantage of lower wages, but at the same time they usually also have a less-skilled labor force. The "curse" of developing countries is therefore that, because of those bidding wars, they are only able to attract low-tech manufacturing firms. This is a counter-intuitive result: developing countries should have a higher interest in banning public subsidies to firms than developed countries. Actually, van Buiren and Brouwer (2010) find empirical evidence that state aid is not higher in less concentrated countries ("periphery"-countries) than in concentrated countries ("core"-countries).

The quantitative dimension should be kept in mind. In practice, people do not vote that easily with their feet. They do not simply relocate just because of a state aid decision that went against there interest. Nevertheless, there could be long-run effects, and they could differ from industry to industry.

Zahariadis (2008) postulates three hypotheses. First, as discussed above, higher asset specificity leads to more subsidies. Secondly, higher asset specificity leads to more sectoral aid and, thirdly, to fewer horizontal aid. The argument is that firms with specific assets will want aid that is tailor-made to their needs. If they lobby for horizontal aid, they are more likely to face conflicting demands from a higher number of actors.

Aydin (2008) uses EU state aid data from the period 1992 to 2006 and confirms the following hypothesis:

(and especially the tone), the issues it addresses are nevertheless very relevant.

1. The higher the ratio of mobile to immobile capital in a country, the larger is the spending on subsidies. The measurements of capital mobility are based on assumed mobility of specific sectors, not observed mobility, though.

2. The higher the average subsidy levels of neighboring countries, the larger is a country's spending on subsidies. This measures how subsidies possibly entail subsidy races between neighboring states.

3. The smaller district magnitude in a country, the higher will be the level of subsidies.

4. The lower the unity of parties in a country, the higher is the level of subsidies

Subsidies and state aids only account for a small amount of the overall location decision [source]. It is also not always known how quickly a firm which has gone into bankruptcy or left the market will be replaced. For instance, on February 3rd, 2012, state-owned (re-nationalized in 2010) Hungarian legacy airline Malev ceased its operations, shortly after the EU (on January 9, 2012) decided that it had to repay State aid monies worth its entire 2010 revenue. On the very same day, Ryanair announced that it would open a new base with four airplanes in Budapest within two weeks to serve 31 destinations. According to its press release, Ryanair will support 2,000 jobs at Budapest airport (Malev employed 2,600 people before its grounding). At the same time, Wizzair, Lufthansa, Air Berlin, and Smartwings unveiled plans to increase their presence in Budapest[19]. This is an example of high capital mobility. In this case, claims of the Hungarian government that state aids are necessary to maintain the connectedness of the Hungarian economy were not justified as other firms immediately jumped in to replace the failed firm.

As a result, state aid control should be fine-tuned to the mobility patterns in place. An aid to a firm which can be easily replaced should be treated differently than an aid to a firm with very location-specific investments, which happens to be in a temporary financial turmoil.

[19] http://www.reuters.com/article/2012/02/03/us-malev-stoppage-idUSTRE8121JS20120203

5.5 The firm location race: inter-jurisdictional competition with uncertainty

In the early 2000s, Seattle-based aircraft manufacturer Boeing sought a new location for its firm headquarters. In a rare instance of transparence in those kinds of decisions, they hired Deloitte to organize an auction – cities and counties could bid to become the new firm location. Crucial components of these bids were so-called incentive packages in order to increase the attractiveness of the locations. Among others, Dallas/Fort Worth, Denver and Chicago submitted viable bids and eventually the latter prevailed. The combined offer of Chicago and the state of Illinois consisted in subsidies to the amount of $41 million from Illinois and $20 million from Chicago. Additionally, a $2 million grant was added, as well as the promise to build a public heliport conveniently close to the new headquarters building. A similar competition was staged shortly after for the location of the manufacturing site for the new Boeing 787 Dreamliner plane – a competition in which Washington state succeeded in maintaining Boeing within its jurisdiction (Boeing is traditionally closely tied to the Everett and Seattle, WA, area).

In other instances, jurisdictions went even further in order to be attractive for the investment. Recently, the trend to build Las Vegas-style casino macrocomplexes (as they already exist in Macao and Singapore) almost arrived in Europe. In 2012, Las Vegas Sands Corporation, which, *inter alia*, operates the famous Venetian Resort Hotel Casino as well as the Sands Expo and Convention Center in Las Vegas, proposed the construction of a so-called EuroVegas. According to news reports, it was supposed to host twelve hotels, six casinos, a convention center, three golf courses, an indoor stadium, theaters, shopping malls, bars, and restaurants. Although it is not known with how many governments the investors negotiated, the competition soon narrowed down to one between Madrid and Barcelona. The complex was expected to create 260,000 mostly unskilled jobs. In times of high unemployment, this was a tempting offer to the Spanish government. But the company required more. They demanded substantial tax exemption (virtually turning the village into a tax haven for ten years) and infrastructure investment by the government to support the project. Furthermore, they considered the EU-wide ban on smoking an obstacle to the atmosphere in the casi-

nos and thus pushed for a waiver. It was also reported that "the group wanted changes to Spain's labour laws, lower social security payments, relaxed smoking laws and the creation of university degrees in casino management" (Reuters, 28.3.2012). Eventually, the conservative Spanish government – faced by opposition from an alliance of labor unions, the Roman Catholic Archdiocese of Madrid, and socialist politicians – had to pull the brake. The main trigger seems to have been that the investors demand that the government offer a guarantee not to change the favorable legislation in the future or to pay compensation. Deputy Prime Minister Soraya Sáenz de Santamaría declared: "It is impossible to create a legal shield against regulatory changes because the courts are sovereign, majorities can change and the idea of indemnifying against future regulatory changes does not exist in our legal system" (Financial Times, 13.12.2013). Although the project eventually failed, it shows how far governments are willing to go in order to attract firms and investments. It also illustrates that the competition takes place through various locational factors, such as subsidies, tax breaks, but also labor or public law.

This process of competing for firm locations is a very costly one. It unavoidably entails redistribution within the jurisdiction that prevails in the competition, but sometimes also in the jurisdictions that lost the race. Furthermore, any regulator supervising such competitions would need to watch very closely the activities of local governments since many state measures can be more or less covert contributions to a subsidy race. A view that emphasizes the distributive aspects of inter-jurisdictional competition therefore needs to understand how harm might be caused in "bidding wars" and also consider the cost of close monitoring. What this section will show is that the competition for firms leads to inefficient allocation of resources, and that the argument in favor of deterrence (e.g. through fines) of certain practices can be made. It also keeps in mind certain political considerations, such as the unpopularity of sanction mechanisms that subject the state. This contrasts to related policy fields such as competition law, where high fines serving the purpose of deterring future violations are commonplace. Again, the peculiarity of state aid law, namely that states have to agree on regulation that affects their own behavior, comes into play.

The existing literature so far has treated this competition merely as

an auction. A novel way pursued in this model is to interpret this competition not only as a competition, but even as a race. In this view, time matters. Jurisdictions spend money not only in order to attract firms, but also to do so *before* any other jurisdiction attracts the firm. They make investments that have some distributional effects. The fact that "subsidy wars" are also races has implications from a welfare point of view. Individual local governments spend resources to accelerate firm relocations to their jurisdiction. The costs are twofold: first, there are the actual incentives paid out to the firm, secondly, they have costs that accrue even if they lose in the competition. Not simply being a restatement of the "winner's curse," it is the latter of the two which produces most of the concern in this model. A jurisdiction might for instance invest in big infrastructure works (such as expanding their highways or airports) – infrastructure works that only make sense if any firms actually decide to relocate to this jurisdiction. Similarly, jurisdictions might have to pay out subsidies to other firms or reduce their tax base below the desired tax rate solely to build up a reputation as an attractive location, even though those other firms either never threatened to leave or would have come anyway.

While the traditional view of state aid emphasized the competition among firms, Nicolini et al. (2013) argues that, instead, interjurisdictional competition has gotten the upper hand nowadays. "While state aid is considered a competition policy problem in the EU, where each national government typically supports its national champion, the U.S. example stresses that industry subsidies are actually regional policy issues, where states compete for investment, but where all firms are equally likely to be welcomed by States. As traditional firms are no longer confined within the original national borders, a convergence of EU policies towards this approach may emerge as an option" (Nicolini et al., 2013, p. 86). This is reflected in the fact that these so-called national champions have been replaced by multinationals (or have become that themselves). These firms (e.g. car manufacturers like Renault, Rover, or Alfa Romeo) have been privatized and internationalized their production chains. Of course, defending production plants within national boundaries – and the jobs they create – is still deemed of high importance (Nicolini et al., 2013).

In chapter 3, the point was made that inter-jursidictional competition might not necessarily be detrimental to total welfare. This section makes

the point that the competitive process is in itself costly and might lead to over-investment. In this view, state aid is more than simply a transfer of resources from the state to a specific firm.

Jurisdictions do not know beforehand when firm-relocation opportunities might arise, but they can invest in order to have them appear earlier. Yet, the more they invest, the higher the damage (in terms of wasted resources) for the people living in these jurisdictions. This setting is actually very similar to "patent races," in which firms invest in research and development, but only the firm which reached an innovation first reaps its benefits. More precisely, this setting is analogous to one in which the patent race induces firms to release unsafe or insufficiently tested products – an outcome calling for punitive damages or prior product approval by a regulating authority (Baumann and Heine, 2013).

If we now assume a misalignment in the incentives of voters and of politicians, something similar could happen. Politicians making investment decisions might not fully take into account all potential damages. One reason for this is that they might apply the median voter concept and do not care about damages accrued to the minority which does not vote for them. Again, these damages would be included in an aggregate welfare function maximized by a hypothetical social planner. The potential damages are the damages stemming from giving state aid to a firm. For instance, a majority with strong preferences for a good produced by a firm receiving state aids could redistribute income from a minority with weak preferences for said good by levying a tax and using these funds to lower the price of the good (this was the premise of the descriptive model earlier in this chapter). This "expropriation" is exactly the damage caused by state aids which is not fully taken into consideration by the politician's objective function. In line with the literature on state aid, these damages can be much more: they could be distortions of competition, that a firm ends up in a dominant position and abuses it, the creation of an oligopoly, the effects on the efficiency of the firm (e.g. its reduced innovative activity), etc.

Most of the standard literature on state aids reaches the conclusion that bidding wars are always detrimental because of the distortions of competition they ensue. This is not the spin taken by this model. Here, state aids are *a priori* positively valued, even though they of course

produce costs. The idea is that they might help reach a better match between firms and locations, or that they favor the creation of new firms with better products. For instance, Mueller (2000) interprets subsidies to firms as a provision of public goods.

Applying an approach to the race for firms that emphasizes the potential damages is both fruitful and sometimes problematic. The fact that politicians of local governments are in a race against other jurisdictions induces them to rush measures increasing the attractiveness of their locality. Thereby they cause harm among some of their electorate which would not occur if the competition was merely comparable to an auction. This situation is reflected in the model which uses a hazard rate to encompass the time dimension and a damage factor. But the problem resides in the options available to remedy the excessively low "level of care" of politicians: there is no liability imposed on firms or individuals causing harm in this context. Politicians can hardly be forced to pay compensations to their electorate. The only possible remedy is ex-ante notification of investments and state aids to a supranational authority – in the end, a system comparable to the current EU state aid control mechanism, but to a different extent. This indeed has an analogue in the aforementioned literature, namely the requirement of official product approval. The practical problem in terms of resulting policy implications is the difficulty of drawing clear boundaries to the activities of the state in the economy.

This section follows less the existing state aid literature, but rather draws its inspiration from the literature on the timing of innovations under rivalry. In a seminal paper, Kamien and Schwartz (1972) study a firm's choice of development period and introduction time for a single innovation. Their main assumptions are that the firm's costs increase with compression of the development period, that firms have fewer profit opportunities if they prolong their development period, and that the probability with which its rivals innovate and introduce new products (described as a hazard rate) affects the potential rewards available to the firm. This model has been generalized and refined in Kamien and Schwartz (1980). Dari-Mattiacci and Franzoni (2014) connect tort liability with innovation and discuss the optimal liability rule and standard of care for different kinds of innovations. Baumann and Heine (2013) addressed the question of increased damages to customers due to the

rushed release and marketing of new products. They designed a model combining a "patent race" with torts and analyzed the implications for the design of optimal tort law regimes. A crucial point in their model is that firms do not take the whole amount of the expected damages into account when deciding their speed of innovation – yet, a social planner would. The model presented in this section draws a very close analogy between the setting in Baumann and Heine (2013) and the race for firms through inter-jurisdictional competition using incentive packages (or state aid, as it is usually referred to in European law).

For the purpose of this section, it is paramount to distinguish rescue aids, that is, subsidies to firms in distress, from firm location incentives, which have the purpose of inducing firms to relocate to the state-aid-granting jurisdiction. Since around 2007, state aids to firms in Europe and North America have largely been dominated by bailouts for banks and large corporations deemed "too big to fail." This of course is a consequence of the current financial crisis and is – hopefully – only a temporary phenomenon (indeed, aid to non-financial industries in the EU declined again in 2010). This section focuses on efforts made by jurisdictions to attract new firms and does not address specific crisis-related aids, even though conceptually, the difference from rescue aids is not too large. After all, a firm going bankrupt is more or less tantamount to a firm not choosing to locate in any jurisdiction.

This section follows the following structure: subsection 1 introduces the model of the race for firms, subsection 2 discusses the equilibrium, subsection 3 introduces state aid control, and subsection 4 deduces the policy implications from the model and concludes.

5.5.1 The model

There are n jurisdictions competing for the relocation or creation of a firm. For the moment, it is assumed that the "market for firms" consists only of one firm. The citizens' valuation of having the firm relocate to their jurisdiction is v and exceeds the potential harm d caused by the state aid decision. In order to attract firms, jurisdictions have to make investments to increase their attractiveness. Therefore, the politicians of every jurisdiction i ($i = 1, ..., n$) set the amount of investment, modeled as a hazard rate called h_i at which it succeeds with its bid. The costs of this investment are described by a strictly convex cost function $c(h_i > 0$

(thus, $c'(h_i) > 0$ and $c''(h_i) > 0$). The term $\frac{1}{h_i}$ represents the expected time until the jurisdiction is successful.

In order to actually have a time-cost trade-off, it must be assumed that the average expected costs of winning a firm relocation, $\frac{c(h_i)}{h_i}$, increase in the hazard rate.

The citizens of the jurisdiction value it if a firm relocates to their jurisdiction and build rational expectations $\bar{h}$ about the hazard rate chosen by the government. At the same time, they also have to bear the cost of making the necessary investments and concessions. The rent that the median voter m reaps from the firm's relocation is described by:

$$R_m = v - (1 - \gamma)x(\bar{h})d \tag{5.5.1}$$

The parameter γ measures the share of the damage due to the specific state aid measure borne by the median voter. Thus, γd is the expected harm attributable to said policy. The fate of the politician is closely linked to the payoffs the average citizen receives. Thus, the rent R_m also translates into the rent π_I of the politician. Finally, the continuous interest rate used to discount future payments is r and all players are considered risk-neutral.

5.5.2 Equilibrium analysis

5.5.2.1 Levels chosen by politicians

Politicians now make decisions on investments and subsidies. Thanks to the description of the model, it is now possible to determine their political rents.

The political gain of the politician in jurisdiction i if he or she is successful in attracting a new firm is given by the rent of their voters, minus the "damages" caused by the policy.

$$\pi^I(h_i) = R_m - \gamma x(h_i)d = v - (1 - \gamma)x(\bar{h})d - \gamma x(h_i)d \tag{5.5.2}$$

If he or she is not successful, she suffers the costs $c(h_i)$.

Thus, the ex-ante expected present value of politician i's objective function can accordingly be written as:

$$E\pi_i = \int_0^\infty e^{-rt}\Big[e^{-\sum_{j=1}^n h_j t}(-c(h_i)) \\ + e^{-\sum_{j\neq i} h_j t} h_i e^{-h_i t}\pi^I(h_i) + (1 - e^{-\sum_{j=1}^n h_j t}) * 0\Big]\, dt \tag{5.5.3}$$

If no jurisdiction was successful in acquiring a firm by time t, then jurisdiction i incurs a a cost $c(h_i)$. If no other jurisdiction was successful, then the density function for jurisdiction i acquiring a firm at time t is $h_i e^{-h_i t}$. But if the jurisdiction was too slow, meaning that the firm already moved somewhere else, then its income is zero.

The last equation can be simplified and rewritten:

$$E\pi_i = \frac{h_i \pi^I(h_i) - c(h_i)}{r + \sum_{j=1}^n h_j} \tag{5.5.4}$$

Given this expected present value of the objective function (the expected "profits" per period during the competition adjusted by the discount rate), each politician/government now maximizes this ex-ante function by choosing its hazard rate h_i, yielding the following first-order condition:

$$\frac{\partial E\pi_i}{\partial h_i} = \frac{1}{\left(r + \sum_{j=1}^n h_j\right)^2} \\ * \left[\left[\pi^I(h_i) + h_i \frac{\partial \pi^I(h_i)}{\partial h_i} - c'(h_i)\right]\left(r + \sum_{j=1}^n h_j\right) \\ - h_i \pi^I(h_i) + c(h_i)\right] = 0 \tag{5.5.5}$$

This first-order condition can be transformed into:

$$A := \pi^I(h_i)\left(r + \sum_{j\neq i} h_j\right) - h_i\gamma x'(h_i)d(r + \sum_{j=1}^{n} h_j) - c(h_i)\left[\frac{c'(h_i)}{c(h_i)}\left(r + \sum_{j=1}^{n} h_j\right) - 1\right] = 0 \quad (5.5.6)$$

The first term in this first-order condition is the gain from being the first to acquire the firm. It equals the increase in costs due to the higher expected harm plus the higher costs of winning the competition.

Deriving by h_i, that is, calculating the second-order condition, shows that there is indeed a maximum of ex-ante expected profits:

$$\frac{\partial A}{\partial h_i} = (-2\gamma x'(h_i)d - h_i\gamma x''(h_i)d - c''(h_i))\left(r + \sum_{j=1}^{n} h_j\right) < 0 \quad (5.5.7)$$

From looking at the reaction curve $h_i(h_k)$, it is possible to conclude that the hazard rates are strategic complements, that is, the effort exerted by jurisdictions increases with the effort of the other jurisdictions.

$$\frac{\partial h_i}{\partial h_k} = -\frac{\frac{\partial A}{\partial h_k}}{\frac{\partial A}{\partial h_i}} = \frac{h_i\pi^I(h_i) - c(h_i)}{-\left(r + \sum_{j=1}^{n} h_j\right)\frac{\partial A}{\partial h_i}} > 0 \quad (5.5.8)$$

where $k \neq i$, the first-order condition 5.5.6 has been applied and the expected profits are assumed to be positive.

Using these conditions, the equilibrium can be determined. Assuming that all jurisdictions are symmetric and rational expectations formed by citizens ($h = \bar{h} = h_i$), the equilibrium condition is:

$$A^E := (v - x(h)d)(r + (n-1)h) - h\gamma x'(h)d(r + nh) - c(h)\left[\frac{c'(h)}{c(h)}(r + nh) - 1\right] = 0 \quad (5.5.9)$$

In order for this equilibrium to be stable, it has to be assumed that $\frac{\partial A^E}{\partial h} < 0$. From equation 5.5.9 it can be seen that the equilibrium hazard

rate h increases with the number of jurisdictions n taking part in the firm relocation race. Furthermore, it decreases with the factor γ, that is, the amount of harm attributed to the government policy. Thus, if the competition is fierce, politicians will spend more money on winning it. The more accountable they are vis-à-vis their voters, the fewer incentives they have to invest in the race.

5.5.2.2 The levels chosen by a "social planner"

The next step now is to compare this outcome with the level of investment and effort a hypothetical social planner, that is, a supra-jurisdictional authority, maximizing a utilitarian welfare function would choose. This computation will yield the socially optimal outcome.

The social planner maximizes not only the politician's welfare function, but also takes into account the utility of the voters. Because the "market for voters" has been simplified by the assumptions made earlier, the "voter surplus" is equal to zero in the equilibrium. It is therefore sufficient to solely look at the politicians' expected present value of their objective function.

The expected social welfare is then given by:

$$\begin{aligned} ESW = &\int_0^\infty e^{-rt} \\ &\left[e^{-\sum_{j=1}^n h_j t} \left(\sum_{k=1}^n \left[h_k(v - x(h_k)d) - c(h_k) \right] \right) \right] dt \\ = &\frac{\sum_{k=1}^n \left[h_k(v - x(h_k)d) - c(h_k) \right]}{r + \sum_{j=1}^n h_j} \end{aligned} \tag{5.5.10}$$

Again assuming the symmetries in the equilibrium, the expected social welfare can be restated as:

$$ESW = \frac{nh(v - x(h)d) - nc(h)}{r + nh} \tag{5.5.11}$$

The first-order condition is:

$$\begin{aligned}\frac{\partial ESW}{\partial h} =& \frac{1}{(r+nh^*)^2}\left[n(v-x(h^*)d)r - nh^*x'(h^*)d(r+nh^*)\right.\\ &\left. -nc(h^*)\left[\frac{c'(h^*)}{c(h^*)}(r+nh^*)-n\right]\right] = 0\end{aligned} \tag{5.5.12}$$

Analogously, an equilibrium condition can be defined:

$$\begin{aligned}B :=& (v-x(h^*)d)r - h^*x'(h^*)d(r+nh^*)\\ &- c(h^*)\left[\frac{c'(h^*)}{c(h^*)}(r+nh^*)-n\right] = 0\end{aligned} \tag{5.5.13}$$

The difference to the outcome in equation 5.5.9 is that the social planner values the profits from firm relocation $(v - x(h)d)$ to a lesser extent, because he or she knows that firm relocation to one jurisdiction implies that no other jurisdiction is able to reap the rents thereof. Unlike the politicians, he or she considers saving the total cost of $nc(h)$ after the firm location, whereas a single jurisdiction only takes into account its own cost savings.

Also, the harm done by state aids is taken into account only at a fraction γ by individual governments, whereas the social planner does so entirely. Because the race creates externalities upon other jurisdictions, the optimal hazard rate h^* decreases with the number n of jurisdictions competing in the race.

The relevant question now is how this socially optimal level can be achieved in practice and which constitutional framework this requires.

A first idea would be to adjust γ, and thereby γd. The wording used to describe this parameter in this model is "harm" or "damage" caused by the subsidy decision. Intuitively, this would call for some kind of liability system which compensates voters for the damages they suffered.

Formally, it is possible to derive the optimal damages factor by equating equations 5.5.9 and 5.5.13, while stipulating that $h = h^*$:

$$\gamma^* - 1 = \frac{n-1}{h^*x'(h^*)d}\frac{h^*(v-x(h^*)d)-c(h^*)}{r+nh^*} \tag{5.5.14}$$

If we stay in this thought experiment, then the optimal damages factor would depend on (i) the number of jurisdictions in the race, (ii) the relationship between the expected harm rate and the hazard rate, and (iii) the value of the jurisdiction's objective function in equilibrium in relation to expected harm.

The problem is that with inter-jurisdictional competition (that is, $n > 1$) the optimal damages factor exceeds one and increases in expected payoffs. If there were a compensation scheme in place, then this would stipulate punitive damages.

The intuition of this outcome is that if the damage factor were one, the jurisdiction would internalize all the effects of its decision regarding the hazard rate, a result in line with the standard models of liability in market settings, such as Shavell (2004). But because of competition, the individual jurisdiction's incentives deviate from the socially optimal level. They do not take into account the loss of the other jurisdictions when accelerating their investment efforts. Only a damage factor higher than one would slow down the jurisdiction's efforts.

Finally, it can be shown that the damages factor is monotonously increasing with the number of jurisdictions:

$$\begin{aligned}\frac{d\gamma^*}{dn} =& \frac{h^*(v - x(h^*)d) - c(h^*)}{(r + nh^*)^2} \frac{r + h^*}{h^* x'(h^*)d} \\ &- \frac{h^*(v - x(h^*)d) - c(h^*)}{r + nh^*} \\ &* \frac{(n-1)[x'(h^*)d + h^* x''(h^*)d]}{(h^* x'(h^*)d)^2} \frac{\partial h^*}{\partial n} > 0\end{aligned} \tag{5.5.15}$$

The due effects increasing the optimal damages factor are the one stemming from the externalities due to competition which increase with the number of jurisdictions, and the one stemming from the decrease of the first-best hazard rate with the number of jurisdictions while the private incentives for early firm location increase with the number of jurisdictions.

Fiercer competition leads to jurisdictions making investments too early, which then has to be counteracted by higher punitive damages.

5.5.3 With state aid / subsidy control

A supra-jurisdictional entity could now regulate the competition. It can do so by approving the incentive package. A key element of this model is uncertainty. Therefore, I assume that the regulating authority operates under the same conditions. The probability that jurisdiction i's efforts find approval is a function of the hazard rate and denoted by $q(h_i)$, with $q'(h_i) < 0 < q''(h_i)$. So, because of the better information on the side of the jurisdiction, the regulator might approve even for too high hazard rates or deny for too low rates. Accordingly, it is assumed that the probability of the incentive being approved is increasing with the expected time until a firm relocates to the jurisdiction $(\frac{1}{h_i})$.

The expected payoff of the jurisdiction can therefore be re-written as:

$$\begin{aligned} E\pi_i &= \int_0^\infty e^{(-r+\sum_{j=1}^n q(h_j)h_j)t} \left[q(h_i)h_i\pi^I(h_i) - c(h_i)\right] dt \\ &= \frac{q(h_i)h_i\pi^I(h_i) - c(h_i)}{r + \sum_{j=1}^n h_j} \end{aligned} \tag{5.5.16}$$

The payoffs after approval of the measure remain the same.

Again, the condition determining the chosen hazard rate in the market equilibrium follows:

$$\begin{aligned} A^E :=& q(h)[1 + \epsilon_{qh}(h)](v - x(h)d)(r + (n-1)h) \\ &- h\gamma x'(h)d(r + nh) \\ &- c(h)\left[\frac{c'(h)}{c(h)}(r + nh) - q(h)[1 + \epsilon_{qh}(h)]\right] = 0 \end{aligned} \tag{5.5.17}$$

where $\epsilon_{qh}(h) = \frac{q'(h)h}{q(h)}$ is the elasticity of the approval probability with respect to the chosen hazard rate. The easier it is for the regulating authority to determine whether the state aid is appropriate, the higher the absolute value of the elasticity. Given this probability of approval $q(h)$, the new expected social welfare is:

$$ESW = \frac{nq(h)h(v - x(h)d) - nc(h)}{r + nh} \tag{5.5.18}$$

This welfare function can again be maximized and yields the optimal hazard rate described by:

$$B := q(h)[1+\epsilon_{qh}(h)](v-x(h^*)d)r - h^*x'(h^*)d(r+nh^*) \quad (5.5.19)$$
$$- c(h^*)\left[\frac{c'(h^*)}{c(h^*)}(r+nh^*) - nq(h)[1+\epsilon_{qh}(h)]\right] = 0 \quad (5.5.20)$$

By comparing equations 5.5.17 and 5.5.19, the optimal damages factor γ^* can be found:

$$\gamma^* - 1 = [1+\epsilon_{qh}(h^*)]\frac{n-1}{h^*x'(h^*)d}\frac{h^*(v-x(h^*)d)-c(h^*)}{r+nh^*} \quad (5.5.21)$$

The difference between the new optimal damages factor and the original damages factor (without state aid control) is the factor $[1+\epsilon_{qh}(h^*)]$

The result is that the optimal damages factor now depends on the effectiveness of the state aid control mechanism. It is lower with control, meaning that ex-ante regulation and liability of politicians are substitutes. If the control mechanism is ineffective, then – in terms of the model – "punitive damages", that is, some form of punishment of politicians, remain part of the optimal design.

5.5.4 Policy implications and conclusion

The purpose of this endeavor was to contribute to the design or improvement of a regulatory system applying to incentive packages handed out by governments to firms. The idea here was to model the competition as a race between a variable number of jurisdictions which has some detrimental effects to parts of the society. It followed that there are several relevant factors: first, the fiercer the competition, that is, the higher the number of jurisdictions, the more damage this competition will produce; secondly, the degree to which this competition produces damages (e.g. through expropriation of the minority or through distortions of competition); thirdly, the payoff functions determine the need for punitive damages.

Legally, it is problematic to implement punitive damages in this scenario. Even the quite stern European state aid control mechanism does

not know punitive damages. There are areas in which the EU can levy fines. Quite famously, it ordered Microsoft to pay €497 million for abuse of its dominant position in 2007 and ordered Intel to pay €1.06 billion (both following Article 101 of the EU treaty, one of the two cornerstones of European competition law). In 2010, it fined a price-fixing cartel of eleven air cargo carriers €799 million, pursuant to Article 102, the other cornerstone of EU competition policy.

The EU can also impose fines on governments. The Commission can withhold money if it decides that financial management of European spending is inadequate[20]. In theory, the EU can impose fines on member states not adhering to the Maastricht criteria (the criteria countries have to fulfill in order to join the monetary union) – while not very credible from the beginning, the rule has become more or less obsolete with the financial crisis and the explosion of almost all member states' deficits. Yet, in the realm of the European state aid control system, there are no provisions for fines. This, of course, has to do with the peculiar nature of state aid control as a restraining device of sovereign countries. There does not seem to be a political will to confer a sanctioning power to the European Union. There is a relatively realistic possibility of introducing a special kind of punishment mechanism: a recent change to the Danish competition act provides that henceforth all unlawful national state aid and probably also unlawful and incompatible aid according to the TFEU shall be repaid to the state treasury instead of the aid-granting authority (which might be a local or regional jurisdiction). Such a procedure seems politically viable and might have a strong deterring effect on wasteful state aid spending (Lund, 2013).

Previous discussions of the competition between jurisdictions for firms came to the conclusion that a ban or tight regulation is necessary. This model comes to a similar conclusion. The difference though is that this model not only calls for control of the actual incentive package or state aid (that is, the specific measures), but generally of investments made in order to attract firms (that is, non-specific measures, such as e.g. the concept of "horizontal aid" in EU state aid law).

This model is primarily a model of public choice in that it describes

[20]For instance, the United Kingdom had to pay up to £1 billion in fines in 2011, see www.telegraph.co.uk/news/worldnews/europe/eu/8269828/Britain-faces-1bn-of-EU-fines.html.

the behavior of utility-maximizing politicians and jurisdictions, unlike the more industrial-organization- and/or strategic-trade-oriented models by Collie (2000, 2002, 2005), Besley and Seabright (2000, 1999). The disadvantage of this approach though is that it remains agnostic as to how exactly the government causes harm by giving state aids to firms. Martin and Valbonesi (2006b) liken the complexity of the state aid problem at least to the complexity of the string theory of particle physics (the M-theory, an extension of string theory, works with eleven dimensions). As such, incorporating all aspects of industrial organization with all possible market structures into this model of a race for firms would unfortunately lead to excessive complexity. While accommodating all possible market structures seems too tedious, it might be possible to say a little bit more about the firms that the jurisdictions compete for. After all, the welfare effects will be different if the firm in question is a new, highly innovative firm, an old firm in an obsolete industry, or a large retailer chain (incentive packages for the latter is probably the most problematic, as there is hardly any welfare increase from support retail).

5.6 Self-reinforcing violation of state aid control

The "firm location race" section above illustrated a situation in which jurisdictions compete actively for firm location. This section discusses a different scenario, namely the possible equilibria if there are several jurisdictions competing, but in a setting where there is an overall consensus among them not to engage in state aid and a weak enforcement mechanism in place. The WTO would be an example for such a regime. Also within the European Union, since states use a multitude of instruments and administrative agencies to support their industries, it is difficult for the Commission as the supreme regulatory authority to know exactly which subsidies are given. No national agency – unlike other competition law areas such as mergers and acquisitions – has a '"panoramic picture of state aid allocations or enforcement powers" (Zahariadis, 2013, p. 144). Since the potential violators of state aid law are the governments themselves, they have little interest in providing complete transparency

in this field. This is reflected in the fact that there is no comprehensive disclosure system in place at any higher level of government (some American states do have disclosure programs).

The game is therefore similar to the game played by firms and corrupt bureaucrats in order to receive certain government services (see Andvig and Moene (1990), which this model follows closely). In this case, there are no bureaucrats, but jurisdictions that can be "bribed" by firms (e.g. by offering to build a factory) in order to receive a certain service (a state aid in the widest sense, such as infrastructure buildings or cash transfers).

Firms approach jurisdictions for the location of a new plant. The period length is assumed to be sufficiently short so that only one jurisdiction can be negotiated with at a time. The state aid involved is assumed to be homogeneous, meaning that the level of state aid transactions can be indicated by the number of jurisdictions awarding state aid, which is normalized to 1. It is also assumed that all firms demand the same amount of state aid.

The fraction of jurisdictions willing to breach the state aid law regime is denoted by y and that of jurisdictions following the rules by $1 - y$. The firm therefore has to search for a jurisdiction that is willing to hand out subsidies. The probability that it does so after N trials is therefore $(1-y)^{N-1}y$. The expected value of N, which is geometrically distributed, is thus $E(N) = \frac{1}{y}$ and can be interpreted as the average number of trials the firm needs to undertake before finding a willing jurisdiction. For sake of simplicity, it is also assumed that jurisdictions do not actively seek firms. Search comes at a cost, which is q_i for firm i. The excess profits of receiving state aid at a price b is $\pi_i(b)$, with $\pi_i'(b) < 0$. The expected profits of receiving a state aid can hence be written as:

$$P_i = \pi_i(b) - \frac{q_i}{y} \tag{5.6.1}$$

Of course, only firms with $P_i > 0$ are willing to seek and receive state aid. The total demand for state aid is proportional to the number of firms with a positive P_i. This demand can then be written as $D = D(b, y)$. D decreases with b (the more the firm has to provide to the state, the less attractive the aid is) and increases with y (the higher the incidence of state aid, the lower the search costs). It is assumed that function D is continuous and differentiable in order to facilitate the analysis. The

equation $y = D(b, y)$ gives the relationship between the benefit b and the normalized level of demand for state aid y. The long run demand curve can be upward sloping and the supply directly induce demand.

The jurisdictions are assumed to be heterogeneous with respect to the costs of providing state aid. They can choose between a strategy of not supporting firms and a strategy of doing so. They are assumed to have an infinite horizon and discount future transfers in their favor with the factor $\beta = \frac{1}{1+r}$. The expected value of the options of a rationally-acting jurisdiction i in period t can be written as:

$$V_i(t) = w + max[b - c_i + U_i(t), \beta V_i(t+1)] \tag{5.6.2}$$

In this equation, b is the offer of the firm (the value of creating jobs, tax revenue, etc.), c_i is the jurisdiction's cost of providing the necessary state aid and $b - c_i + U_i(t)$ is the expected gain of providing state aid in period t. If the jurisdiction adheres to state aid law, then it obtains $\beta V_i(t+1)$ for the next period with certainty. Thus, the expected consequences of violating state aid law are described by:

$$U_i(t) = (1 - s)\beta V_i(t+1) + s[y(\beta V_i(t+1) - B)) + (1 - y)(-b)] \tag{5.6.3}$$

s is the exogenously determined probability of being detected. If the state aid transaction is not uncovered, the jurisdiction enters the next period with the same options as in the present period. If, on the other hand, the deal is uncovered by a competing jurisdictions, then the outcome will depend on the deal that the two strike. If the jurisdiction that uncovered the state aid follows a strict no-state-aid-strategy, then the supervising authority would annul the contract and impose sanctions against the offending jurisdictions. With this punishment, there is a probability of $s(1-y)$ of obtaining $-b+\beta 0$ in the next period. This can be compared to the countervailing duties available in the WTO regime, which virtually lock out the offending country from competing in the next period. Just like in the WTO setting, the jurisdictions can agree not to report the matter. The state aid granting jurisdictions could for instance transfer a share of its benefits, for instance, by granting certain concessions in favor of the other jurisdiction. There are several alternatives for the determination of this agreement, but they all lead to qualitatively identical results. In order to simplify the model, it is

assumed that the maximum compensation that the jurisdictions would agree to would be b, that is, the amount the other jurisdiction, which is in principle willing to break the law, would actually need to receive in order to do so itself.

It stationarity is assumed (that is, $V_i(t) = V(t)$ and $U_i(t) = U_i$ for all t), then 5.6.2 allows to find the expected value of a "no state aid" strategy, namely $V^N = \frac{w}{1-\beta}$, the present value of future payoffs (the payoff being the fact of being in the game without having been sanctioned).

The expected present value of giving state aid is:

$$V_i^A = \frac{w + b(1-s) - c_i}{1 - \beta(1 - s(1-y))} \tag{5.6.4}$$

If V_i^a is positive, then the payoff of giving state aid is higher the higher its incidence, that is, the higher y.

A rational jurisdiction awards state aid if: $V_i^A > V^N$. From the expressions of V_i^A and V_i^N and replacing β by $\frac{1}{1+r}$, it can be shown that this inequality is satisfied if:

$$c_i < (1-s)b - s(1-y)\frac{w}{r} \tag{5.6.5}$$

The right hand side of the inequality is the gain of firm location, the first term being the expected retained value of firm location and the second term the expected loss of future pay-off. Those jurisdictions with costs c_i lower than the expected gain of state aid award state aid. In order to award state aid, it is necessary (although not sufficient) that $(1-s)b$ be higher than the costs c_i, which implies that V_i^a is strictly positive for self-selected pro-state-aid jurisdictions.

Each jurisdiction has a cost c_i of providing state aid and it is assumed that the cost of providing state aid is distributed over the interval $[\underline{c}, \overline{c}]$ with the cumulative density $F(\cdot)$ such that $F(\underline{c}) = 0$ and $F(\overline{c}) = 1$.

For any given values of y, b, w, s and r the proportion of jurisdictions willing to award state aid is $F((1-s)b - s(1-y)\frac{w}{r}$.

Thus, the number of jurisdictions handing out subsidies is higher

- the higher the perceived fraction of jurisdictions giving state aid and breaking the anti-subsidy regime

- the higher the benefits from firm location
- the lower the sanction from being detected
- the lower the exogenously given detection probability s
- the higher the discount rate r

The term r and subsequently the discount factor β can also be seen as the likelihood of a change in state aid policy, for instance towards a more stringent or a more lenient approach.

$F((1-s)b - s(1-y)\frac{w}{r}$ can be interpreted as a response function indicating the number of jurisdictions that choose to give state aid for a perceived level of y. Accordingly, the positive equilibrium levels of y and b are those satisfying

$$F((1-s)b - s(1-y)\frac{w}{r} = y for 0 < y < 1 \tag{5.6.6}$$

and

$$b = E(y) \tag{5.6.7}$$

The last two equations describe self-fulfilling consistent beliefs about the incidence of state aid and the equilibrium required benefits from firm location. They also describe Nash equilibria in the game theoretic sense. It works in a setting where each jurisdiction predicts the equilibrium level of state aid based on rational behavior, but also if each jurisdiction only knows their own cost c_i and observes last period's behavior of others. Once $y(t) = y(t-1)$, a stationary equilibrium is reached. It is locally stable if a small deviation from it in period t leads to a conversion back to it. This can be called a myopic adjustment case.

5.6.1 Equilibria

Depending on the incidence of state aid, the market-clearing required benefits values will change. The possible equilibrium levels depend on the distribution of c_i over the jurisdictions.

There may frequently be multiple equilibria. The value $y = 1$, that is, all jurisdictions give state aid, is in the set of equilibria if $(1-s)E(1) > \overline{c}$. This means that the expected value of the equilibrium state aid when

everybody gives state aid exceeds the cost of the jurisdiction least prone to give state aid.

Conversely, the value $y = 0$ is in the equilibrium set if $(1-s)E(0) < s\frac{w}{r} + \underline{c}$. This condition is fulfilled if the expected value of firm location when everybody else complies with state aid law is not high enough to cover the expected loss of future pay-offs and the costs of the jurisdiction most prone to give state aid.

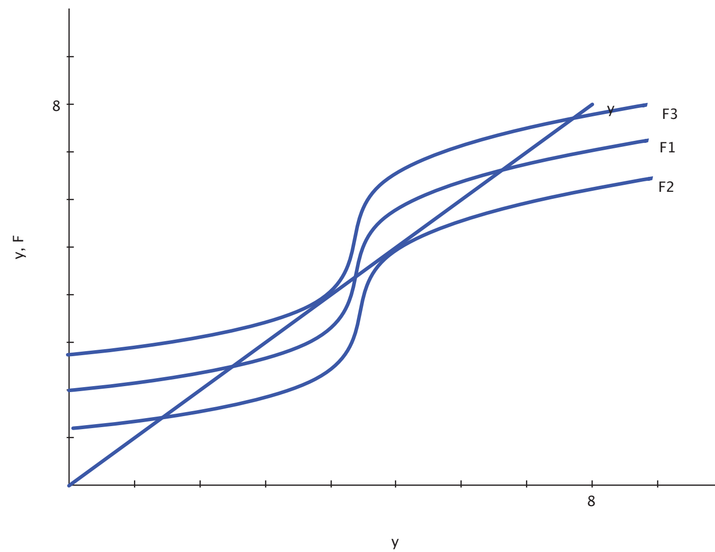

Figure 5.4: Self-reinforcing state aid violation

More interesting results appear if the distribution of c_i is bell shaped. In this case, as illustrated in figure 5.4, there are three possible equilibrium levels of y on the supply side for any given value of b (the three intersections between the y-curve and the F-curve). In the myopic adjustment case, only the two outer intersections represent stable equilibria.

The supply side of state aid depends on the potential benefits offered by the firm. An increase in b shifts the F-curve upwards (from F1 to F3). The highest amount of b that is able to sustain a low state aid equilibrium is the one represented by F3. If the curve shifted upwards a little bit more, then the only intersection would be in the region of high

state aid. Similarly, any benefit b lower than the one represented by F2 would entail a low state aid equilibrium.

5.6.2 Extensions

The model can be modified in several ways.

So far, the model has been silent on what drives the costs for state aid. A view more driven by a public choice, principal-agent approach could attribute this cost solely to the governing politicians, not the jurisdiction as a whole. In that cae, the cost could be modeled as a function of the prevalence of state aid. If state aid is commonplace around the world, then the political cost of engaging in this activity as well might be lower. The demand for state aid will then increase.

It could also be said that the probability of detection decreases with the level of state aid. The more jurisdictions hand out subsidies, the more difficult it becomes for a centralized authority to monitor all transactions.

If these extensions are incorporated into the model, then the main proposition, namely that the profitability of state aid increases with its incidence, is strengthened. They lead unambiguously to higher equilibrium levels of state aid but also to higher benefits for the state aid grantor.

5.6.3 Conclusion and policy implications

The purpose of the above model was to illustrate the case of a weak state aid control mechanism and to showcase its vulnerabilities. It demonstrates that, on one hand, violations of the agreement can lead to even more violations and eventually to the collapse of the system. On the other hand, it also shows that there can be several equilibria, explaining why similar regional groupings might nevertheless be characterized by different magnitudes of state aid prevalence.

In order to reduce state aid, the sanctioning mechanism needs to be strengthened. While this might appear trivial at first, the model shows another possibility in case installing a rigid sanctions regime is not feasible. A centralized authority could *temporarily* increase the sanctions in order to induce a shift from a high state aid equilibrium to a low state

aid equilibrium. Once this shift has been made and because it is a stable equilibrium, the regime can become more lax afterwards.

The novelty of this model is nested in several elements. It is an attempt to combine the demand side of state aid with the supply side in a unified model. It emphasizes that the process is costly for all parties involved - the jurisdictions that have to bear the cost of the state aid, but also the firm which faces search costs and has to make certain concessions to meet the demands of the state aid grantor. These factors are endogenous in this model and lead to an outcome with several equilbria.

5.7 Negotiating state aid deals

The political process of devolution or decentralization – a process generally regarded positively for its alleged improvement of democratic oversight[21] – might have increased the informational asymmetries in the negotiations between governments and firms. Devolution created a variety of new governments. A worry expressed e.g. in Markusen and Nesse (2007) is that internationally-operating firms are more experienced in negotiating incentive deals than newly formed governments.

The "state aid game" is about competition in two areas at the same time. Firms compete among themselves, while jurisdictions compete for capital. In this market in which firms negotiate deals with jurisdictions (and both try to maximize either their profit or their utility, however it is described). In the last century, there was an important innovation in this market though: the advent of specialized consultants who act as intermediaries between firms and governments. In a market of perfect information, so the common theory in law and economics, there is nothing particularly problematic about this. In the worst case, there are some more transaction costs, in the best case there is a better flow of information and a higher quality of outcomes. But exactly this assumption of perfect information and full knowledge of all market participants does not hold and – worse – is even reinforced by the institution of site consultants.

The argument goes as follows (see e.g Markusen and Nesse, 2007). Site consultants enable an anonymous market. Thanks to them, firms

[21]The idea is that a regional government is closer to the preferences of the region's citizens than a central government in a possibly far-away capital.

do not have to negotiate directly with governments and thereby reveal their identity. Instead, site consultants leave governments in the dark about the identity of the firm and of possible other jurisdictions offering incentives. This gives them the power to bluff in the early-stage incentive negotiations. In fact, they can even pretend that there is a competition for a firm's investment decision even though there is not. The possible result of this is that firms receive tax cuts in the jurisdiction of their current location even though they were not actually willing to relocate in the first place. This of course is good for the firm – but it is not good for the jurisdiction which – based on a democratic decision – chose its optimal tax rate.

LeRoy (2005) gives several examples of how companies sometimes create a bogus competition. For instance, hotel chain Marriott International, Inc., was ventilating the idea of relocating from Bethesda, Maryland (west of DC and north of the Potomac River) and received offers from suburban Virginia (south of both DC and Potomac River). The result of the competition was that Marriott received \$49 to \$74 million and staid in Maryland. Two things make this case interesting though. First, a journalist uncovered confidential information stating that Marriott never intended to move out of Maryland. The second is that taking a closer look at the case makes that this comes as no surprise. The vast majority of Marriott employees, including the highest-level executives, live in Maryland, from where it is tedious to commute to commute to Northern Virginia, given the insufficient number of bridges over the Potomac River. If a firm like Marriott now uses site consultants who keep it as secret who their clients are, then Virginia and Maryland have no way of finding out that Marriott's sole plan was to get a better tax deal in its original home state.

Furthermore, site consultants act as gatekeepers between firms and governments. Some criticize the consultants' role by claiming that they have the power to "blacklist" governments which appear un-cooperative in the consultants' view. This is furthermore reinforced by business climate indexes produced by important site location consultancy publications (such as the magazine *Site Selection*). Because of those business climate indexes, local governments end up handing out aids only to achieve a better ranking and be considered once an important relocation decision comes up.

The site consultancy trade is absolutely unregulated. This seems to be an inefficient situation, though. For instance, the real estate market is usually heavily regulated, and, most importantly, agents are prohibited from working for both sides. Similar regulations are in place for instance in the legal profession. A lawyer cannot work for both sides in litigation, and he or she cannot work as defense attorney and as prosecutor at the same time. Yet, in the site consultancy industry, it can be observed that individual consultants or site location departments in larger consulting or accounting[22] firms work not only as brokers for site location consultant for firms, but also economic development consultants for various jurisdictions. This is a lucrative business for consultants who may end up earning a commission as high as 30% of the total aid package. From an efficiency point of view, this might not be ideal.

Large firms are also better equipped to conduct negotiations in their favor. They have the organizational advantage of flexibility that (especially local) governments do not share, since the latter need to coordinate e.g. with the city council or regional parliament (Weber, 2007).

To understand if regulation of site consultants is necessary, it is worthwhile to draw upon the findings of the literature on the regulation of professions, where the profession of real estate agents is probably the one that comes closest to site consultants. Dewatripont and Tirole (1999) provide a rationale for advocacy and the competition between enfranchised advocates of special interests to improve policy-making. Macey and Miller (1997) model the attorney-client relationship as an agency contract characterized by information and monitoring difficulties. Miceli et al. (2000) analyze real estate agency regulation and conclude that unbundling the matching and representation functions might contribute to effective agency reform.

[22]Interestingly, the major players in the industry belong to large accounting firms, such as Deloitte (Khan, 2002).

CHAPTER 6

State Aid, Firm Decisions, and Corporate Governance*

Much of the literature on state aid is based on the premise that firms will naturally seek state incentives and relocate if this is deemed profitable. It is agnostic about the internal processes – and maybe even conflicts of interest – within firms. This chapter tries to further the understanding of firm location decisions, the internal governance mechanisms relevant for the acquisition of subsidies, and what it means for state aid regulation.

So far, the firm side of the market has not received much attention. In a certain way, modeling the preferences of firms is not straight-forward. At first glance, all firms would want state aid. This does not necessarily mean that they prefer a constitutional order that allows for such aid. If it is (reasonably) assumed, that firms act profit-maximizingly, then those firms which are more likely to receive state aids will be in favor of lax rules, whereas firms which are not likely candidates for state aids will want stricter rules.

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*Some parts of this chapter have been co-authored with Klaus Heine and resulted in two forthcoming publications (Hanke and Heine, 2014; Heine and Hanke, 2014). This applies specifically to sections 6.2, 6.3.1 to 6.3.3, 6.4 to 6.6, 6.8 to 6.10, and 6.12.

Remaining in the field of aviation, for instance British Airways' stance on state aid policy reform is as follows: "British Airways has suffered badly because of substantial amounts of state aid being provided to some its largest competitors in Europe (and indeed all over the world - this is not just a European phenomenon but that is not a reason to soften the line against aid in Europe). We believe that there is no place for such huge sums to be paid in a highly competitive industry like aviation. They have acted against the best interests of European air passengers and penalized unfairly Europe's more efficient and better managed airlines" (British Airways, 2005, p. 2005). This has to be seen within the context that the United Kingdom is consistently among the countries with the lowest amount of aids given to firms, while other countries (especially France and Germany) have a more generous tradition towards their national airlines (and the EU has been historically relatively lenient when it comes to state aids to the aviation industry).

In a certain way, British Airways' feedback to the state aid reform proposal might even have some shortcomings. It would be in BA's core interest if not only European countries subsidized Airbus, but if the United States supported Boeing. Thus it should perform the highwire act of lobbying on one hand against subsidies to airlines, but on the other hand also lobby for subsidies to its main suppliers, Airbus, Boeing, Embraer and others (preferably those which do not supply BA's competitors). Organizations closer to the research and development in the aviation sector, such as the Society of British Aerospace Companies (representing 1,500 small and medium-sized enterprises), naturally put a much bigger emphasis on block exemptions for R&D.

But the situation is actually more complicated than that. Firms are not just a production function (as they are interpreted in neoclassical economics), but there are agency problems. In fact, they could be seen as a nexus of management, shareholders and workers; their incentives are not necessarily aligned. During the financial crisis, state aids were given to banks under the condition of increased transparency and shareholder control rights. It is conceivable that the management of certain financial institutions might have declined aid because of those conditions, even though it might have been in the interest of the shareholders to accept the aid. Conversely, shareholders might object to a manage-

ment which is able to accrue state aids[1] as it might as well be able to expropriate the shareholders (similarly to the observation that a management able to evade taxes is not always in the shareholders' interest for the same reasons). We might thus for instance observe somewhat "unholy alliances" between the management and the firm's employees and workers against the shareholders or between the shareholders and workers against the management.

There is a recent literature analyzing the link between corporate taxes and corporate governance. Desai et al. (2007) show that the design of corporate taxes affects the amount of private benefits extracted by company insiders. They also show that the quality of the corporate governance system affects the sensitivity of tax revenues to tax changes. Desai and Dharmapala (2009a) ask themselves whether corporate tax avoidance activities advance shareholder interests. They show that the effect of tax avoidance on firm value is a function of firm governance and note that corporate tax avoidance is more than just a transfer of resources from the state to shareholders and includes agency problems characterizing shareholder-manager relations.

This literature can be expanded and applied to the analysis of state incentive-seeking behavior. Several questions follow. What happens to state aids given to firms, to what extent do they benefit the shareholders and to what extent do they increase the private benefits of company insiders? What is the effect of subsidies on firm value then? And, last but not least, what does all this mean for state aid control?

6.1 Investment and location decisions

With regard to aid decisions within the firm, it is important to distinguish between investment decisions and location decisions. Ramboll and Matrix (2012) note that these decision processes are usually handled at the highest level within the particular organization, which might also be a reason why accessing information regarding investment and location decisions can be very difficult a task. Investment decisions can be initiated by the parent company (top-down), but some processes can also initiate at the level of decentralized business units which propose a cer-

[1] State aids here are seen as rents extracted through lobbying.

tain investment to their parent company (bottom-up). Sometimes, the management of firms issues an internal call for competition, for instance when firms decide where to develop or manufacture new products – the process then incorporates both top-down and bottom-up elements. Location decisions, similarly to investment decisions, involve the board of the investing company, but seem to be more decentralized than the decision to invest itself. Companies often hire external consultants to screen possible locations. Ramboll and Matrix (2012) find that the incentive effect of regional aid is stronger with regard to the location decision than to the investment decision. This reason for this is that investment decisions are usually highly strategic decisions, which means that aid can only influence the size of the investments. Once the decision is made, aid can play a role in the race for the location of the firm.

Ramboll and Matrix (2012) distinguish between three different determinants other than state aid: efficiency seeking, market seeking and factors of production. Efficiency seeking means that firms seek to increase efficiency by reducing cost, exploiting economies of scale or higher productivity. Market seeking is the reaction to increasing or changing patterns of demand. It can lead to better access and proximity to growing markets. Other investments seek to increase or improve factors of production by improving the availability of raw materials and skilled human resources.

6.1.1 Do managers care about location?

There is a variety of factors that come into play when firms decide on location. Probably one of the first theoretical approaches to the issue was Marshall (1890) who identified knowledge spillovers, labor market risk pooling, and vertical linkages as the main reasons for firm location. Krugman (1991a) emphasized the remarkably high concentration of economic activity in space. Krugman (1991b) showed how countries differentiate endogenously into an industrialized core area, with manufacturing firms located in the region with the larger demand, and an agricultural periphery. This differentiation depends on transportation costs, economies of scale, and the share of manufacturing in national income. This relates to the concept of backward and forward linkages central to the work of Albert O. Hirschman (see e.g. Hirschman, 1958).

Audretsch et al. (2005) highlight the importance of proximity to universities in order to benefit from technology spillovers. Managers have not always been on a perennial quest for better firm locations. For a long time, engineers dominated the management circles and were quite oblivious towards the potential gains from real estate decisions. Over time, management either professionalized or hired consultants to do the job for them (Markusen and Nesse, 2007; Markusen et al., 1991).

In Europe, so-called "greenfield" investments are rather rare. Projects receiving regional aid often involve expanding existing capacities, diversifying output, or changing the production process of existing facilities (Ramboll and Matrix, 2012). If political considerations are incorporated into firms' location decisions, then it can be conjectured that firms have higher incentives to move to regions with high unemployment as they might find a regional government there that is willing to go to great lengths in order to attract the firm – for instance, by awarding state aid (Hillman et al., 1987).

Ramboll and Matrix (2012) distinguish two different sequences for the location decisions. In the first model, firms differentiate between hard and soft location factors. They first shortlist on the basis of hard location factors. If this is deemed necessary, they submit an anonymous information request to the local business development authorities, usually through site consultants. After that, contacts to these authorities are formally established by the potential investors. In the subsequent negotiations, the aid-granting authority can try to influence the location decision. They report this kind of procedure for instance in the German solar industry. In a second model, firms distinguish between different geographic scales, reducing the size of the potential location in each step. So, for instance, firms decide first whether they want to invest in Central and Eastern Europe, and then in which specific country and region they want to do so. The car industry in Slovakia and Hungary is an example for this kind of procedure. The study also finds that in none of them did return on investment calculations were used to compare alternative locations (including potential state aid). Instead, a multi-criteria analysis was usually applied at the stage of deciding upon a location.

6.1.2 Do taxes matter?

The assumption so far has been that governments' aid decisions actually have an effect on the decision of firms to enter or leave a market as well as whether to open up (e.g. due to aids for start-ups) or close down operations (e.g. due to rescue and restructuring aid) at all. In fact, the effect that aids have on firm decisions are disputed or, at least, evolving. According to (Markusen and Nesse, 2007, p. 10), "firms surveyed from the 1950s well into the 1980s dismissed the importance of taxes as an interregional siting factor - instead, transportation costs, raw material access, labor costs, land costs, infrastructure, and access to markets dominated their locational calculus." According to Bartik (2007) and Wasylenko (1997), this seems to have changed. Falling transportation and communication costs made relocations easier and determinants influenced by potential state aids, like land and labor costs or the available infrastructure, more important. Nevertheless, Markusen and Nesse (2007) are not satisfied by this explanation. Indeed, since the industrial revolution of the nineteenth century, transportation and communication costs have been falling. And yet, no fierce competition for capital has ensued for a long time.

6.1.3 Do firms and/or their managers always want state aid?

State aid does not always come for free. In some cases, the jurisdiction granting the aid has some demands in exchange for the aid. Since the politicians involved have different incentive mechanisms than the managers of firms, an agreement does not always come along. For instance, European airplane manufacturer EADS (recently reorganized under the more positively-connotated name Airbus Group, which up to then was only a subsidiary to EADS) reported strong results for 2012 and a strong increase in liquidity. As a result, the company rejected the offer of the German federal government to provide initial funding (start-up aid) for the Airbus A350 XWB program (a direct competitor to Boeing's 777 and 787 models). Subject of the discussion was a loan of €600 million provided by the KfW (*Kreditanstalt für Wiederaufbau*, Reconstruction Credit Institute). According to media reports, the German government demanded that EADS maintain its production plant in Hamburg and

establish a final assembly line for the new A350 plane there. The management was not willing to accept this deal and was credited for trying to free EADS/Airbus from the tight corset of industrial policy considerations of its owners (Germany and France hold 12% each; the amount of free float shares was recently increased from 49% to 70%). One subsequent measure was to merge the company's administrative units in Munich and Toulouse at its headquarters in France – a step that would probably not have been accepted by Germany[2].

6.2 Theory of the firm and state aid control – a research gap

In this chapter, none of the approaches to the analysis of state aid control outlined in chapter 3 shall be followed. Instead, a new perspective on the issue of state aids shall be demonstrated, which so far has not received attention in the literature. Herein, the topic is the influence of the corporate governance of firms on the demand and use of state aids. The main idea is simple: In the typical discussion of state aids it is normally assumed that the aid-receiving firm profits unequivocally from the aid. The owners of a firm receive a positive cash flow. Thus it is obvious that they have an interest in being granted aids. But is this really the case? Doubts arise once the implicitly assumed fiction of the owner-entrepreneur is abandoned and a separation of ownership and control - as it is commonly the case in modern capitalist economies - is assumed.

This means that the question whether state aids are actually in the interest of the firm's owners can only be answered positively if the owners are also the decision makers inside the firm, that is, if there are no problems of delegation between ownership and control.

Only in the case that there is no problem of delegation can the receipt of a state aid be directly attributed to the wish of the owners and the aid be apportioned to the income of the owners. This clear-cut situation might not apply though to a majority of firms exceeding a certain

[2]See Wall Street Journal of 27 February 2013, `http://online.wsj.com/news/articles/SB10001424127887324662404578329984072804560`, and aero.de of 1 March 2013, `http://www.at.aero.de/news-16979/Enders-EADS-ist-auf-A350-Kredit-nicht-angewiesen.html`

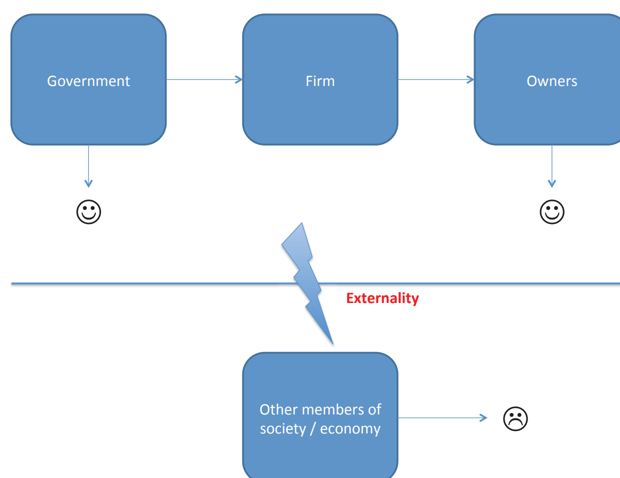

Figure 6.1: The traditional view of state aid control

size. Typically, larger firms rather employ a professional management running the day-to-day activities, as well as a separate supervisory body representing the interests of the owners, such as the supervisory board or the general assembly. The task of monitoring the management is then characterized by an agency-problem, in which the owners cannot simply assume that the management is acting in their interest (Jensen and Meckling, 1976; Fama and Jensen, 1983). It is therefore not necessarily obvious whether state aids are always in the interest of the owners. This relates to the corporate governance of the firm, which constitutes the linchpin between owner interests and the leadership exerted by the management with regards to state aids.

The following chapter will first outline some state aid cases illustrating the corporate governance. The next step will draw a parallel to a new theoretical strain of literature, namely the so-called agency view of tax avoidance (see e.g. Desai and Dharmapala (2009a)). The fourth section further develops these arguments. Section five will frame these considerations using a formal model, and section six will deduce relevant policy recommendations as to how European state aid control can be improved in light of the potential conflicts of interest between owners

and managers.

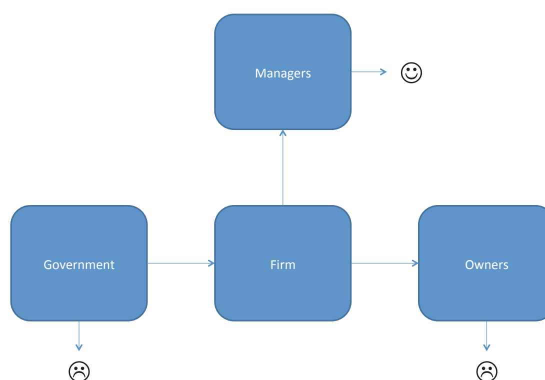

Figure 6.2: The corporate governance view of state aid control

6.3 State aid and the interests of the management - an illustration

This section will present three different examples involving state aids and where it might be suspected that there is an agency problem between management and owners to which the granting of a state aid is causal.

6.3.1 Bremer Vulkan

The first case is about the Bremer Vulkan shipbuilding company. In the early 1990s, the company acquired shipyards in Eastern Germany from the *Treuhandanstalt*, the government agency founded in the immediate post-socialist period charged with privatizing East German enterprises. In order to maintain jobs and a competitive shipbuilding industry in Eastern Germany, Bremer Vulkan received around two billion Deutschmarks (around one billion Euros, not inflation-adjusted, or

around 1.5 billion in 2013 Euros) in state aids from the Treuhandanstalt AG.

As Bremer Vulkan AG was in a financially tense situation since the early 1990s, the management installed a central cash pool in 1992. This cash pool received the financial surpluses of subsidiary companies in order to compensate liquidity problems of other company parts on a short-term basis. The newly acquired shipyards in East Germany were also included in this pool, and around 850 Million DM of the granted state aids in East Germany were diverted into the general cash pool.

In 1996, Bremer Vulkan AG finally had to declare bankruptcy in light of the dramatically worsening financial situation of the enterprise. The subsidies granted for the restructuring of the East German shipyards were lost in the process and thus could not be used anymore to save the East German shipbuilding locations. Recovering the state aids was not feasible anymore because of the loss in substance of Bremer Vulkan.

The Bremer Vulkan case consequentially led to a legal debate about the liability of the board of directors of the *Konzern*. While it is not possible to address all aspects and ramifications of the applicable company law here, the core of the case is whether there is a case of embezzlement, that is, whether there was a breach of duty on the part of the managers vis-à-vis the interests of the company owners (Bauer, 2008). The courts never resolved this legal issue, as the pending lawsuit against former CEO Friedrich Hennemann was discontinued due to the length of the procedure and the applicable statute of limitations and the charges against four former members of the board in a civil trial were dropped because of a settlement.

At this point, the relevant question is whether the separation of ownership and control led to the loss of the awarded state aid monies. This was obviously the case, since the management decision to include the East German shipyards into the cash pool led to the loss. This can be interpreted as a breach of duty towards the state aid granter or at least as an act of the management not in favor of the economic interest of the granter. It can also be speculated about whether stopping at an early stage the inclusion of the East German monies in the cash pool would have prevented the management's business strategy of building a world-leading shipbuilding *Konzern*. This might have saved Bremer Vulkan from bankruptcy and might thereby have prevented the loss of

wealth of the owners.

The case of Bremer Vulkan shows vividly that there may be a principal-agent problem between management and owners when the firm receives state aids. Of course, the motivation of the management to make use of an information asymmetry vis-a-vis the owners can be complex and multi-layered. In the case of the former CEO of Bremer Vulkan AG it can be suspected that it was not only the desire for higher compensation and retirement benefits which fueled the risky expansion of the company by using state aids, but also the hubris (Homberg, 2010) of wanting to forger a globally leading company group within a short timespan (empire-building). In addition to that, there were long-standing personal and financial interrelationships between Vulkan AG and the *Land* Bremen, meaning that the decisions of the management also have to be seen in the context of political opportunities.

6.3.2 Reserves for German nuclear power plants

The second case is about the reserves put aside by German nuclear power plant operators for the disposal of nuclear waste and long-term shutdown of the plants (in line with the policy goal of phasing-out nuclear energy by 2022). In 1999, a number of German communal (non-nuclear) electricity producers sued against the Federal Republic, arguing that the tax allowance for these reserves constitute illegal state aid. Their point was that it creates a distortion of competition among European electricity producers to the detriment of those producers which cannot build up such reserves. This is the case because in fact the nuclear producers can dispose freely of the reserves and use them as a source of internal finance, e.g. to buy up competitors. A further aspect was that, although building up reserves for the disposal of nuclear waste, it is not predictable how high these reserves have to be in order to fulfill their duty. It is not even clear yet, when they will be needed. In the end, these reserves contribute to managerial discretion and an advantage with regards to financing in favor of nuclear power plant operators. This, so the claim, constitutes a distortion of competition in the sense of European State Aid Law (see European Commission C(2001) 3967 fin.).

In 2006 the lawsuit against the European Commission brought forward by three communal power producers in 2002 was dismissed on the grounds that the selectivity criterium was not met. The court found

that reserves are a necessity in operating a nuclear power plant (T-92/02, Stadtwerke Schwäbisch Hall et al v. Commission). The public utility companies appealed against the decision, which was finally dismissed in 2007 by the European Court of Justice, too.

Why would it not be in the interest of nuclear power plant owners to profit from finance advantages provided by the possibility to accrue tax-exempt reserves? The answer to this lies in the principal-agent problem at hand between the managers and the owners. The management is particularly interested in internal forms of finance, since it provides them more discretion than other means. High disposable equity allows the management namely to follow a company strategy such as an empire-building strategy (which is not necessarily in the interest of the owners but gives the managers higher earnings, a consolidation of their position in the company, and prestige) while at the same time avoiding the close scrutiny by the owners (Göbel, 2002).

In this case the problem is not only that the returns for the owners might have been reduced due to the increase in managerial discretion. The problem might even be that those reserves could get lost completely due to faulty company strategies. The outcome would undesirable in that at the time the nuclear waste needs to be disposed of, there might be no funds available anymore. In this case the state would have to jump in and act as a deficiency guarantor, even though the necessary funds were already transferred in form of the original state aid. Monitoring the management is particularly difficult in this setting though, since the final disposal of nuclear waste is an event way ahead in the future and it is virtually impossible to estimate beforehand, how high the costs will eventually be. A manager acting according to the precautionary principle can therefore very easily justify building up a high amount of reserves and expand his or her discretionary financing capacity. A study by the German Federal Court of Auditors from the year 2011 shares this assessment (Parliamentary Paper 17/5350) and comes to the conclusion that the competent tax offices know the amounts of the reserves, but cannot assess their appropriateness due to the technical nature. For reasons of tax secrecy, they are not allowed to communicate the amounts to the Federal Ministry of Economics and Technology or the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, which could provide the required professional expertise.

Tax secrecy on one side and the lack of professional monitoring of the reserve practices on the other side make it for managers to use the instrument of internal finance to follow a corporate strategy difficult to scrutinize for the owners. It can be presumed that the principal-agent problem between managers and owners could be mitigated if the reserves had to be built as special assets by the nuclear power plant operators and thereby could not contribute to internal finance.

6.3.3 General Motors and Opel AG

The third case pertains to the request by General Motors in 2009 for state aid from the Deutschlandfonds for their wholy-owned subsidiary Adam Opel AG. Eventually, the aid was never granted, but the case nevertheless illustrates the possibility of principal-agent problems between owners and managers.

Adam Opel AG saw itself confronted with dramatically dropping sales starting with the onset of the financial crisis in 2007. General Motors decided to sell Opel. In the possible case that Opel would be sold to Magna, a Canadian automobile parts manufacturer with a strong presence in nearby Austria, the German Federal Government was ready to grant restructuring aid in order to save Opel's jobs. Eventually, General Motors opted not sell Opel to Magna after all and to restructure the company themselves, although – so their wish – the aid monies should be paid nevertheless. The Federal Government, in consultation with the European Commission, however, denied the application in the end.

At first glance it might seem obvious that it would have been to the direct benefit of General Motors shareholders if the German taxpayer had covered the costs of restructuring Opel. At second glance, this is not obvious anymore, though. Awarding General Motors the aid might have borne the risk of reasserting the failing business strategy followed by GM and Opel's management. The state aid would have contributed to hiding management errors committed in the past. Furthermore, the aid would have cemented the past company strategy by tying state aids to certain employment figures and production locations. Such a procedure is without doubt in the interest of managers who could thereby keep and further consolidate their position with the company. It is, however, not in the interest of General Motors' shareholders who are interested in a long-run improvement of the company's value.

The owners of General Motors were therefore facing the risk that the awarded subsidies would only prolong Opel's crisis in the medium and long run, without a short-term exit option. On the other hand, the management of Opel and General Motors would have profited from the restructuring aids in the short run. In other words, the management would have succeeded in reaping private benefits from the state aids.

General Motors also caused some controversy on the other side of the Atlantic. GM and Chrysler entered serious turbulences in late 2008 and subsequently received bailout money from the Troubled Asset Relief Porgram (TARP), which was originally set up to rescue banks. Both firms restructured substantially, with significant changes in ownership and management. They both briefly entered bankruptcy but reemerged from Chapter 11 protection after a couple of months. This costly bailout has been criticized. Zywicki (2011), for instance, argues that Chapter 11 re-organization would have been sufficient to make both firms viable again, especially since they were both not as much in economic distress as they were in financial distress. Bankruptcy, so the claim of the critics, would not have destroyed the firms and their assets (such as their skilled workforce and trusted car brands), but given them the opportunity to get rid of deadweight. What the bailout did, though, was to create "a kind of state capitalism that seeks to entangle the government and large corporations in order to allow for careful management of the economy" (p. 66).

6.3.4 American International Group, Inc. (AIG)

Starting from September 2008, AIG was facing a liquidity crisis. Due to the importance of AIG to the financial system, the U.S. Federal Reserve Bank (Fed) created a secured credit facility of up to$85 billion in order to "bail out" the company and thereby giving AIG the possibility to offer additional collateral to their credit default swap trading partners.

The terms of the loan were as follows: "The interests of taxpayers are protected by key terms of the loan. The loan is collateralized by all the assets of AIG, and of its primary non-regulated subsidiaries. These assets include the stock of substantially all of the regulated subsidiaries. The loan is expected to be repaid from the proceeds of the sale of the firm's assets. The U.S. government will receive a 79.9 percent equity interest in AIG and has the right to veto the payment of dividends to common

and preferred shareholders" Press release by the Federal Reserve Board of Governors from September 16, 2008).

The provision that the federal government can veto dividend payments was a sensible one as it prevented shareholders from diverting the bailout money into their own pockets. But in the aftermath of this rescue operation, two scandals ensued. For one, "AIG paid bonuses of $1 mn or more to 73 employees at its financial-products division, including 11 who no longer work for the company, New York Attorney General Andrew Cuomo said. The top 10 bonus recipients received a combined $42 mn, he said. AIG's financial products unit lost $40.5 bn last year" (Fox Business, 17.3.2009).It also distributed $165 million in executive bonuses, and the bonus payments for the Financial Products unit were expected to reach $450 million, with bonuses for the entire company of around $1.2 billion" (ibid.). This means that a substantial amount of taxpayers' money ended up with senior personnel of the corporation. In this specific case though, the eventual damage to the taxpayer was not as originally expected, since AIG eventually paid back all loans and other bailout transfers. The government's total support for AIG was worth $182 billion. But AIG actually paid back $205 billion, which constituted a net profit for the Treasury of around $23 billion (U.S. Department of Treasury, 2013).

AIG, ostensibly satisfied with the resolution of its crisis, started an advertising campaign called "Thank you, America" in January 2013. At the same time, a group of shareholders around a former CEO of the insurer filed a lawsuit against the U.S. federal government seeking billions of dollars in damages. Their allegation was that the bailout was unfair to shareholders and that the interest rate for the loans was excessive. An insider commented pointedly to the New York Times: "The government has been saying, We're your friend, we owned and controlled you and we let you go. But AIG doesn't owe loyalty to the government ... it owes loyalty to its shareholders" (NYT, January 7, 2013). In the case that a substantial amount of shareholders is filing suit, the board of directors of the company has a legal and fiduciary duty to consider joining the legal action and, after some discussion, refused to support it. The reaction of the American public was highly negative, of course (Berkowitz, 2013).

This case conveys an important message: subsidies or bailouts are not always in the interest of all shareholders. The suspicion of some

shareholders in the AIG case is that the management and the government colluded to the detriment of these shareholders. From the government's perspective and in hindsight, the contract with AIG was incomplete – the bonus payments caused significant discontent. A more pessimistic view of the government might see a conspiracy between the managers and the government expropriating taxpayers.

The four examples present here are very different one from the other. Nevertheless, they all share the insight that the management when granted state aids receives an additional margin of discretion to follow their own private interests which are not in line with the interests of the company's owners. It would therefore be in the interest of the company owners and of the state aid granting entity to monitor this additional latitude of judgment and to prevent the diversion of parts of the subsidies into the pockets of the management.

6.4 Agency-theoretical analysis of state-aid-related problems - a first approximation

If the firm is seen merely as a black box, then tax avoidance or getting a subsidy is always in the interest of its owners. This view is predominant in the approaches taken by public finance dealing with tax avoidance. It is assumed that tax avoidance always leads to a profit for the firm owners. This implies that the firm's management and the firm's owners find themselves in a coalition with the shared interest of avoiding taxes, or getting a subsidy (see e.g. Chen and Chu (2005) and Crocker and Slemrod (2005) for these bilateral agreements).

In recent years, a new strand of literature has emerged dealing with tax avoidance to the detriment of firms. The so-called agency view of tax avoidance abandons the *per se* assumption of a shared interest between managers and owners of the firm with regard to tax avoidance. Instead, there can be a coalition between the state that levies the taxes (and by extension: grants subsidies) and the owners of the firm (see e.g. Desai et al., 2007).

The idea of the agency view of tax avoidance is that a management capable of avoiding taxes aggressively is also capable of diverting profits from the shareholders. This means that self-interested managers will

not or not entirely pass on to the shareholders the profits earned by means of tax avoidance or subsidies. Thereby the opportunistic activity of the management remains hidden to both the shareholders and the tax authority (Dyck and Zingales, 2004). Seen this way, the state can be considered a *de facto* minority owner of the firm (as it receives a payoff contingent on profits in the form of taxes), with its incentives aligned with the owners. The state thus has an intrinsic interest that all profits are made visible and that the shareholders receive their fair share (Hanlon et al., 2012).

In this view, tax avoidance or subsidies increase the firm value only if the management is subjected to a strict corporate governance regime guaranteeing that the profits yielded are paid out to the shareholders (Desai and Dharmapala, 2009a). Thereby shareholders are in an inherently bad position. If they want the management to engage aggressively in tax avoiding activities, they have to accept an opaque firm structure and cannot rely on courts to enforce these by definition difficult-to-monitor and sometimes borderline-illegal contracts (Chen and Chu, 2005).

Indeed, there are empirical studies indicating that the public announcement of firms to further avoid taxes in the future can lead to a decrease in firm value (Hanlon and Slemrod, 2009). In other words, the owners expect more damage than benefit for themselves when the management announces an aggressive tax avoidance strategy.

An important conclusion from the agency view of tax avoidance is that shareholders approve of stricter corporate governance rules, e.g. through appending company law rules by codes of management conduct, even though those rules might prevent the management from avoiding taxes aggressively. But not only firm-internal corporate governance rules are relevant here, but also the signals coming from the state. For example, when the Putin government announced in the year 2000 to take a stronger stance against tax evasion, the stock prices of the firms concerned by this measure rose. Here a stricter government policy against tax avoidance and evasion replaced the lax adherence to internal corporate governance rules (Desai et al., 2007). The opportunistic activities of the management of many Russian companies were made public and not tolerated any longer. Taxation here has not only the purpose of generating revenue for the state, but also to provide standardized information

(balance sheets) to the public and to enforce corporate governance rules.

From this and other examples it can be concluded that a strict and credible state aid control can signal to potential investors that the state will not support management strategies that are in the interest of the management but not necessarily in the interests of firm owners. The case of Opel/GM is a good example for how a broad discussion of a possible sale and subsequent award of state aid uncovered the strategic management problems of the corporation.

Similar effects could be observed in the United States as well. Hanlon et al. (2012) report an increase in the quality of financial reports with an increase in tax enforcement. This effect is particularly strong where other monitoring mechanisms are less developed. Hanlon and Slemrod (2009) investigate for example the effects of media reports about a firm's management's tax aggressiveness. They observe that news about firm activities in off-shore tax havens lead to a decrease in stock prices. This effect is smaller for firms with good corporate governance – an indicator that in those companies, the shareholders do not worry about opportunistic behavior of the management towards them. It could be speculated that, likewise, firms signaling publicly to refrain from accepting state aids might see their share prices rise. Desai and Dharmapala (2006) empirically find a link between tax avoiding activities of the management and the firm's management compensation scheme.

The analogy between tax avoidance and state aid to firms might seem startling at first glance, since the former takes place in opacity while the latter is more public in nature. Two points render this analogy more powerful. First, regulatory restrictions on direct and specific subsidies to firms (e.g. at the EU or WTO level) require states to exert some creativity in the method how it awards aid: Often the aid is not given directly as cash money out of the state budget, but more indirectly via the granting of tax credits, costless use or access to public infrastructure, or profitable deals with public authorities that discriminate competitors. Secondly, states often do not show much interest in monitoring the use of subsidies, and even less in sanctioning the unintended use or the firm?s failure to comply with agreements made. This observation is in line with the general finding that the state is a poor entrepreneur (Milgrom and Roberts, 1992; Zenger et al., 2011) and the more specific findings of a study by the European Commission where it is showcased that jurisdic-

tions only seldom control for the promised amount of jobs by firms in return for state aid (Ramboll and Matrix, 2012). Another trigger for the opacity of state aids is the potential interconnectedness between firms and politicians. While a fair and unhampered competition between firms demand a strict application of the rule of law, politicians may be more in favor of discretionary policy measures that secure their success in the booth, but that undermine fair competition between firms (see e.g. Tollison, 1982). Chaney et al. (2011) also show that the quality of accounting information in politically connected companies is significantly poorer than that of similar non-connected firms. This suggests that connected firms can afford disclosing lower quality accounting information because they face a lesser need to respond to market pressures to improve the quality of accounting information. They do not face the repercussions of a higher cost of debt that similar, but politically not connected firms with lower quality reported earnings face. Claessens et al. (2008) showed that firms which contributed to electoral campaigns in Brazil substantially increased their bank financing relative to firms that did not. This indicates that access to bank finance can be a channel through which political connections operate.

Another possible coalition in the game between managers, owners, and the state is the one between the state and the management. This would be the case if the management corrupts the tax authority in order to continue extracting rents from the firm. This can happen through outright bribes, or by paying too much taxes, e.g. on illicit profits (see e.g. Erickson et al., 2004). The Bremer Vulkan case seems to have been an example of a fraudulent entanglement and thus conflicts of interest between firm managers and the state (the CEO of Bremer Vulkan was a member of the ruling social-democratic party and former director of the Bremen's city administration). This is an argument in favor of a supra-jurisdictional state aid control mechanism preventing local rent-seeking coalitions – a proposal that would move European state aid control beyond its fixation on competition matters.

A complex web of interrelations between a firm's managers, shareholders, politicians, employees and voters emerges which drives the inherent agency problem of giving state aids. Thereby it depends on the specific context which of these groups profits most from the granting of state aids. However, what can be already derived from this is that

mitigating the agency problem will result in a better calibration of the web of interest groups. This very general statement nevertheless has two important implications: First, a more comprehensive collection of state aid data would help to overcome the opacity that allows yet managers and politicians to profit individually from the given subsidies while other groups, like shareholders or voters, pay for it. Second, opacity is most likely overcome if a supra-jurisdictional state aid control mechanism becomes implemented that is more immune against local rent-seeking coalitions.

6.5 Corporate Governance and incentive problems of state aids

6.5.1 The book-income gap

When the state awards an aid, it becomes active as an investor of sorts, albeit for different reasons than private investors. Most of the time, the state is interested in creating or maintaining jobs or in promoting research and development. The problem is how to represent the legitimate interests of this investor, which de facto can be interpreted as a shareholder, but is not considered as such by company law. In order to better understand this connection, the incentive structure of the management in relation to corporate governance has to be investigated. This research has to give a particular significance to tax authorities and state aid control.

Tax avoiding strategies lead to an increase in the gap between book income and taxable income. As a result, the effective tax rates decrease and an increasing amount of companies pays little or no taxes at all (Desai and Dharmapala, 2009b).

This book-income gap of firms has risen since the 1990s (Desai and Hines, 2002). This means that firms progressively report a different income to the tax authorities than they do to the financial markets. This divided reporting is often the direct result of complicated financial transactions and opaque firm constructs (see e.g. the example of Dynergy in Desai and Dharmapala, 2006). This applies to subsidies as well, when it is not transparent what the aids are being used for in the end or where parts of the state aids might go to. This can also contribute to

an increase in the book-income gap. In the case of Bremer Vulkan, the subsidies disappeared in a cash pool of an opaque firm construct. With the German nuclear power plants, the problem is that the appropriate amount of reserves is unclear and almost uncontrolled internal finance means are available to the management. In the case of Opel it was not clear whether the state aid would not have benefited the ailing parent company General Motors.

The increasing divergence between book income and tax income therefore is a sign that investors on capital markets might receive less accurate and occasionally wrong information about firms. A first conclusion of the agency view of tax avoidance is therefore the proposal to abolish the balance sheet and to rely only on the tax income to calculate the tax burden, but also to inform the capital markets (for a discussion, see Desai, 2007).

6.5.2 Opportunistic tax avoidance by the management

The common view of tax avoidance assumes that avoiding taxes serves the reduction of the firm's tax burden. In that view, managers aggressively make use of tax shelters – once defined colloquially as "a deal done by very smart people that, absent tax considerations, would be very stupid" (Graetz, 2010) – in order to benefit the owners of the firm. The same is true for state aids: managers seek subsidies in order to improve the firm value.

Yet, there is a non-trivial incentive problem for the management linked to the use of tax avoiding strategies and application for subsidies. Shareholders imposing a fixed salary might not give the right incentives to engage in those profit-enhancing activities. If those activities are deemed illegal by a court of law, then the possible consequences will have to be borne by the managers more than by the shareholders who can be assumed to own a diversified stock portfolio. Accordingly, the managers do not want to jeopardize their reputation and chances on the market for corporate control and thereby reduce their future income (Desai and Dharmapala, 2006).

Conversely, this incentive problem explains why the increase of the prevalence of performance-based executive compensation has led to an

increase in tax avoiding activities (Desai and Dharmapala, 2006). Individual companies even reorganized their tax departments into profit centers (most prominently: Enron, see Joint Committee on Taxation, 2003). This trend leads to a variety of problems. The tax department weighs in on business decisions, with the result that firms base their decisions not on whether they make them more efficient, but on whether they save taxes[3]. It might drive efficient firms that do not pay much attention to taxes out of business to the benefit of possibly inefficient firms that are more tax-savy, for instance, by being better able to attract capital. Furthermore, aggressive tax avoidance strategies reallocate human capital to perform innovative tax optimization instead of developing innovative products (Burman and Slemrod, 2012). Most importantly for this book, it has exacerbated the above-mentioned opportunism problem shareholders face vis-à-vis the management. Tax avoidance requires a high degree of opacity which can be used by the management to divert profits into their own pockets. The same applies to state aids, where the management also has to apply an amount of creativity in order to acquire them, which at the same time means that the advantages of the subsidy do not necessarily benefit the owners.

The diversion of firm property by the managers is understood very broadly in the agency view of tax avoidance. What the term subsumes are all activities benefiting the managers but not the owners. This includes, for example, to manipulate earnings in order to augment the variable part of the salary. This assumes that the earnings of a firm are given exogenously and can only be observed by the managers. The manager then determines the level of earnings he or she reports to the owners (the balance sheet). At the same time, he or she determines the earnings declared to the tax authorities (the tax income). This double reporting enables the manager to divert firm profits into their pockets.

By definition, these manipulations of the balance sheet and the taxable income are difficult to trace in detail. Due to the public interest it caused, the Enron case revealed some of the strategies used. Enron transformed its tax department into a business unit, that is, into a profit-generating department. Its task was to generate as many earnings

[3]The assumption here is that the tax considered is one that has as a goal primarily to generate revenue. The statement does not hold for taxes that aim at inducing a different behavior, as it is the case e.g. with environmental taxes.

as possible for the annual statement. Some of the unit's projects were very expensive. Desai and Dharmapala (2009b) report, for example, a transaction that cost 11 million dollars. The transaction had the purpose of artificially inflating the balance sheet, but did not entail any significant reduction in the tax burden. Behind the veil of tax avoidance, the owners suffered substantial costs due to these balance tricks and entering buy-and-hold positions; thus these activities only served the management. Similar cases can be found in the firms Dynergy (Desai and Dharmapala, 2006), as well as Tyco and Parmalat (Desai, 2005). It can easily be imagined how subsidies might have similar effects and encourage a likewise behavior.

In order to better understand the opportunism problem, Desai and Dharmapala (2009b) present an example. The starting point is a firm with earning of \$100 each in two periods. The tax rate be 35%. By making use of tax avoiding strategies, the management can reduce the tax burden to 30%. In the end of period 2, the firm has a value of \$100 and all its earnings are paid as a dividend to the shareholders. The manager leaves the firm at the end of period 1. There can be two executive compensation schemes: he or she can (a) receive a fixed salary of \$10, (b) receive a fixed salary of \$10 and a 50% share of the after-tax profits in period 1 exceeding \$65, or (c) receive a fixed salary of \$10 in period 1 and 1% of the shares in period 2.

From the traditional tax avoidance literature point of view, the result would be the following. The reported earnings are the true earnings in each period. Tax avoidance leads to an increase in firm value in any case, independently of the compensation scheme. But the latter determines whether the managers have the right incentives to exert the necessary effort to engage in tax avoidance. It can be easily seen that there is an incentive compatibility problem in cases (b) and (c).

Yet, tax loop holes and discretion in accounting rules provide the opportunity to manipulate earnings. In the numerical example given above, the manager could transfer earnings from period two to period one. Instead of reporting \$100 every year, he or she could report earnings of \$125 in period 1 and \$75 in period 2. From a tax point of view, this measure is neutral. If the manager receives a fixed amount as in case (a), he or she does not have any incentive to do that. If his or her pay is performance-based as in case (b), then he or she has every incentive

to enter tax avoiding strategies and at the same time to raise earnings in period 1 to the detriment of the earnings in period 2. His or her personal income increases due to this measure. But in this example, this strategy is harmful for the owners of the firm. They profit from a lower tax burden, but the lose income due to the higher bonus payments to the managers.

A possible solution to this problem could be scheme (c). In that case the manager acts like an owner in period 2, who would be worse-off because of the tax avoidance activities. Therefore, all possible damages would be internalized by the manager. Desai and Dharmapala therefore come to the conclusion that the right compensation scheme, here share participation, can prevent managers from entering disadvantageous tax avoidance strategies. This is only true though when managers cannot divert earnings from period 1 to period 2.

This simple numerical example highlights the relevance of executive compensation schemes not only for tax matters, but generally for all kinds of rent-seeking by the management, which also include seeking state subsidies (see e.g. Gupta and Swenson (2003) on rent-seeking by agents of the firm in the area of policy-making).

6.5.3 Monitoring by the tax authorities

In Desai et al. (2007) the tax authorities fulfill an important monitoring role. Managers can divert certain amounts of firm earnings, but this can entail substantial ex-post costs, that is, punishment of opportunistic behavior. From the perspective of the manager it is irrelevant whether the activities are uncovered by instruments of corporate governance or by the tax authorities. In that case, the agency view of tax avoidance predicts that countries with higher corporate tax rates should have a generally higher level of tax avoidance or evasion than countries with lower corporate tax rates. Accordingly, corporate taxation improves the quality of monitoring when the enforcement of corporate taxes surpasses a certain level. The probability of detecting tax diversion by the management increases. This result has to be specified further in the situational context of firms. Indeed, this link is stronger if corporate governance is weak. The monitoring through the collection of corporate taxes then substitutes the weak legal rules of corporate governance. This is also true when the ownership of the firm is dispersed. In that case, there is

a collective-action problem on the part of the shareholders which makes the enforcement of corporate governance rules more difficult. The tax authority then acts as a block holder of sorts and takes over the monitoring role.

It can therefore be said that, for any given level of quality of corporate governance, the firm value increases with the degree of tax enforcement (better monitoring) and decreases with the tax rate (higher incentives for diversion of tax savings).

This relationship can also be transposed to the problem of state aids. Firm owners have to expect that managers divert state aid monies into their pockets the weaker the corporate governance is developed. The weaker the corporate governance and the bigger the collective-action problem of the shareholders, the more important it becomes that there be a strict monitoring by state aid control. Such a monitoring is in the interest of the aid-granting entity as well as of the owners who have an interest in increasing firm value. At the same time it can be assumed that the smaller the subsidy and therefore the smaller the potential amount for diversions, the less attractive it is to the management to divert funds from the state aid.

6.6 Moral hazard and subsidies

For long, the information asymmetry between shareholders and management has been considered as an important trigger for inefficient investment decisions (Jensen and Meckling, 1976; Myers and Majluf, 1984).

With regard to the problem discussed in this book, the information asymmetry gives leeway to managers to engage in rent-seeking activities which damage the overall efficiency and value of firms (see, for example, Rajan et al., 2000; Seog and Baik, 2012; Scharfstein and Stein, 2000). Firms may underinvest in growth options, which are in the interest of shareholders but not necessarily of managers (Holmström and Ricart i Costa, 1986; Hirshleifer and Thakor, 1992).

More specifically, the availability of subsidies may create a moral hazard problem. There is a long-standing literature on so-called soft budget constraints in state-owned firms (mainly focused on transition economies) emphasizing the insuring effect of state subsidies (Kornai, 1986). In a case study of developing countries, Buccola and McCandlish

(1999) show how the managers of state-owned firms and their supervisors within the civil service lobby shield the firm from competition together and maximize the costs.

The managers of a firm are aware of the fact that unemployment is politically costly to politicians. In case of difficulties, e.g. due to increased imports or other competition, they can request protection (nowadays mainly through non-tariffs barriers such as health regulation) or seek subsidies. As a result, employment levels might be sustained, but also the firm's profits might have increased unduly (Hillman et al., 1987).

Also the regulation of public utilities in Western market economies has to deal with that sort of problem. Under the traditional "cost-plus" price regulation scheme, when at the end of the regulation period all costs become balanced by the public, managers of public utilities have only little incentive to care for cost effectiveness and investments into new technologies (Joskow and Noll, 1981; Joskow, 2007).

In the case of subsidies to private firms, it can similarly be assumed that rent-seeking behavior of management is induced. However, differently to public utilities, those firms compete with other firms for a limited amount of publicly available subsidies. This competition for public rents drives a wedge into management effort. On the one hand managers engage in general management activities, on the other hand they strive for rent-seeking activities. This is exacerbated by the private benefits they receive from rent-seeking activities due to the governance mechanisms in place within the firm.

Some papers discuss the link between access to finance through government subsidies and risk-taking behavior. For instance, Gande and Kalpathy (2013) find that the federal loan assistance through the U.S. Federal Reserve emergency loan program that some large financial firms received during the financial crisis is related to CEO risk-taking incentives (a 10% increase in CEO risk-taking incentives is associated with a 1.41% increase in federal loan assistance).

In a paper written under the impression of the insolvency of a large numbers of government-insured savings and loans associations and the government had to bail out financial institutions, Akerlof and Romer (1993) introduce the concept of "bankruptcy for profit" (p. 1) and discuss the "incentive to go broke for profit at society's expense (to loot) instead of to go for broke (to gamble on success)" (p. 2). Although gov-

ernments require firms operating under soft budget constraints to meet specific targets for an accounting measure of net worth, the owners[4] of the firm will find that bankrupting it while extracting a profit can be a more attractive strategy than maximizing true economic values. In their model, the profits that these “looters” (ibid.) acquire is lower than the payouts by the government – society as a whole incurs a net loss. Unlike models of excessive risk-taking due to government guarantees, in which the owners of a firm want the gambles to pay off, Akerlof and Romer emphasize strategies in which bankruptcy itself is the goal for profit reasons. They provide three examples of how looting works in savings and loans associations (inflating net worth, shifting yields from one period to another, and creating artificial earnings through acquisition, development, and construction loans)

An important observation appears in Akerlof and Romer (1993), namely that loans from the state are different from loans given by private investors: “optimizing individuals will not repeatedly lend on terms that let them be exploited, so if lending occurs, some kind of mechanism (such as reputation, collateral, or debt covenants) that protects the lenders must be at work. However, this premise may not apply to lending arrangements undertaken by the government. Governments sometimes do things that optimizing agents would not do, and, because of their power to tax, can persist long after any other person or firm would have been forced to stop because of a lack of resources” (p. 5). They hint at several reasons why the political process led to the government being left exposed to abuse: regulators hid to what extent artificial accounting devices caused problems, congressmen exerted pressure on regulators in favor of their constituents and political donors, and the savings and loan industry lobbied to postpone any regulatory action so that general tax revenue would have to address the issues and not revenue stemming from taxes on successful firms.

[4]They do not consider the agency problem between owners and managers of the firm (on purpose). In their view, opportunistic strategies can be implemented more easily if ownership is concentrated and therefore the owners can control their managers more tightly. This is also their explanation why bank regulators prohibited concentrated ownership in savings and loans associations until the 1980s. The agency view of tax avoidance, on the other hand, turns this view upside-down and emphasizes the need for opacity and lax controls for the management to follow aggressive tax avoidance strategies.

6.7 A model of tax evasion, subsidies, and managerial diversion

To examine the relation between corporate governance, corporate taxes, and state aids, I extend the relatively standard model of governance in Desai et al. (2007), on which they superimposed a corporate income tax, by adding a state aid (and distinguish them by kind). Likewise, the model focuses on the problem of diversion by insiders – due to the prevalence of concentrated ownership structures, this is generally seen as the most relevant conflict.

6.7.1 The optimal level of diversion

In the Desai et al. (2007) model, insiders divert a proportion $d \in [0, 1]$ of the firm's revenue. These insiders own a fraction λ of the company, and thus, if there are no taxes or state aids whatsoever, receive a payoff of $\lambda(1 - d) + d$. Diverting income is costly because insiders can be caught and penalized, which is modeled with a quadratic function $C(d) = \frac{\gamma}{2}d^2$. The parameter γ captures the quality of the corporate governance system (the higher, the better).

The difference between the payoff function and the cost function (i.e., the optimal amount of diversion) is maximized if:

$$d^* = min\left(\frac{1-\lambda}{\gamma}, 1\right) \tag{6.7.1}$$

6.7.2 The effect of a corporate income tax

The corporate tax is characterized by two parameters: the tax rate t and the level of enforcement α. Getting caught evading taxes produces a personal cost to insiders of $C(d) = \frac{\alpha d^2}{2}$.

With corporate taxation, the total payoff to insiders equals $\lambda(1 - d)(1-t) + d - \frac{\alpha+\gamma}{2}d^2$, which leads to a new optimal amount of diversion:

$$d^{**} = min\left(\frac{1-\lambda(1-t)}{\alpha+\gamma}, \gamma\right) \tag{6.7.2}$$

This setup leads to a couple of results and corollaries (all taken from Desai et al. (2007), proofs omitted):

- Ceteris paribus, countries with a higher tax rate will have higher levels of diversion. This effect is stronger where tax enforcement is weaker.

- The introduction of a corporate tax improves corporate governance (i.e., reduces the amount of diversion) if and only if the level of tax enforcement exceeds a critical level ($\alpha > \frac{\lambda\gamma t}{1-\lambda}$).

- For a given monitoring ability of the tax authorities (α), the introduction of a corporate tax is more likely to reduce diversion (and improve corporate governance) when (i) the corporate governance system is weaker, (ii) ownership is less concentrated, and (iii) the tax rate is lower.

- The market value of a company increases with tax enforcement and decreases with the tax rate.

- Following an increase in enforcement, companies that were previously diverting more will experience a larger increase in price.

- The value of control decreases with tax enforcement.

- if $0 < \frac{\alpha+\gamma+\lambda-1}{2\lambda} < 1$, then corporate tax revenues as a function of corporate tax rates are hump-shaped.

- The sensitivity of corporate tax revenues to tax rate changes increases with the quality of the corporate governance system γ.

- The sensitivity of tax revenues to tax rate changes increases with ownership for tax rates below 50%. For tax rates above that, it decreases with ownership.

6.7.3 Introducing state aid

To understand the effects that state aid might have on the corporate governance problem here, it is paramount to first distinguish the various kinds of state aids, as they will enter the model differently.

Let us consider three kinds of state aids: in-kind aids, tax cuts, and lump-sum subsidies.

In-kind aids The first kind does not involve a financial transfer, but reflects a government aid specific to the firm nevertheless. This aid could for instance be an improvement of the infrastructure in the immediate surroundings of the firm: a direct access to the highway, a heliport, or a new university built conveniently next to the company headquarters. In this situation, the management will not be able to divert any of the direct benefits of the aid. This assumes that the management is not able to negotiate aids which constitute private benefits for the company insiders. [EXAMPLES? E.g. heliport in Chicago for Boeing] In fact, the management might be strong enough to extort private benefits from the aid-granting jurisdiction. But because the taxpayers, but not the shareholders are harmed by that, this is a problem of public choice, not corporate governance.

Tax cuts A tax cut will counter-act against the benefits from a corporate tax (assuming that the corporate tax was chosen in such a way that it reduces diversion). The management now has less incentives to divert funds (since the income is not taxed), but at the same time faces a lower cost of doing so[5].

Lump-sum subsidies A lump-sum subsidies might at first appear equivalent to a tax cut. Given the framework above, they are not, though. The total income of the firm remains the same as if the aid was given as a tax credit. What is different though is the monitoring. After receiving the subsidy, the firm is still under scrutiny from the tax authorities.

This leads to the following results:

- Tax cuts, equivalent to lax tax enforcement, exacerbate the corporate governance problem.
- Lump-sum subsidies are to be preferred over tax cuts because they maintain the monitoring.

[5]On a sidenote, the European Commission has recently announced to address the issue of aggressive tax planning from a state aid and competition point of view. The claim is that letting companies pursue such tax strategies might actually constitute a form of state aid (Almunia, 2014).

- In-kind aids do not pose a corporate governance problem, at least if the management is not powerful enough to steer a local government away from awarding lump-sum subsidies towards giving an in-kind aid which constitutes private benefits for the insiders.

6.7.4 Extensions

The used framework might be extended by an aspect deliberately left out by Desai et al. (2007), namely the link between tax rates and tax enforcement – and, extending even further, the amount of subsidies granted. In fact, the public might might pressure the government granting state aids to a firm to subject the latter to greater scrutiny than a firm operating without any aids from the state. This indeed seems to have happened during the 2007-2009 financial crisis.

In terms of the model, a state aid might be tied to an increase in α. This has a double positive effect on the market value of the firm because not only is the effective tax rate lower, but also the tax enforcement is better (which in this model is good for the outsider shareholders). Unlike in the original model, this effect only applies to the aid-receiving firm – all other firms keep their previous tax enforcement levels. As another consequence, the corporate tax revenues (from this specific firm) might not be hump-shaped anymore.

6.7.5 Limitations of the model(s)

Desai et al. (2007) address several limitations of the model. The present extensions also need some further critical remarks.

There are no negotiations between insiders and outsiders about the level of diversion. The power of outsiders can be subsumed under the parameter γ. Indeed, it could be imagined that firm outsiders might have a word to say on the rent-seeking activities of the management.

Other negotiations and possible side deals are missing as well. The model does not consider the possibility that insiders and outsiders coordinate their actions to reduce the corporate tax liability. Equally importantly, it does not provide for the possibility that insiders and the government conspire against the outside shareholders. The reason for that are the high transaction costs involved, especially in publicly traded companies.

6.8 A model of managerial rent-seeking effort and diversion

Introducing an agency perspective into state aid control produces various trade-offs for management and shareholders which cannot be easily overcome. That is because shareholders like managers to be engaged in tax avoiding activities, however only as long as the profits of this activity accrue to them in form of a higher firm value.

In order to illustrate the trade-offs involved and to show the maximization problems of the managers and the shareholders, the following model can help.

6.8.1 Two kinds of efforts

Assume a firm is owned by the shareholders and controlled by the managers. The managers do two things. They exert effort m for general management activities. They furthermore engage in rent-seeking activities r in order to acquire state subsidies s (measured in monetary units per unit of rent-seeking effort). Both efforts combined are subject to a quadratic cost function ($c(m+r)^2$).

Depending on the efforts exerted, the firm will make a profit according to a Cobb-Douglas function uniting the general management effort and the rent-seeking effort. This reflects the idea that a subsidy on its own is not profit-increasing, but requires an additional management effort to be transformed productively.

The Cobb-Douglas function reflects the problem better than the linear functions used by Holmström and Milgrom (1991) in their multitask principal-agent problem. It incorporates diminishing marginal return, which is a very realistic assumption about management and rent-seeking efforts. It also mirrors the complementarity of labor (management) and capital (subsidies) as it is common in economic growth theories based on Cobb-Douglas functions.

6.8.2 The managers

Thanks to high-powered incentives, managers receive a share b of the profit. In addition, they receive private benefits from the subsidies, that

is, the share of the state aids that does not go into the profits, but purely into the pay-off of managers. The corporate governance measure γ indicates how much of the aids goes into the profits and how much into private benefits $(1-\gamma)$.

The managers' profit is therefore:

$$M = b(Zm)^{\alpha}(\gamma sr)^{1-\alpha} - (1-\gamma)sr - c(m+r)^2 \qquad (6.8.1)$$

Given the exogenous parameters γ, b, Z (a constant), c, α, and s, they chose their optimal levels of m and r.

6.8.3 The shareholders' perspective

The shareholders of the firm are aware of the calculations that the managers make. They therefore set the governance parameter accordingly. But corporate governance comes at a price. They face coordination costs. If they do not monitor the managers at all, they have a nominal cost of T (representative of the minimum of costs incurred by fulfilling the duties of being a shareholder, such as opening the invitation letter for the general assembly). The other extreme, namely complete monitoring, is prohibitively expensive. To monitor all actions of the managers, the shareholders would have to attend all the day-to-day activities of the managers. The shareholders will therefore never want to install a governance mechanism that does not allow for any possible private benefits.

The total pay-off of the shareholders is therefore the profit the firm produces minus the bonus payments and the transaction costs of governance:

$$H = (1-b)(Zm)^{\alpha}(\gamma sr)^{1-\alpha} - \frac{T}{1-g} \qquad (6.8.2)$$

The shareholders maximize this pay-off by anticipating the effort levels chosen by the managers for any given γ and set it accordingly.

Using numerical optimizations, the following graphs can be obtained:

6.9 Results

Because of the complexity of the multi-dimensional optimization problem, we use numerical estimations to get an idea of the effects taking

place.

Unless noted otherwise, the exogenous parameters are set to be $c = 1$, $b = 0.4$, and $Z = 800$. The possible effort parameters m and r range from 0 to 149 (integers only). This can be interpreted for example as the amount of working hours spent in a fortnight. The optimal γ's were calculated in steps of 1/10 ranging from 0 to 0.99 (a γ of 1 would cause a division by 0).

6.9.1 The optimal choice of governance

After predicting the managers' effort levels m and r as a function of γ, the shareholders will choose the γ that maximizes their pay-off. The simulation shows that there is a high variance among the optimal γ's for different exogenous parameters such as s or α, and that they sometimes vary non-monotonously (see figure 6.3). Most interestingly, even in the absence of monitoring costs, shareholders will in almost all cases want to set the governance level somewhere in the interval $]0;1[$, that is, they only rarely strive for perfect corporate governance. In a certain way, the private benefits of subsidies act as a sort of bonus incentivizing the managers to exert an effort. This is in line with the findings of the agency view of tax avoidance which comes to the conclusion that some opacity is necessary to achieve optimal results.

6.9.2 Monitoring costs

The effect of an increase in the shareholders' transaction costs for the managers is straight-forward and intuitive. The higher the monitoring costs, the weaker the governance mechanism they will implement. But the governance level set for a certain transaction cost level increases with the availability of subsidies. In other words, the more subsidies a firm receives, the more monitoring the shareholders will perform, *ceteris paribus*. Figure 6.4 shows the optimal choice of g as a function of T for different levels of s.

6.9.3 The availability of subsidies

When subsidies or other state aids are readily available, the firm managers will put more emphasis on rent-seeking activities to the detriment

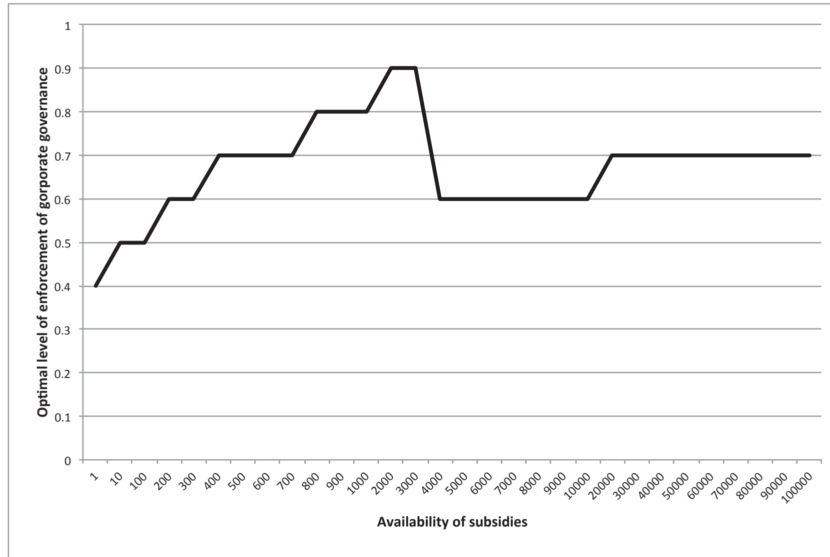

Figure 6.3: Optimal γ as a function of s, for $T = 2100$, $\alpha = 0.9$

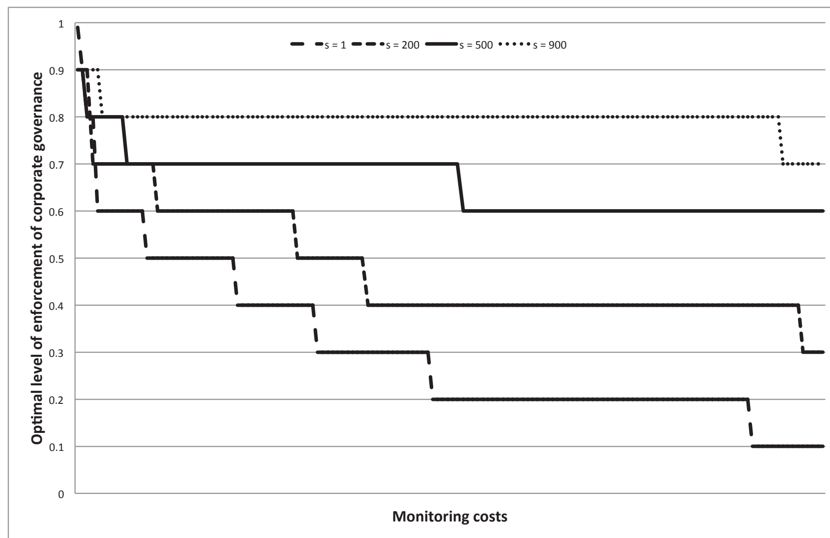

Figure 6.4: Optimal γ as a function of T, for different s, with $\alpha = 0.9$

of general management efforts. Parts of the subsidies contribute to firm profits, but a share $1 - \gamma$ flows into the managers' pockets. Therefore, the overall effect of having easy access to state aids is ambivalent from the point of view of the shareholders. Under cheap monitoring, a higher availability of subsidies unequivocally leads to higher pay-offs for the shareholders. But with increasing costs of governance, there are local maxima. This means that from the shareholders' perspective, more subsidies does not always mean more firm value. Figure 6.5 illustrates the change in shareholder profit as a function of s.

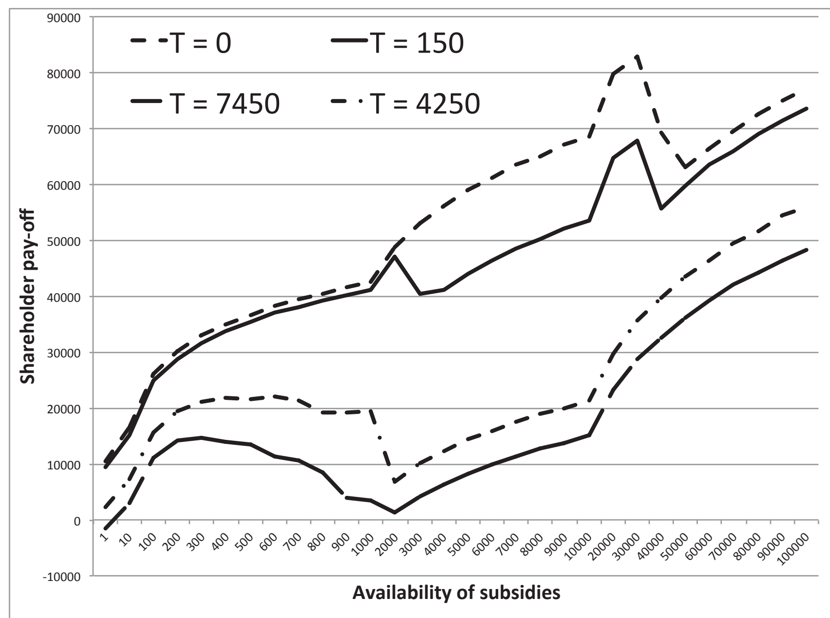

Figure 6.5: Shareholder profit as a function of s for different T, with $\alpha = 0.9$

6.9.4 The output elasticities of effort

The variable α measures the output elasticities of the general management effort and the rent-seeking effort ($1 - \alpha$; for the time being, we assume constant returns to scale). Whether there are indeed local max-

ima depends on the α: the lower the α, the higher the chance of finding local maxima. This suggests that the characteristics of the specific subsidy and the industry in general matter.

6.9.5 The regulator's perspective

From the perspective of the regulator, the main problem is that the private profits of the managers are not observable and verifiable. As a benevolent social planner, it would object to the wasteful spending in rent seeking effort and consequential reduction in shareholder value. It also has an interest in reducing the wasteful transaction costs incurred on the shareholders by the increased need to monitor the managers. These arguments alone could be – under certain conditions – sufficient to warrant an ban or reduction of state aid.

6.10 Legal measures against private benefits from state aids

During the time of the recent bank bailouts and probably induced by scandals such as the one surrounding AIG, some European countries passed laws to restrict the payment of bonuses to bank employees. Furthermore, the EU Commission adopted a banking communication which also sets caps on executive remuneration in the case of state aids to banks.

6.10.1 European countries

The French government issued to decrees with rules of compensation for senior executives of state-aided companies (Dcret n 2009-348 du 30 mars 2009 relatif aux conditions de rmunration des dirigeants des entreprises aides par l'Etat ou bnficiant du soutien de l'Etat du fait de la crise conomique et des responsables des entreprises publiques, expired on 31 December 2010). According to these decrees, bonuses are prohibited if large-scale lay-offs are necessary to save the company. When aiding banks, the government also appoints a controller to supervise whether

the bank's internal policies are in compliance with national and international rules. [6]

Bank aid in Germany was mainly conducted by a special program of the German federal government called Sonderfonds Finanzmarktstabilisierung (SoFFin - Special Financial Market Stabilization Funds), which was then reorganized in 2011 under the newly-created Finanzmarktstabilisierungsagentur (FMSA - Agency for the Stabilization of the Financial Markets). Under this scheme, banks which receive aids need to re-examine their compensation systems. The salaries for senior executives are capped at €500,000 for the years 2008 and 2009. All bonus payments that are not legally required are prohibited by law, as well as severance payments for managers and awarding stock option grants and their exercise[7].

In Italy, the Law Decree n. 98/2011 on Urgent Stability Measures requires banks to adopt a Code of Ethics with rules regarding the remuneration of the top management[8].

In the Netherlands, Article 14 of the Regulation on Sound Remuneration Policies pursuant to the Financial Supervision Act 2011 of 16 december 2010 issued by the Dutch Central Bank[9] limits the variable part of bank executives' compensation. It says that financial institutions benefiting from state aid (a) have to limit the variable part of executives' pay to a percentage of net revenue as long as this does not interfere with the timely repayment of the state aid and with maintaining a solid capital base, (b) ensure that they restructure their rewards so that they are aligned with sound risk management and long-term development, including, where appropriate, establishing limits to the remuneration of the daily policy makers of the financial institution, and

[6] Guido Ferrarini and Maria Cristina Ungureanu, Remuneration Policies at State-Aided Banks, presentation held at the Center for Research in Law & Economics (CRELE) Bolzano on 27-28 November 2009

[7] See FMSA, Vergtungsgrundstze, Neufassung im Hinblick auf die Institutsvergtungsordnung, February 2012, the Restrukturierungsgesetz, and the Finanzmarktstabilisierungsgesetz.

[8] Guido Ferrarini and Maria Cristina Ungureanu, Remuneration Policies at State-Aided Banks, presentation held at the Center for Research in Law & Economics (CRELE) Bolzano on 27-28 November 2009

[9] Regeling van De Nederlandsche Bank N.V. van 16 december 2010, houdende regels met betrekking tot het beheerst beloningsbeleid van financile ondernemingen (Regeling beheerst beloningsbeleid Wft 2011)

(c) pay no variable remuneration to day-to-day decision-makers of the financial institution, unless justified.

After the bailout of several Spanish banks, there was a public outcry about the earnings of the managers of these banks. E.g., Bankia, the largest Spanish bank by number of customers, paids its top executives more than €2 million a year after receiving €4.5 billion in state aids[10]. There were also some scandals in which managers of bailed-out banks awarded themselves multi-million dollar severance payments. As a consequence, the Spanish government set a cap at €600,000 euros per year for executive salaries at rescued banks, and suspended incentive pay. The salaries of top executives at banks of which the state took over the majority during the bailout were limited to €300,000. Furthermore, it limited other forms of remuneration, e.g. extraordinary pension fund contributions. The rules stem are set forth in Real Decreto-ley 2/2012, de 3 de febrero 2012, de saneamiento del sector financiero (Royal Decree on recapitalization of the financial sector). This decree also limits the salaries of the middle management (€50,000 or €100,000, depending on whether the state holds a majority of shares or not).

Art. 10a of the Swiss Banking Act (*Bankengesetz*) authorizes the Federal Government (*Bundesrat*) to impose rules regarding employee compensation. More specifically, it can decide to prohibit partially or completely the payment of variable compensations. It can also more generally adjust the compensation scheme in place. This applies only to banks which are systemically relevant. These banks are also required to include clauses in their compensation schemes a caveat that the variable components of the salaries might be restricted in the case that the bank receives state aids.

6.10.2 European Union

At the EU level, the current version of the central document pertaining to state aids and the management is the so-called "Banking Communication"[11]. Some of the measures in this new set of state aid rules relates

[10] http://www.reuters.com/article/2012/02/03/spain-banks-idUSL5E8D32TP20120203

[11] Communication from the Commission on the application, from 1 August 2013, of State aid rules to support measures in favour of banks in the context of the financial crisis ('Banking Communication'), 2013/C 216/01

to the issues addressed in this chapter. Already the Banking Communication of 2008 prevented the management from receiving undue benefits from state aids and gave EU Member States the power to curb executive compensation. The 2009 Recapitalisation Communication also limited the handing out of fixed and variable payments. In the Impaired Asset Communication of 2009 the Commission also suggested considering caps on executive remuneration.

6.10.2.1 Executive compensation

Paragraph 37 of the 2013 Banking Communication prescribes a punishment mechanism if a bank has to request state aids even though it could have been averted "through appropriate and timely management action". In that case, the state aid granting entity "should normally" fire the bank's CEO, as well as other board members "if appropriate". The Communication explicitly states that managers should have incentives to "undertake far-reaching restructuring in good times", which, in turn, will "minimise the need to recourse to State support".

Paragraph 38 continues in that reasoning. It states that said entities "should [sic] apply strict executive remuneration policies". According to the Communication, this requires a cap on executive pay as well as restrictions on the total remuneration to senior staff. This applies to fixed salaries as well as variable components and pensions and should be "in line with Articles 93 and 94 of the EU Capital Requirements Directive (CRD IV)". Article 93 of the CRD[12] states that:

> "In the case of institutions that benefit from exceptional government intervention, the following principles shall apply in addition to those set out in Article 92(2):
>
> a. variable remuneration is strictly limited as a percentage of net revenue where it is inconsistent with the maintenance of a sound capital base and timely exit from government support;

[12] Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms

b. the relevant competent authorities require institutions to restructure remuneration in a manner aligned with sound risk management and long-term growth, including, where appropriate, establishing limits to the remuneration of the members of the management body of the institution;

c. no variable remuneration is paid to members of the management body of the institution unless justified." (Article 91, CRD IV)

Article 94 sets some detailed rules about the variable component of the compensation (independently of whether the financial institution receives state aid or not). Most importantly, it limits the bonus payments to 100% of the base salary (200% after explicit approval by the shareholders).

In addition to that, the Banking Communication stipulates that "[t]he total remuneration of any such individual may therefore not exceed 15 times the national average salary in the Member State where the beneficiary is incorporated or 10 times the average salary of employees in the beneficiary bank. Restrictions on remuneration must apply until the end of the restructuring period or until the bank has repaid the State aid, whichever occurs earlier." (para 38, footnotes omitted)

Paragraph 39 requests that banks receiving state aids in the form of recapitalization or impaired asset measures should not "in principle make severance payments in excess of what is required by law or contract."

These rules apply to all banks receiving aid after August 1st, 2013.

6.10.2.2 Dividend policy

The European Union established another mechanism in 2009 to ensure that state aids to banks do not disappear in private pockets. In Commission Communication "The return to viability and the assessment of restructuring measures in the financial sector in the current crisis under the State aid rules" (Official Journal C 195, 19.8.2009, pp. 9-20) of 22 July 2009, the EC states that "banks should not use State aid to remunerate own funds (equity and subordinated debt) when those activities do not generate sufficient profits. Therefore, in a restructuring context,

the discretionary offset of losses (for example by releasing reserves or reducing equity) by beneficiary banks in order to guarantee the payment of dividends and coupons on outstanding subordinated debt, is in principle not compatible with the objective of burden sharing". This follows from the Commission's decision in case N 615/2008 Bayern LB, in which the Commission insisted on a commitment by BayernLB and the state aid granting German authorities not to pay out dividends on existing shares. Dividend payments are only allowed if the bank is in a binding obligation to do so.

There have been instance in which this rule might have been violated if it had not been for the stern supervision by the Commission. E.g., in December 2012, the Commission opened an in-depth investigation into payment of dividends by Caixa Geral de Depósitos (CGD), a Portuguese bank which received a rescue capital injection from the Portuguese state amounting to €1.65 billion. As a result, CGD agreed to re-pay to the Portuguese government an amount that is equivalent to the dividend payments (Commission press release IP/13/738 of July 24th, 2013 and case number SA.35062 in the state aid register).

6.10.3 United States

In the context of TARP-related regulations, the American Recovery and Reinvestment Act (ARRA) of 2009, which amends Section 111 of the Emergency Economic Stabilization Act of 2008 (12 USC 5221), intervenes in the governance of banks and other financial institutions profiting from federal subsidies. The Act requires the Treasure Secretary to set rules which limit incentives to 'take unnecessary and excessive risks' (Sec. 111(b)(3)(A), 12 USC 5221) and to make provisions for the recovery of variable payments to the 21 most highly-compensated employees of the TARP recipient if it turns out that the financial statements the bonus was based on are later found to be materially inaccurate. Furthermore, TARP recipients may not award any golden parachute payments to the six most highly-compensated employees as long as any financial assistance from TARP remains outstanding.

6.10.4 Discussion

As outlined above, several countries as well as the EU have taken steps to prevent managers from accruing private benefits from state aids. All these measures have to be seen in light of a general development in Europe and the world to curb executive pay, especially its variable component. The CRD IV limits bonus payments to managers, even if the bank does not receive state aid. While this is not the place to discuss executive compensation in general, it can be concluded nevertheless that interventions into the internal governance of a state-aided firm might be a wise policy. As it has been implemented with banks, these "punishment mechanisms" could also be implemented for non-financial firms which are being granted a state aid. This overview of the law applicable to banks has identified two main measures that might show the possible road to be taken for other firms: (a) mandatory replacement of the CEO and/or other board members, (b) curb on bonus payments. These rules could be implemented relatively easily within the European Commission's state aid assessment procedure. It seems that, so far, France is one of only a few countries (if it is not the only one) to apply this range of rules not only to banks, but to all firms receiving aids.

A provision like those that cap dividend payments can cause conflicts among shareholders, as the example of AIG illustrated.

On the other hand, a possible consequence of these legal measures is to cause the opposite of what was intended. Firm managers, fearing to be fired or to suffer from a pay cut, might either end up not seeking state aids even though that would be clearly in the interest of shareholders, or putting too much effort into repaying the state aid in order to get out of the strict corset imposed by the government or the European Commission.

In fact, there seem to be cases in which the firm management might have rushed paying off the loan or not have accepted a state aid because of the effects on the managers' private benefits.

6.11 Policy implications and conclusion

Due to the complexity of industrial policy and historical reasons, the regulation of aid to firms by political subdivisions of integrated markets

varies around the globe, with the EU and the U.S. representing the two ends of a spectrum (see Chapter 2). Therefore, the specific policy implications stemming from this thought exercise will be shaped differently depending on the country or grouping of countries of interest. Nevertheless, some policy implications can be thought of.

Monitoring comes at a high cost to shareholders and induces them to accept incomplete governance. A regulatory body, such as the European Commission in the EU or the federal government in the United States or Canada, might be in an inherently better position to safeguard the interests of the shareholders. However, that central authority should be aware of the fact that any implementation of a state-aid-regulating regime (such as the European State Aid Control mechanism or the Canadian Code of Conduct in the Agreement on Internal Trade) should take place in full awareness of the corporate governance in place and be adjusted accordingly. This implies especially to take into account the local corporate law that determines the rights and duties of management and owners. As a consequence a centrally organized state aid control authority would have to be sensitive against local patterns of governance, in order to avoid detrimental effects of its control.

Furthermore, the state-aid-granting entity may be seen as a *de facto* investor in the firm and be treated as such. This could mean including representatives of the state aid grantor in the supervisory board of the firm or building specific committees to monitor the adequate use of the subsidy. It might also be conceivable to implement a compliance management system surveilling the use of the subsidy. Such a compliance management system could take, for example, the form similar to the financial services industry, where a compliance officer is mandatory to survey the proper delivery of financial services to customers.

Finally, any policy increasing the transparency of the management's activities (i.e., lowering T) would be a positive development. It would allow the shareholders to better assess the decisions taken by their agents and prevent shifting extra money into the pockets of managements.

These changes would be optimally addressed at the European level and not on the member states' level. As of now, the Commission would stand on weak legal grounds if it were to refuse state aid on any of the grounds suggested in this chapter. After all, state aid law is still understood as a branch of competition law. Article 107 TFEU only gives

a mandate to prevent aid "which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods" and only if "it affects trade between Member States". Whether taxpayers' money got transferred illegitimately into the pockets of firm managers is of no concern to the European treaties.

This chapter applied the agency approach of tax avoidance to the problem of regulating state subsidies to firms. Shareholders face an agency problem in the sense that they cannot be sure that subsidies actually serve their interest. This chapter is meant as a first step towards a better understanding of the agency problems at hand by coming up with a simple model. The here presented numerical solution of the model provides a first step towards a better understanding of the intricate mechanisms in place. The numerical solution of the model allows to get a sort of overview over the interaction between the (multidimensional) parameters which are at stake. This does not exclude that for more specific research questions the model becomes more specified, in order to derive analytically the optimal (interior) governance levels. For example, one could investigate more in-depth the effect of an exogenously given restriction of management profits, as it was the case in the recent financial crisis when firms (especially banks) received state aid. Or, one could model more analytically the effect of the availability of state aid to firms. This future research path would also make a stronger link to the implied public choice problems, namely the propensity of politicians to give subsidies to firms which are seen as relevant for winning the next elections. While in that case managers, politicians and employees (voters) may form a rent-seeking coalition, this coalition is above a certain threshold level very likely to the detriment of shareholders (Pagano and Volpin, 2005)[13].

Another future research avenue concerns the empirical test of the model. An empirical test would not only clarify the validity of the theoretical model, it would also be possible to come up with more specific policy recommendations. While the theoretical model already allows to identify relevant parameters and their interaction, it is yet still open how these parameters play out in a concrete institutional setting, like the

[13] Pagano and Volpin (2005) find that a proportional electoral rule leads to weaker investor protection. Van Buiren and Brouwer (2010) find that proportional electoral rules lead to less state aid (see section 5.3.4). This is good news, as it implies that where investor protection is weaker, states are also less prone to grant state aid.

European Union in combination with the member states' different corporate governance systems. Such a subsequent empirical analysis could answer also more practical legal questions, as for example, whether in certain member states it would be more effective to implement compliance officers who monitor the usage of state aids, or whether it would be more advisable to create a sort of board position for the grantor of the subsidy, in order to stress the grantor's de facto co-ownership of the firm and to secure corporate control.

Overall, a more elaborate theory would have to further dissect the variety of parameters, institutional settings and the subsequent dynamics taking place. This would especially imply a deeper and even more analytical look into the actual governance mechanism - the γ of the model. Further empirical research would then also look at governance measures at the level of aid-receiving firms (and e.g. compare them to firms that do not receive aid).

CHAPTER 7

Towards a better regulation of state aid to firms

The deliberations on inter-jurisdictional competition as well as the insights from public choice and corporate governance lead to the conclusion that the effect on trade between member states is not the paramount issue. Indeed, the legal literature seems to concur that, in fact, the EU is less and less considering the effect on trade between member states as a relevant criterion (see e.g. de Cecco, 2013; Friederiszick et al., 2007). While the existing European literature mainly discussed state aid from the perspective of the competition order, this book focused on issues of incomplete contracts and problematic agreements between various stakeholders. The following chapter shall therefore take stock and elaborate on the policy recommendations that follow from the arguments made earlier.

7.1 The allocation of rules in settings of multi-layered government

The core of the problem of regulation of state aid is that it is the rulemakers themselves that possibly engage in the activity that they are making

rules for. At the same time, the state acts through several layers - in form of the local council, the district government, the regional government, the national governmental, or sometimes even through appropriately empowered international institutions, as for instance the European Union. In fact, state aid might be more prevalent in federations (Markusen and Nesse, 2007). This is a result of the competition between sub-national governments. Unitary states are better able to regulate and at the same are under more international organizational scrutiny.

Since all of these layers can conceivably engage in state aid, and for the arguments of market-preserving federalism and the proponents of interjurisdictional competition, the key question is which rights and duties shall be allocated to which level of government[1].

The presence of inefficient subsidy races is an argument for centralized regulation. The sheer complexity of state intervention in the economy is an argument against it. Centralizing or decentralizing decisions can be seen as a risk-return trade-off. Centralizing decision-making might lead to better decisions (higher return), but bears the risk that wrong decisions will affect a larger number of people. Decentralization then has the advantage that if decisions are wrong, only few people will be affected by its consequences (see for instance Arcuri and Dari-Mattiacci (2010)).

One string of the literature tries to produce an integrated theory of regulatory competition in a world of overlapping jurisdictions. Parisi et al. (2006) develop a two-dimensional taxonomy of various modalities of regulation, which Depoorter and Parisi (2005) apply to antitrust regulatory competition (in the context of decentralization of European competition law). The following section reiterates said literature and applies it to the regulation of state aid to firms.

The first dimension distinguishes between positive and negative regulation. Positive means that a regulator can permit an activity that is otherwise prohibited. A firm would have to obtain a permission from the regulator in order to engage in a certain activity. If we apply this to state aids, then positive regulation would mean that a jurisdiction would have

[1]For sake of completeness, an implicit assumption shall be made explicit, namely that geographical entities are considered given. The program of this book is to analyze the rule-making given the world's current division in states, provinces, and communities. It thus looks at the second-best outcome, given that the first-best outcome might include redrawing or abolishing jurisdictional boundaries.

to seek permission from a higher-level authority before granting subsidies to firms. Negative regulation works the other way round. The same activity is generally permitted, but a regulator can step in an ban it in certain cases. An example would be a general permission of state aids, but exceptions for certain industries or special cases. The *de minimis rule* (see section on European State Aid Control) might be an example for this.

The second dimension relates to the allocation of regulatory competence. If there is only one single regulator, then the type of regulatory activity (positive versus negative actions) is not relevant. The problem becomes apparent when there are overlapping jurisdictions. In that case, a firm, individual or jurisdiction (the latter being the player relevant to the analysis of state aids), might need to acquire several regulatory inputs or might be able to choose among alternative regulatory inputs. What matters then is whether the competence of the various regulating bodies are concurrent (an affirmative action of multiple regulators is needed for the effectiveness of a regulatory act) or alternative (the action of one regulator is enough to give effects to a regulatory act).

The two dimensions are summarized in table 7.1. Parisi et al. (2006) use this setup to look at the implications in further detail and discuss the effects of externalities in regulatory competition.

	Alternative (substitutes)	Concurrent (complements)
Positive	Any regulator can permit	Every regulator should permit
Negative	Any regulator can prohibit	Every regulator should prohibit

Table 7.1: Two dimensions of regulation - Depoorter and Parisi (2005)

If the jurisdiction of regulators overlap (as it is for instance the case with the WTO rules on subsidies and European state aid control), then the decision of one regulator will affect the rent that the other regulator can reap – a typical externality. The term “rent” here is used in a wider sense. It can indeed represent regulatory capture, but can also stand for the goals or mission of regulators on a more general basis. These

goals can for instance be the reaching of efficiency or the improvement of equity. Table 7.2 summarizes regulatory activity under different allocations of competence. If the regulators choose independently from each other, the resulting level of the regulated activity will always be different from the level they would choose if the two agencies were to work as a single authority. This is due to the externalities created between regulators. Therefore, the way how regulation is allocated will determine the regulatory outcome.

	Alternative competence (regulatory substitutes)	Unified competence	Concurrent competence (regulatory complements)
Positive competence	Activity over-permitted	Rent-maximizing level	Activity under-permitted
Negative competence	Activity over-restricted	Rent-maximizing level	Activity under-restricted

Table 7.2: Regulatory activity under different allocations of competence - Parisi et al. (2006)

The task is therefore not only to design optimal policy rules, but also to allocate powers to different levels of government optimally and define how these different layers interact. In that sense, the WTO rules are not effective because they primarily address the top layers of government. At the same time, EU state aid control is limited because EU rules only apply to a subset of states (namely European countries), although they reach the bottom layer better than the WTO rules.

7.2 Reform at the aid-granting level of government

If we assume that there are possible majorities for state aids and that there is nothing particularly inefficient about that, then the obvious

policy implication is to make sure that those democratic decisions accurately reflect the will of the electorate. For instance, governments could be required to precisely state why they awarded an aid and what the benefits (in the model: change in prices and wages, in practice: number of jobs created, effect on innovation, pro-competitive effects, etc.) and costs (taxpayers' money to fund the aid, anti-competitive effects, etc.) are. This is basically tantamount to requiring a sort of "regulatory impact assessment" instead of e.g. the current European state aid control mechanism. This policy recommendation also applies for instance to the United States, which is more liberal towards jurisdictions' right to grant subsidies, insofar as it would require (better) reporting and transparency requirements.

Discussions about possible ways for reform in the United States have led to several policy recommendations. While some are more specific to the American system of public finance, others can and should be transposed also for usage in a European setting.

Regulation of site consultants and defining them as lobbyists
Brokering deals that involve governmental support in exchange for investment is functionally not much different than the real estate market. Through intermediaries, a buyer and a seller get together and enter an agreement. Site consultants usually operate on a commission, they therefore have high incentives to work for both sides – even though the firm and the state are parties with conflicting interests – and to fuel subsidy races (LeRoy, 2007). They contribute to the information asymmetry and can help the firm conceal its true intentions from the state. At the same time, the work of site location consultants is similar to that of lobbyists. Yet, both professions (real estate agents and lobbyists) are usually highly regulated. Real estate agents usually have to acquire a license, and many countries around the world maintaining a lobby register (see e.g. the Lobbying Disclosure Act of 1995 in the United States, the Lobbyist Registration Act in Canada, or the recently implemented voluntary transparency registers in the EU or the UK). Registering lobbyists seems to be positively linked to reductions in corruption (Holmana and Luneburg, 2012). More transparency in this field would help all parties better understand the activities of site consultants. A further step might be to separate the activities of site location consultants and change the game

into an "adversarial process in which the taxpayers benefit from a side of the profession that specializes in aggressive bargaining, professional cost-benefit analysis, and cold market judgments about corporate behavior" (LeRoy, 2007, p. 194).

Improved transparency Many state aid deals lack transparency. Some state aid measures have to be notified to the Commission and in some countries freedom of information laws can lead to some disclosure. Neither of these systems procudes an accessible and comprehensive overview of state aid decisions. In fact, the scope of the information on state aid expenditure collected from member states by the Commission, which is guided by Annex IIIA of Commission Regulation (EC) 794/2004 (OJ L 140, 30.4.2004), does not include detail down to the level of the beneficiary. Only data on large regional aid projects and R&D&I projects over €3 million provides this kind of information. The system gets more transparent once the Commission initiates an investigation and comes to a decision. Of course, all cases that go to the European Court of Justice are also made public.

In the United States, some states implemented a transparent record-keeping system with regard to subsidies. For example, the state of Minnesota requires all government agencies that provide assistance to businesses to fill in a so-called Minnesota Business Assistance Form (MBAF). Therein, the firm and the aid-granting agency have to provide information on the number of jobs created, the hourly wages paid, and whether all goals agreed upon have been met.

A change in accounting rules could also alleviate the transparency problem. Firms could be required to disclose all government loans and subsidies they received. This would make it possible to assess how many subsidies a given firm received in total, that is, from all places in the world, in a given year. With transparency rules at the aid-granting level alone, this would still not be possible, since states might follow different definitions of state aid and not all jurisdictions might implement the same level of disclosure. International Accounting Standard (IAS) 20 "Accounting for Government Grants and Disclosure of Government Assistance" set by the International Accounting Standards Board of the IFRS Foundation, despite some limitations[2], provides an ideal starting

[2]For example, it does not include infrastructure provisions from which the firm

base for such a disclosure policy.

Better structured deals The regulatory body could also directly intervene in the substance of the agreements. One possibility is to improve the structure of the state aid deals. Ideally, any subsidy deal should be scrutinized by an independent, non-interested third party. Again, a thorough cost-benefit analysis should accompany any such agreement. States could also be required to include in their contracts with the firms specific goals and public benefits. Firms would then have to, for instance, commit to staying in the jurisdiction for a clearly-defined period of time or to create a certain number of jobs (the skill-level and salaries of these jobs should also be made explicit). In order to rely less on promises, state aid deals could be made performance-based. In such a deal structure, subsidies would only be paid out once certain requirements have been met (e.g. a certain number of workers have been hired). With such an understanding, no party has to bear an excessive amount of risk (Weber, 2007).

Performance requirements and clawbacks for subsidized firms The second interference with the contracting between the two parties relates to the performance requirements and, most importantly, to the sanctions in case of non-performance. This, of course, requires some monitoring. The state-aid-granting entity could be required to inspect whether the terms of the contract have been met, but the onus could also lie on the recipient to provide adequate documentation. Ledebur and Woodward (1990) identify four instruments through which nonperformance can be addressed:

- Recisions, that is, the outright cancellation of the contract
- Clawbacks, that is, the recovery of parts or the entire subsidy if the firm does not meet its obligations
- Penalties, that is, special charges if the firm does not perform or relocates
- Recalibrations, mean that the terms and conditions of the agreement can be adjusted to reflect changing business conditions

benefits (IFRS, 2012).

In the United States, there have been cases in which firms voluntarily honored their clawback agreements to avoid legal enforcement (see Weber, 2007).

Changes in company law The previous policy recommendations focused on the contracts between firms and the state. In light of the problems that may exist *within* the firm, it might be worth discussing whether a change in company law is warranted. For instance, such a reform could grant automatic rights to the subsidizing jurisdiction. This could include the obligation to appoint a "compliance officer" within the firm who monitors the use of the state aid and liaises between the firm and the state-aid-granting agency. The latter could also be entitled to appoint a member to the supervisory board (if applicable) of the company. Such systems exist in other fields of regulation. For instance, the Basel 3 accords (implemented in the EU by Directive 2013/36/EU of 26 June 2013) mandate (under certain circumstances) the appointment of a Chief Risk Officer. The Directive also mandates so-called remuneration committees to oversee the bank's remuneration policies. These rules need to be designed in such a way that they also apply to foreign firms and that domestic firms cannot circumvent them by e.g. creating a foreign subsidiary acting as the beneficiary of the aid.

7.3 EU state aid control

The present analysis shows that the harmful effects of state aids are not as clear-cut as it might seem or as it is suggested in the EU treaty and that many factors guide the political decision-making.

7.3.1 Setting incentives to comply with state aid law

In the current state aid control system, the incentives to comply with the substantive and procedural rules set forth by Articles 107 to 109 and specified by the various Commission guidelines are ill-developed. The reason for that is relatively simply: the price of not doing so is low. Failure to comply with the notification requirement, for instance, does not entail any consequences. If a jurisdiction is caught handing out a state aid that is deemed incompatible with the internal market, then

it has to be repaid. Admittedly, there is a political cost involved for the politician. This might be quite limited as well though. Once the unlawful aid has been paid and the firm decided to relocate or expand accordingly, repayment of the subsidy does not automatically undo the benefits obtained from the subsidy. At best, the government gets its money back and the firm does not alter its investment level. It therefore makes sense to discuss measures that would induce compliance with state aid law proactively. One solution – the Danish model – is that unlawful aid is not paid back to the authority that granted it, but to the state's treasury or to a special fund. Punitive damages to be paid to the Commission would entail optimal enforcement, but might be politically not marketable. These reforms must be supported by increased monitoring and transparency though. Else, the consequence might be that states put more effort in hiding their state aid schemes from the Commission.

7.3.2 Limitations of the Treaties

While European state aid control provides an order in which competition among firms and jurisdictions takes place, its scope is at the same time limited by this focus on competition. This book focused on two aspects of state aid that are not addressed by the Treaties. One is rent-seeking, the other is the internal structure of the recipient firm. Although Articles 107 to 109 do not give the Commission a mandate to reduce rent-seeking and opportunistic behavior, it is nevertheless worthwhile to conduct a thought exercise about what the Commission could be entrusted with and what possible additional measures could be.

The Commission would be in an ideal place to monitor the state aid contracting of the Member States. With the right mandate, it could for instance impose an *ex ante* and *ex post* transparent procedure with regard to state aid. It could require that aid can only be handed out through transparent programs and bidding processes. It could make it mandatory to notify the Commission about *all* subsidies given, in a disaggregated manner at level of the beneficiary. Member States could be forced to provide a precise report on their decisions – this report could include the total (discounted) amount, the number of jobs created, the expected spill-overs, etc. At the same time, an *ex post* analysis would check whether the goals agreed upon by the aid-granting authority and

the firm were met. Ideally, failure to meet these goals would entail repayment of the state aid. All these measures could also be implemented at the national level, but an independent supranational authority might lead to better results.

One instrument to curb state aid are ceilings on so-called *de minimis* aid. Apparently, raising these limits is a demand often heard from national authorities (Nicolaides, 2013b). While the Commission does not seem to be inclined to meet those demands, its justification for maintaining the threshold at a certain level is insofar weak as it does not have a systematic procedure to the determine what the optimal amount might be (ibid.). To the outside observer, the current amount of €200.000 over a three-year period appears rather random.

Nevertheless, the Commission has exerted a certain degree of discretion in the interpretation of its mandate. This is for instance reflected in the advent of the "more economic approach to state aid control," which – analogously to the developments in the law against the abuse of dominant position – attempts to implement a more reason-based and less rule-driven approach. It can exert some flexibility as it can change its interpretation of Article 7, sections (2) and (3) and is not bound by its previous decisions Freistaat Sachsen v Commission, C-57/00P; Regione autonoma della Sardegna v. Commission, T-171/02, see (Nicolaides, 2013b)).

While at first, the ECJ rejected to introduce the kind of scrutiny known from antitrust law (such as establishing a clear market definition and assessing market shares) in cases such as *Philip Morris* (Case 730/79 Philip Morris [1980] ECR 2671), European State Aid control has moved towards the kind of economic analysis required by *Delimitis* (Case C-234/89, Stergios Dilimitis v. Henninger Bru AG of February 28, 1991).

The more economic approach requires some clear economic criteria in order not to become arbitrary and suffers from the shortcomings of economics, which, after all, is not an exact science. Some practitioners for instance point out hat "Economics can only be an aid, but not a substitute for the political decision of granting state aid" (Piffaut et al., 2009, p. 11). They also issue a word of caution toward the possibility of wrong decisions: "However, it might be possible that a wrong decision is made. We have seen that the critical assessment is important at all stages to limit the presence of type I and type II errors. The proper implemen-

tation of State aid control would require having recourse to information from various sources in order to be able to quantify the various elements of the analysis but also to be able to cross-check the information that has been provided. This is because Member States might have an incentive to submit information in a biased manner, thereby increasing the probability that the granted state aid will be approved, leading to type I errors. The Commission currently lacks the investigative powers to collect such information from parties distinct from the Member States. This increases the risk that State aid procedures would lead to too many (type I) errors and will be harmful for society as a whole" (Piffaut et al., 2009, p. 12).

7.3.3 *Ex post* evaluation

Currently, there is no system in place for the *ex post* evaluation of state aid. Instead, all assessments with relevance to the European state aid regime, whether they are carried out in the member states or at the Commission during the notification procedure, take place *ex ante*. Evaluations, if at all, are conducted *ad hoc*. The aid schemes are approved *ex ante* based on pre-defined criteria, without evaluating properly their impact on markets and over time (European Commission, 2013a).

The European Commission, through its state aid modernization agenda, is currently in a process of establishing a methodology for such evaluations (European Commission, 2013b). Ex post evaluations are not very popular in the Member States. National authorities find it often difficult or even impossible to measure the effects of state aid and oppose making the process more bureaucratic (Nicolaides, 2013a). While it is too early to comment on the outcome of this reform process (the first reports by Member States are expected only within a few years), this is a laudable step to take. Two things should be noted nevertheless: more transparency in the state aid process is still necessary (e.g. regarding the detailed list of all aid recipients), and evaluations do not automatically alter behavior – this only happens if they are accessible to a wider audience.

7.3.4 *Per se* rules, rule of reason, and bounded rationality

The previous chapters emphasized the difficulty of setting boundaries to state aid control, which can have the purpose of regulating inter-firm competition, but also provide checks on governmental spending. A fundamental problem for all regulation of state aid is the inherent complexity of the matter. Even though the actors involved are not necessarily *irrational*, their cognitive powers to monitor an overwhelming amount of information are limited, nevertheless, meaning that they are constrained by their memory size or computational capabilities (see e.g. Haucap and Schwalbe (2011) for an overview of the literature and application to competition policy). State aid involves a large number of actors who might be affected by this kind of problem: firms, politicians, citizens, the European Commission, the European Court of Justice, and other courts potentially dealing with state aid decisions (in some circumstances, these might be national courts). The task is therefore to design a manageable regulatory regime.

In 1952, Stigler noted that "Economic policy must be contrived with a view to the typical rather than the exceptional. That some drivers can safely proceed at eighty miles per hour is no objection to a maximum speed law" (Stigler, 1952). He advocated for *per se* rules because individualized rules (such as the example of speed rules tailor-made to the capabilities of a driver) are too costly to enforce. In other words, as soon as the transactions costs are non-negative and there is a possibility of error, there is a trade-off and a "more economic approach" is *not necessarily* optimal. Similar arguments have been made in the field of competition (anti-trust) policy. They are based on what can be referred to as the "error cost-approach". The idea is that rules and their enforcement should be designed in such a way that it minimizes the sum of the welfare costs due to decision errors of type I (false positives) and type II (false negatives) plus information and other transaction costs (see e.g. Haucap, 2011; Christiansen and Kerber, 2006). An important assumption is that enforcement is always imperfect. The reasons might be that the rules themselves could be underinclusive (not prohibiting harmful behavior) or overinclusive (prohibiting beneficial behavior) because they are not in line with economic analysis. This could happen due to lobbying activities or the evolution of theories over time. Furthermore, there

is incomplete information in the specific case due to incomplete disclosure and the cost of collecting information (Christiansen and Kerber, 2006).

From a legal point of view, it is problematic that a case-by-case assessment would cause a degree of legal uncertainty. Risk-averse parties might end up not entering a contract for fear of having the aid agreement annulled by the Commission. Although there are no fines or other punishments in the case of unlawful state aid, there is a cost of recovery. Firms might face sudden liquidity problems and politicians might want to avoid the embarrassment and political repercussions a negative decision might entail.

The current EU state aid regime is sometimes criticized for being unpredictable. This problem will rather be reinforced by a more economic approach. This was also brought up in the consultation process on the State Aid Action Plan in 2005. For instance, the UK Federation of Small Businesses notes that "The FSB believes that the state aid regime needs simplicity and clarity. In its current form, it is complicated and multifarious. The regime should be flexible, but there must be safeguards to ensure that competition amongst business is not distorted; for example, looking at the economic impact of state aids"(Federation of Small Businesses, 2005, p. 2).

Rules which restrict the discretion of governmental agencies can also reduce problems due to rent-seeking and the negative welfare effects it entails. The more discretion a regulator has, the more its policies are prone to influence from interest groups (Christiansen and Kerber, 2006)[3].

The bottom line of this is that rules should to be differentiated optimally. Depending on the possible types of errors, the information, and the decision costs, the optimal degree of differentiation could be found. Christiansen and Kerber (2006) steered away from what they considered an "outdated dichotomy of 'per se rules vs. rule of reason'" (p. 3). Instead, they favor a continuum of intermediate solutions between these two extremes and show that a rule (they apply this concept specifically to competition rules) is optimally differentiated if the marginal reduction of the sum error costs (that is, the marginal benefit of differentiation) equals the marginal costs of differentiation.

Christiansen and Kerber (2006), Kerber et al. (2008), and Haucap

[3]This argument dates back to Eucken (1952) and Brennan and Buchanan (1985).

and Schwalbe (2011) discuss this with an application to competition policy, and distinguish e.g. between horizontal price cartels, predatory pricing allegations, or bundling practices of dominant firms. Also, they argue in favor of *de minimis* rules, that is, rules where certain anti-competitive practices would be acceptable if the small size of the market did not warrant a full-scale investigation by the competent competition authority. Christiansen and Kerber (2006) note that “From this law and economics perspective, competition policy should consist mainly of (more or less differentiated) rules and should only rarely rely on case-by-case analysis. Therefore the main task of a ‘more economic approach’ is to use economics for the formulation of appropriate competition rules” (p. 2).

Similar arguments can be (and have been) made for state aid control. The European Commission follows several approaches to curb down the administrative burden.

Generally, all aid below the threshold of €200,000 granted over a period of three years is not regarded as state aid in the sense of Article 107(1) TFEU with a reduced ceiling of €100,000 applying to aid in the field of road transport (Council Regulation (EC) No 994/98). This rule only applies to so-called “transparent aid”, that is, aid where the amount can be calculated exactly in advance without the need to carry out a risk assessment. As of the time of writing, the Commission is currently in the process of revising these rules and issue new guidelines by the end of 2013. A positive step (in light of the analysis in this book) is the introduction of a mandatory *de minimis* register, which would gather data on the use of *de minimis* aid, subject to a transition period[4].

Furthermore, the Commission issued an intricate set of guidelines pertaining to various kinds of aids. It declared certain aids as compatible with the common market (Commission Regulation (EC) No 800/2008 of 6 August 2008), thus giving block exemptions for the kinds of aid listed in table 7.3.4. It is clear from this list that the Commission made a conscious choice as to which aids are beneficial (or at least unproblematic if compared to the cost and benefit of assessing each aid individually) and which not, even though an aid not on the block exemptions list is not automatically denied.

[4] http://europa.eu/rapid/press-release_IP-13-699_en.htm

SME investment and employment	small enterprises newly created by female entrepreneurs
consultancy in favour of SMEs	SME participation in fairs
provision of risk capital	research and development
technical feasibility studies	industrial property rights costs for SMEs
research and development in the agricultural and fisheries sectors	young innovative enterprises
innovation advisory services and for innovation support services	the loan of highly qualified personnel
the environment, in the form of tax reductions	recruitment of disadvantaged workers in the form of wage subsidies
employment of disabled workers in the form of wage subsidies	compensating the additional costs of employing disabled workers
regional investment and employment	newly created small enterprises in assisted regions
investment to go beyond Community standards for environmental protection	acquisition of transport vehicles which go beyond
Community environmental protection standards	early adaptation to future environmental standards for SMEs
investment in energy saving measures	investment in high efficiency cogeneration
investment in the promotion of energy from renewable energy	environmental studies
training	

Table 7.3: General Block Exemption Regulation,
Sources: Commission Regulation (EC) No 800/2008, Press release IP/08/1110

7.3.5 Towards a European industrial policy?

The models in the previous chapters left out the possibility that maintaining competition *per se* might be a primary policy goal. In fact, this is reflected in EU law on state aid. In its statement of principles for an economic assessment of state aids, the Commission opens by stating "State aid control is an essential component of competition policy and a necessary safeguard to preserve effective competition and free trade in the single market" (DG Competition, 2009, p. 1).

The point here is that EU law emphasizes the competition between firms, but an integrated competition order which also takes into account the competition between jurisdictions would require a different kind of legislation.

European State Aid Law, as it was originally designed, followed the logic of negative integration. It *prohibited* states from doing something, namely awarding state aids, while allowing for some less problematic exceptions. The idea was to reign in the possibility for EU member states to cause distortions of competition among each other by subsidizing industry. In an integrated market, state aid had become the only instrument to favor and protect national industries (Lavdas and Mendrinou, 1999). Yet, the rules established in the Treaty are ambiguous, while the individual member states exhibit heterogeneous preferences. As a result, the European Commission started to act as a "supranational entrepreneur, not only enforcing the prohibition of distortive aids, but also partially creating positive integration 'from above'" (Blauberger, 2008, p. 5). Since the Treaty leaves some leeway in the interpretation of its rules, the Commission has the central role of assessing state aids granted by the member states. As this might cause political conflict about individual state aid decisions, the Commission sought to formulate more general guidelines for state aid measures it deems or deems not compatible with the common market. Initially, this constituted a body of soft law, but developed into hard law. By doing so – mainly to shield itself from political pressure in individual cases and to reduce its workload – it had to come up with a notion of what it considers to be desirable state aid policy (Blauberger, 2008). Gómez-Barroso and Feijóo (2012) observe a paradigm shift as well. Taking the example of the EU Commission's guidelines on state aid for broadband network expansion, they argue that the 2009 revision of these rules reveal a shift from a *corrective* approach

to state aid to a more *driving* conception of state aid. State aid is not used anymore only to facilitate the catching-up process of rural areas, but also to accelerate the emerging of completely new markets (as only few European countries had access to so-called Next-Generation Access Networks).

There is a dilemma that the European Commission is caught in. The TFEU's Article 107 gives the Commission a great deal of discretion in establishing the precise rules applicable to state aid to enterprises. It has to act wisely nevertheless: if it goes to far in one direction, conflict with some member governments might ensue. If it acts too harshly against anti-competitive measures, national authorities might challenge, circumvent, or even ignore its efforts (Doleys, 2013). State aid policy is therefore more than just a technical exercise – "state aid control is, at its heart, a profoundly political enterprise" (ibid., p. 24, referring to Wilks (1993)). The provisions of Article 107 TFEU can be interpreted as an incomplete contract (Doleys, 2013). The Commission serves as a third party administering, enforcing, and generally filling-in the agreement made by the member states in the sense of Williamson (1985) and North (1988). Article 108 TFEU gives the contours of how the Commission can "interpret, apply, monitor and enforce the provisions contained in Article 107" (Doleys, 2013, p. 26). This makes the the Commission an agent of the member states. But the principals took care to limit the possibilities of agent opportunism. Article 263 TFEU, by subjecting EU legislation to judicial review by the CJEU, provides a check against the potential misuse of power on the part of the Commission. Similarly, Article 108(2) allows the Council to "decide that aid which that State is granting or intends to grant shall be considered to be compatible with the internal market" (Art. 108(2) TFEU). This step requires unanimity and the article states that such a step has to be justified by "exceptional circumstances" (ibid.). Furthermore, the Commission needs to rely on the compliance of the member states, as it has no ability to enforce decisions directly without their assistance. A threat of non-compliance can therefore be a powerful tool (Doleys, 2013).

If the goal is indeed a European industrial policy, then several questions need to be addressed to define what the goal of such an industrial policy might be. Is it to pick winners or to support losers? Is it to maintain or to boost competition? Foreman-Peck (2007) sees a divergence

between what is taking place and what is optimal: while the Commission's goal might be to improve productivity of the manufacturing industry, encouraging efficient innovation should be the real target. Since productivity is slowing down (especially relatively to Asia), and Europe is lagging behind the United States especially in the high-tech sectors (Cincera and Veugelers, 2013), a European industrial policy might indeed be necessary. The answers to these questions are still pending and are still being discussed in the industrial and competition policy literature. The definite economic order also still needs to be determined through a larger political process.

European state aid control, just like the state aid decisions at the national level, does not take place in a political vacuum. Instead, the European Commission is subjected to political processes taking place among the Member States. In the game of rent-seeking, the Commission is not only in the position of the referee. It is also an integrated part of the game. Although individual state aid decisions usually do not entail open political conflict (even during the crisis, the Commission was successful in safeguarding its rule-based approach, see Ahlborn and Piccinin (2011)), state aid control is a political process for two reasons. For one, state aid control is a policy that touches upon a large variety of goals besides competition: innovation, environmental protection, regional development, employment, and others. How those sometimes conflicting targets are balanced against each other is often a value judgment (e.g.: Should greater inter-regional cohesion be endeavored at the cost of higher tax rates and therefore the loss in attractiveness for new investments in the country?). Secondly, the member states have to accept the general thrust of EU state aid policy in order to make its enforcement effective and politically viable Blauberger (2011). Representing a more critical perspective, Zahariadis (2013), using a database of state aid decisions between 1992 and 2007, shows that state aid decisions are an outcome of power politics between Member States and the Commission. He finds that larger Member States find it easier to have their state aid decisions approved by the Commission. At the same time, the data also shows that the propensity to award state aid is highly dependent on domestic factors.

7.3.6 The European Union in a global economy

The European Union operates in and is an integral part of a global economy. This poses a fundamental problem to European State Aid control. The EU's state aid rules limit the subsidies that European jurisdictions can grant to firms within their territory. Obviously, this means that European firms are in a disadvantage vis-à-vis non-European firms. There have been requests by representatives of national governments to soften EU state aid rules in order to keep European companies competitive against those that are not subject to state aid control. The Commission, not eager to give up its important role, rejected these claims arguing that it is not in its power to do so (Smith, 2001).

This problem surfaced for instance in the year 2009, when the crisis hit the automobile sector in the EU and the U.S. The United States federal government put in place a multi-billion dollar package of subsidies, while the European Parliament passed a resolution pleading the Council and the Commission "to accelerate, simplify and increase financial support for the automotive industry" (resolution 2010/C 117 E/26).

As a result, the European Commission has sought to promote the adoption of European-style state aid and public procurement rules outside the Union. It did so by pressuring third countries as well as by campaigning within the framework of the WTO. The Commission's strategy thus does not seem to be a relaxation of state aid regulation in favor of European firms' competitiveness, but rather to extend the "level playing field". It does so both horizontally, that is, by inducing other countries to adopt state aid rules, and vertically, that is, to the WTO level. The mechanism through which it can do the former is the accession process. Countries endeavoring to join the Union have to comply with the *acquis communitaire* already years before actually becoming a member. At the WTO level, the EU can not exert the same amount of leverage and has to seek consensus instead, mostly with the U.S. government (Blauberger and Krämer, 2013). Blauberger and Krämer (2013) also speculate that this regulatory export, which is bound to be an important topic in the future given the growing competitive pressures from emerging markets and the increasing legalization of international trade, can benefit European firms even beyond the removal of disadvantages. These firms could benefit from lower transaction costs as they are familiar with the workings of state aid rules and now face fewer diverging rules.

The effectiveness of any European state aid control will always depend on its place in the global economy. The EU can be an important source for impulses to curb subsidy wars. By exporting its regulatory regime, it can contribute to prevent wasteful spending by its trading partners. As a consequence, the EU could consider applying its state aid rules not only to subsidies given by EU member states, but also aid given by non-EU countries to firms that operate inside the EU. This would require a change in the EU Treaties, as Article 107 only applies to "aid granted by a Member State or through State resources".

7.4 Overcoming the market failure - problems of collective decision-making

If we now take it for granted that lower level jurisdictions should be regulated in their ability to award subsidies and engage in a competition for capital – and there is ample evidence that we should do so – then the focus is now on the ability of either a higher-level government (e.g. a federal structure, such as Germany or the United States) or an international organization (e.g. the EU or the WTO) to regulate this market for firms. The previous section discussed EU state aid policy. The following sections are more of relevance to countries or groupings of countries which are not part of the EU and its state aid control mechanism.

7.4.1 The monopoly on regulatory power

The increase in international activity and technological progress have had an effect on how subsidies should be regulated. Firms have increasingly become subject to the laws of several countries in which they operate. This insight links the topic to the theories of choice-of-law and international cooperation. Guzman (2002a) notes that in order to achieve an efficient result at the global level, the national interests need to be aligned with those of the global community. A global lawmaker would allow all activities that have a positive net effect on total world welfare, which is the sum of the direct effects on a country and the externalities produced. But this global lawmaker would not care about the distribution of costs and benefits between jurisdictions. This policy of

the global lawmaker can not only produce welfare increases according to the Kaldor-Hicks efficiency-criterion, but also a Pareto-improvement if we allow for compensating lump-sum transfers. In reality though, those transfers are hard to achieve.

The problem becomes more complicated once the government is not modeled as a black box anymore. Additionally, the term "national interest" used in the previous paragraph is very vague, to say the least. The public choice view sees regulators as individuals pursuing their own objectives. The government, which possesses the monopoly on regulatory power, can "sell" its power to design rules to special interest groups. The result is regulation that mainly pursues a regulated industry's benefit, creating barriers to entry and limiting competition. The chief reason why this can happen is the degree of organization of actors. Firms are highly organized (because their whole profits are at stake), whereas consumers in a particular industry do not bother to organize themselves (as they would bear the full costs of organization, but only a small part of their income is affected by prices and quantities in a specific industry[5]) (ibid.).

The outcome of interest group politics is very difficult to predict, even in a narrow field of law as the one relating to the granting of public subsidies to firms. It becomes even more so if an international dimension is added to the problem.

Guzman (2002a) suggests addressing issues of public choice theory in three ways. The first way is to ignore them and just assume that governments always act in the national interest. This approach is the dominant one, especially in the field of international law, which is mostly due to the fact that there is no consensus about the role of public choice on decision-making. Secondly, interests (be they national or particular) could be weighed, with particular interests given a less dominant role than the national interest. The analysis would then parallel the first approach, with comparable conclusions. The weighing of different interests is done arbitrarily, which is a disadvantage of this method. Thirdly, the assumption that governments follow a "national interest" could be relaxed and more general assumptions be made instead. The weighing

[5] As an example, manufacturers of toothpaste might be well-organized, whereas toothpaste consumers do not care enough about the toothpaste industry to engage in political activism with the aim of changing the regulation of the toothpaste industry.

of variables could be done according to their influence on the political process. The conclusions will be less forceful, though.

7.4.2 On the creation of international organizations dealing with subsidies

A key question from what has been said so far is: What are the conditions that have to be met in order for states to create an international organization regulating the awarding of subsidies to firms? A similar question and debate has recently emerged in the field of competition law. At an international level, antitrust is very much characterized by the extraterritoriality of the European and American antitrust regimes. According to Guzman (2002a), the extraterritorial application of antitrust laws will lead to over-regulation, while a ban on extraterritoriality will lead to under-regulation. Countries might also have different approaches towards international antitrust. For instance, developing countries are less likely to have firms with international market power, but there consumers might be affected by the adverse effects of international cartels. Conversely, developed countries might want to protect their internationally powerful firms. Thus, the only way of achieving a worldwide antitrust regime might be through transfer payments. Negotiations therefore need an environment that allows for those transfers, such as a reformed WTO (Guzman, 2002a).

When it comes to subsidies, the international problem is not solved by a choice-of-law rule. Instead, there has to be a forum for the negotiation of substantive issues, which also facilitates transfer payments (or compensations of other kinds). This has also implications for the breadth of international organizations. If we think of a framework where countries compensate other countries in exchange for their subsidy regimes and we want to allow for compensations other than lump-sum transfers, then the scope of the international forum has to be broad enough to accommodate for that need[6]. This forum must for instance allow for deals including e.g. tariffs or trade concessions (note for instance the lit-

[6] As an example, compare the Universal Postal Union, an international organization dealing exclusively with matters postal policy, to the UN Office on Drugs and Crime, which encompasses the topics money laundering, terrorism, human trafficking, corruption, drug trafficking, drug prevention, treatment and care, HIV/AIDS, piracy, wildlife and forest crime, and others.

erature on why the intellectual property agreements were linked to the WTO[7], e.g. Guzman (2003) or Guzman (2004)). This might (a) explain why the European Union is so successful in implementing its state aid control, and (b) tell us that also the WTO could be the appropriate forum for subsidies agreements. There are other public choice scholars who have some concerns about Guzman's view that enabling transfers will increase world welfare. Stephan (2002) for instance notes that those transfers might as well increase the probability that an international agreement might reduce world welfare (see also Guzman (2002b)).

The crucial point is whether countries are affected equally by subsidies given to firms. Just like polluting countries have less of an interest in international environmental agreements than non-polluting countries, countries that are not as much affected by subsidies have fewer incentives to agree to an international regulatory regime than countries which are affected. Under the current regiment, the WTO agreements prohibit subsidies regardless of which country grants them. If we compare this setting to the EU state aid control mechanism, a flaw becomes apparent. The EU explicitly encourages aids in and to (relatively to the average) under-developed regions. Following this reasoning, similar rules should be implemented at the WTO level. In fact, currently, the opposite is happening. According to WTO estimates (WTO, 2006), 21 developed countries spent almost \$250 million, which is equivalent to almost 85 percent of the world's subsidies. Developing countries – despite a high degree of variation among them – spend a considerably lower amount of subsidies (in percent of GDP). Thus, it might be in the interest of the developing, not the developed countries to enact and enforce tighter rules.

7.4.3 State aid control without integration

The European state aid control mechanism operates at a very detailed level and does so in a context of deep economic and political integration. Yet, it has been argued that a political system like the EU is not necessarily a pre-requisite for a functioning subsidy control system organized by an independent authority (Sinnaeve, 2007). It is conceivable

[7] Basically, a deal was struck in which an intellectual property rights agreement was found in exchange for concessions relating to agricultural subsidies and others.

to implement for instance a EU-style state aid control mechanism that focuses only on large cases. This would avoid micro-management and discussions about the scope of national or sub-national sovereignty. The effect on preventing subsidy races could be substantial nevertheless. EU state aid control is a system of *a priori* prohibition with the possibility of exemptions and authorization. A system that works the other way round, that is, one in which aid is generally allowed but jurisdictions agree on certain aids that are prohibited. This might make it politically easier to implement, as states do not have to agree to a general ban, but can pick certain areas in which they want to curb down subsidies. Another way forward is to not prohibit state aid, but to set certain criteria that all states have to abide to. For instance, there could be limits on the aid intensity, that is, the amounts given as a percentage of the investment made by the private firm. The rules could be left vague for broad kinds of aid (e.g. R&D aid), and made more detailed and stricter for those programs that are usually deemed problematic (e.g. sectoral aid).

The WTO system, which comes closest to a comprehensive international subsidy control system beside the EU state aid control mechanism, is severely limited by several factors. While it provides a mechanism to interdict large subsidies, it does not provide an independent authority monitoring states' subsidy programs. Subsidies are only actionable by other member states, meaning that there are no ways for private enforcement. For political reasons, many subsidies do not see adverse action (countries affected by the subsidies might fear a tit-for-tat strategy on the part of the subsidizing state). It also means that not only foreign competitors of subsidized firms with too weak an influence on their own government to start action, but also domestic competitors cannot make use of the WTO system in their favor.

CHAPTER 8

Conclusion

This book revisited the question whether governments should be restricted in the aid that they are giving to private firms. That some kind of regulation is necessary, and be it only in the shape of mandatory disclosure rules, is widely considered a consensus, at least in the academic literature.

Virtually all industrialized regions in the world are subject to state aid regulation. Nevertheless, the rules differ tremendously around the globe. In many instances, the WTO rules on subsidies are the only applicable law. The European Union with its State Aid Law sports a truly unique mechanism, a *sui generis* institution controlling state aid.

The next question is how and to what extent this regulation should take place. The conclusions from this book stem from the various approaches taken. The literature on state aid generally justifies control in the presence of externalities. There is a wide scope of opinions though, with proponents of unrestricted inter-jurisdictional competition on one side, and advocates of a "level playing field" with undistorted competition among firms on the other extreme. In-between positions are common. State aid control establishes an order of competition that affects both inter-firm and inter-jurisdictional competition.

The intention of this book was to delve deeper into some of the mechanisms in place and to formulate some novel insights. The spot was mainly on the issue of incomplete contracts between the various

stakeholders.

First, there is the side of the state. Here, politicians are supposed to follow the will of a heterogeneous electorate. At the same time, they face some uncertainty about the eventual outcome of their spending decisions. The constitutional settings under which they are made determines the outcome and the redistributive effects. Most importantly, politicians make these decisions in a competitive environment, in which other localities' politicians follow similar mandates to attract or rescue firms. The result from this is that the main cause of concern is not necessarily the distortion of competition, but rather the wasteful spending of taxpayers' money, which is a result of rent-seeking and of the dilemma that the participants in firm location races are in.

Secondly, the principal-agent problems on the side of the firm should be taken into account. The agency approach to corporate governance shows that state aids do not always end up where they are supposed to and - in extreme cases - might not even benefit anybody other than the managers of the firm. The state might not receive what it paid for, while, even though there is a transfer from the state to the firm, the actual owners of the firm might not benefit entirely from this transfer. Furthermore, firms might also engage in state aid deals which are not in the interest of the minority shareholders, meaning that, in the course of a state aid transaction, there might be a redistribution from the firm outsiders to the insiders.

Finding an optimal level of regulation can be a two-edged sword. The public choice and corporate governance aspects lead to the conclusion that (a) state aid control is necessary – not to avoid distortions of competition, but to avoid wasting resources, and (b) state aid control should take into account the local specifics of the locality which grants the aid and of the aid recipient. The ambivalence originates in the practicalities. The transaction costs of such a regime would be prohibitively high as it would put all interactions between the state and the economy up for scrutiny. Some solutions exist nevertheless. Only large subsidies should be assessed. There could be penalty payments in the case of unlawful aid, which could be realistically implemented at the national level. Clear, pre-defined procedures should apply when giving aid to a firm, such as limitations on bonus payments or designating a dedicated officer responsible for monitoring the aid. All these suggestions, of course, need

to be translated into the specifics of the regulatory regime in place.

The considerations made in this book also lead to a series of questions for further research. The logical next step is to produce empirically testable hypotheses (e.g. about firm characteristics, firm value, institutional variables, jurisdictional characteristics, and others). As already mentioned in the introductory chapter, a lot of "creativity" is needed in order to obtain a useful dataset. European data is limited due to the fact that the notification requirements are not comprehensive and that non-aggregated, firm-level data is difficult to obtain. American data is not reported systematically, leading to very incomplete data sets.

This book focused on issues of contracting between the state and the firm, giving special attention to the nexus of public choice on the side of the state, and corporate governance on the side of the firm. The considerations made give way to the bigger policy question of how to design industrial policy in Europe and elsewhere. The answer to this question is subject to a political process, of which the outcome has yet to be determined.

Appendix: Articles 107 to 109 TFEU

The Treaty on the Functioning of the European Union contains the legal framework for European State Aid Law:

SECTION 2
AIDS GRANTED BY STATES

Article 107
(ex Article 87 TEC)

1. Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market.

2. The following shall be compatible with the internal market:
(a) aid having a social character, granted to individual consumers, provided that such aid is granted without discrimination related to the origin of the products concerned;
(b) aid to make good the damage caused by natural disasters or exceptional occurrences;
(c) aid granted to the economy of certain areas of the Federal

Republic of Germany affected by the division of Germany, in so far as such aid is required in order to compensate for the economic disadvantages caused by that division. Five years after the entry into force of the Treaty of Lisbon, the Council, acting on a proposal from the Commission, may adopt a decision repealing this point.
3. The following may be considered to be compatible with the internal market: (a) aid to promote the economic development of areas where the standard of living is abnormally low or where there is serious underemployment, and of the regions referred to in Article 349, in view of their structural, economic and social situation; (b) aid to promote the execution of an important project of common European interest or to remedy a serious disturbance in the economy of a Member State;
(c) aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest;
(d) aid to promote culture and heritage conservation where such aid does not affect trading conditions and competition in the Union to an extent that is contrary to the common interest;
(e) such other categories of aid as may be specified by decision of the Council on a proposal from the Commission.

Article 108
(ex Article 88 TEC)

1. The Commission shall, in cooperation with Member States, keep under constant review all systems of aid existing in those States. It shall propose to the latter any appropriate measures required by the progressive development or by the functioning of the internal market.
2. If, after giving notice to the parties concerned to submit their comments, the Commission finds that aid granted by a State or through State resources is not compatible with the internal market having regard to Article 107, or that such

aid is being misused, it shall decide that the State concerned shall abolish or alter such aid within a period of time to be determined by the Commission.

If the State concerned does not comply with this decision within the prescribed time, the Commission or any other interested State may, in derogation from the provisions of Articles 258 and 259, refer the matter to the Court of Justice of the European Union direct.

On application by a Member State, the Council may, acting unanimously, decide that aid which that State is granting or intends to grant shall be considered to be compatible with the internal market, in derogation from the provisions of Article 107 or from the regulations provided for in Article 109, if such a decision is justified by exceptional circumstances. If, as regards the aid in question, the Commission has already initiated the procedure provided for in the first subparagraph of this paragraph, the fact that the State concerned has made its application to the Council shall have the effect of suspending that procedure until the Council has made its attitude known.

If, however, the Council has not made its attitude known within three months of the said application being made, the Commission shall give its decision on the case.

3. The Commission shall be informed, in sufficient time to enable it to submit its comments, of any plans to grant or alter aid. If it considers that any such plan is not compatible with the internal market having regard to Article 107, it shall without delay initiate the procedure provided for in paragraph 2. The Member State concerned shall not put its proposed measures into effect until this procedure has resulted in a final decision.

4. The Commission may adopt regulations relating to the categories of State aid that the Council has, pursuant to Article 109, determined may be exempted from the procedure provided for by paragraph 3 of this Article.

Article 109
(ex Article 89 TEC)

The Council, on a proposal from the Commission and after consulting the European Parliament, may make any appropriate regulations for the application of Articles 107 and 108 and may in particular determine the conditions in which Article 108(3) shall apply and the categories of aid exempted from this procedure.

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Summary

Depending on the regulatory regime they are subject to, various levels of governments may or may not be allowed to hand out subsidies or other forms of state aid to private firms. European state aid law mandates that states refrain from aiding firms unless there is a specific market failure to address. By doing so, it establishes an order that regulates competition among firms, but also among jurisdictions. The goal is to prevent distortions of competition. Not all federal countries or quasi-federal regional groupings of open economies created such a mechanism. Most notably, the United States maintains a system of unregulated inter-jurisdictional competition in which the actions of states and lower-level governments are immune from the restrictions on anti-competitive behavior. At the international level, the WTO provides a framework that is only weakly enforced and does not feature an independent regulatory body.

The economic justification for state aid control can go further, though. It can address several issues present in the competition for capital and the competition for transfers from the state. Three aspects are of particular interest.
First, there are principal-agent problems involved at several stages. Citizens elect representatives to maximize the total welfare of the jurisdiction. Yet, self-interested politicians might enter state aid deals that do not enhance efficiency, but are rather the result of extensive rent-seeking activities of organized interest groups. Thus the institutional design of political systems will have an effect on the propensity of a jurisdiction to award state aid.
Secondly, fierce competition for firm locations can lead to substantial over-spending, as investments are made even if there are no benefits from firm relocation. This effect is stronger if the politicians do not take into account the entirety of the costs created by their participation in the firm location race. Unlike a benevolent social planner, they not incorporate the externalities on under jurisdictions and on the minority within their jurisdiction into their cost-benefit-calculations.
Thirdly, for various reasons, which can be due to rent-seeking, but also to information asymmetries inherent to the process and possibly exacerbated by the presence of intermediaries, state aid deals can be incomplete and not in the interest of the citizens. This applies if there are no sanctions if firms do not meet their obligations from receiving aid, such as creating a certain number of jobs or not relocating again for a certain amount of time.
The separation of ownership and control in modern corporations leads to principal-agent problems on the side of the aid recipient as well. Managers might receive personal benefits from subsidies, the use of which is sometimes less monitored than private finance. This can be to the detriment of the shareholders, as the managers might overly engage in rent-seeking and put less effort into the effective management of the firm. Managers might also refuse aid even though it would be in the interest of the firm if they had to make concessions that are not to their benefit (e.g. bailouts that entail a change in management).

Overall, it can be concluded that state aid control should also serve the purpose of regulating the contracting between governments and firms and ensure the effective use of taxpayers' money. An extended mandate for supervision by the European Commission could include requirements to disincentive the misuse of state aid. In its assessment of state aid measures, the Commission should also focus on the corporate governance regime in place in the jurisdiction that awards the aid as well as in the recipient firm.

Samenvatting

Afhankelijk van het reguleringsregime waar ze onder vallen, is het uiteenlopende overheden al dan niet toegestaan om subsidies of andere vormen van overheidssteun aan private bedrijven te verstrekken. Europese regelgeving met betrekking tot overheidssteun verbiedt staten steun aan bedrijven te bieden tenzij er een specifiek marktfalen aangepakt moet worden. Hierdoor wordt niet alleen een systeem gecreëerd dat concurrentie tussen bedrijven reguleert, maar ook tussen jurisdicties. Het doel is concurrentieverstoringen te voorkomen. Niet alle federale landen of semi-federale regionale groeperingen van open economieën hebben zo'n mechanisme gecreëerd. Zo heeft de Verenigde Staten een systeem van niet-gereguleerde inter-jurisdictionele mededinging waarin de acties van staten en lokale overheden immuun zijn voor de restricties op mededingingsbeperkend gedrag. Op internationaal niveau voorziet de WHO in een raamwerk dat echter slechts beperkt wordt gehandhaafd en waarin geen onafhankelijke instantie is opgenomen.

De economische rechtvaardiging voor reguleren van overheidssteun kan echter verder gaan. Het kan verschillende aspecten aanpakken die aanwezig zijn in concurrentie voor kapitaal en voor overheidstransfers. Drie aspecten zijn hier van bijzonder belang.

Ten eerste spelen er op verschillende niveaus principal-agent problemen. Burgers kiezen vertegenwoordigers om de maatschappelijke welvaart van de jurisdictie te maximaliseren. Op eigen belang gerichte politici zouden echter overheidssteun kunnen bieden die niet gericht is op de verhoging van efficiency, maar die meer het resultaat zijn van uitgebreide rent-seeking activiteiten van georganiseerde belangengroepen. Het institutionele ontwerp van politieke systemen zal dus gevolgen hebben voor de mate waarin een jurisdictie geneigd is overheidssteun te bieden.

Ten tweede kan sterke concurrentie voor bedrijfslocaties leiden tot een substantiële overbesteding, omdat investeringen worden gedaan zelfs als er geen voordelen van herlocatie zijn. Dit effect is sterker als de politici niet alle kosten meewegen die hun deelname aan de bedrijfslocatiewedloop met zich meebrengt. In tegenstelling tot een welwillende sociale planner, nemen zij de negatieve effecten tussen jurisdicties en op de minderheid binnen hun jurisdictie niet mee in hun kosten-baten berekeningen.

Ten derde kunnen afspraken over overheidssteun incompleet en niet in het belang van de burgers zijn vanwege verschillende redenen, die veroorzaakt kunnen worden door rent-seeking, maar ook door informatie-asymmetrieën die inherent aan het proces zijn en die mogelijk versterkt worden door de aanwezigheid van intermediairs. Dit is het geval als er geen sancties zijn als bedrijven hun aan de steun gerelateerde verplichtingen niet nakomen, zoals het creëren van een bepaald aantal banen of het niet herloceren gedurende een bepaalde tijd.

De scheiding tussen eigendom en bestuur binnen moderne bedrijven leidt ook tot principal-agent problemen aan de kant van de steunontvanger. Managers zouden persoonlijk voordeel kunnen hebben van subsidies, waarvan het gebruik soms minder wordt gecontroleerd dan private financiering. Dit kan in het nadeel van de aandeelhouders zijn, omdat de managers teveel rent-seeking activiteiten zouden kunnen ontplooien en minder moeite steken in het effectieve management van het bedrijf. Managers zouden ook steun kunnen weigeren, zelfs als dat in het belang van het bedrijf zou zijn, als zij concessies zouden moeten doen die niet hun voordeel zijn (bijv. overnames die een wijziging in het management zouden impliceren).

In het algemeen kan worden geconcludeerd dat controle op overheidssteun ook het doel moet dienen van het reguleren van afspraken tussen overheden en bedrijven en voor effectief gebruik van het geld van de belastingbetalers moet zorgen. Een uitgebreid mandaat voor toezicht door de Europese Commissie zou maatregelen kunnen behelzen om het misbruik van overheidssteun te ontmoedigen. In zijn beoordeling van overheidssteunmaatregelen zou de Commissie ook moeten focussen op het corporate governance regime van zowel de jurisdictie die de steun toekent, als van het ontvangende bedrijf.