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Fishing for Ballots: Domestic Institutions, Common Pool Resource Problems, and Compliance with  
International Environmental Regimes

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M.A., Baylor University, 2005

B.A., Tulane University, 2000

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## Abstract

### Fishing for Ballots: Domestic Institutions, Common Pool Resource Problems, and Compliance with International Environmental Regimes

By Andrew B. Kirkpatrick

Governments have attempted a variety of measures in the last 70 years to protect international common-pool resources. Frequently, these measures involve international treaties which commit the signatories to the protection of the common-pool resource through restrictions on use: either quotas or targets. However, one sees demonstrable empiric variation in compliance with these treaties.

Why does cooperation with international treaties vary? One factor might involve domestic special interests; deviation from a common-pool resource management regime benefits some minority of people in the near term, usually regular users of the regime. It is clear that small, well-organized groups can receive favors from the government. But under what conditions will governments grant favors to special interests? Do electoral systems matter? Previous work has offered contradictory theories; empirical evidence, depending on the issue area, is muddled.

This dissertation seeks to determine the scope conditions under which previous theories apply through the concept of marginal costs. Some favors for special interests are costly, whether in terms of future support from voters, or in terms of direct budgetary cost. Others are cheap; perhaps they cost a government nothing, or voters do not notice.

Three empirical domains are examined: the European Union's Common Fisheries Policy, where marginal costs are anticipated to be low; the Northwest Atlantic Fisheries Organization, where marginal costs are anticipated to be very low; and the Convention on Long-Range Transboundary Air Pollution, where marginal costs are anticipated to vary due to weather patterns in Europe.

The theory is tested using three separate datasets newly-constructed from archival research. In all three domains, the quantitative evidence is supplemented with short qualitative case studies and elite interviews. The results show that states in low-marginal-cost situations provide private goods to special interests in different ways than states in high-marginal-cost situations. A concluding chapter offers possible solutions to problems facing international common-pool resource regimes and directions for future research.

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I owe my wife, Susan Kirkpatrick, more than I can ever repay for her support throughout graduate school and the writing of this dissertation. But I think it fitting that I reserve my final thanks to our daughter, Molly Kirkpatrick, who was born during the writing process and has filled our home with nothing but joy. Also, she kindly refrained from tearing up any of my notes during writing. It is to her that this dissertation is dedicated.

# Contents

1	Introduction	1
2	Literature Review	17
3	Theory	37
4	The European Union's Common Fisheries Policy	50
5	Overfishing in the Northwest Atlantic	94
6	Air pollution in Europe	116
7	Conclusion	142
	<b>Appendix I. Field Research</b>	<b>151</b>
	<b>Bibliography</b>	<b>153</b>

# List of Figures

1.1	Millions of tons of fish harvested per year	2
1.2	Cumulative number of international fishing agreements	3
3.1	Rogowski 1987 on district magnitude and overfishing	40
3.2	McGillivray 2004 on district magnitude and overfishing	41
3.3	Dissertation theory	42
4.1	Histogram of the quota overrun variable	68
4.2	Histogram of percentage-overfished variable	68
4.3	Histogram of infringements-per-boat variable	69
4.4	Histogram of report compliance variable	69
4.5	A two-way graph comparing overfishing and district magnitude	74
4.6	A two-way graph comparing quota overruns and electoral competition	75
4.7	A two-way graph comparing overfishing and electoral competition	76
4.8	A two-way graph comparing CFP infringements and electoral competition	76
4.9	Predicted values of district magnitude's effect on FIFG subsidies	84
4.10	Predicted values of electoral competition's effect on FIFG subsidies	85
4.11	Overfishing in the UK, 1986-1996	90
5.1	Scatterplot of government survival and overfishing	104
5.2	Predicted values of government survival's effect on catch-to-quota ratio	107
5.3	Predicted values of type of government on catch-to-quota ratio	109
5.4	Predicted effect of electoral competition on overfishing in Canada, 1973-83	114



## List of Tables

4.1	Infringements of the Common Fisheries Policy and percentage over quotas, 2002	51
4.2	Data coverage for overfishing variables	66
4.3	Descriptive statistics	73
4.4	Results of the statistical models	77
5.1	Results from a model using government survival days	106
5.2	Results from a model using Polity	108
5.3	Results from the Canadian case, 1973-1983	113
6.1	Protocols signed under CLRTAP	123
6.2	Descriptive statistics	130
6.3	Results of the statistical models	133

## List of Maps

4.1	Denmark, with fishing-intensive <i>storkredse</i> highlighted	86
4.2	Great Britain, with fishing-intensive constituencies highlighted	88
5.1	NAFO / ICNWAF divisions with the 200-mile exclusive economic zone	98
5.2	Canada, with fishing-intensive ridings highlighted	110
6.1	Nitrogen oxide emissions in Europe, 1994	124
6.2	Nitrogen oxide emissions in Europe, 2008	125

## Chapter 1

### Introduction

As the world's population has grown, policymakers and political scientists have become increasingly aware of the interdependence between states, particularly with regards to the environment. Pollution in one state is picked up by the wind, carried hundreds of miles, and returns to earth as acid rain in another state. Even operating only in its own waters, the actions of one state's fishing fleet can result in fewer fish for the fleets of other states.

Since World War II, states have attempted to solve the problem of interdependent issues through various international agreements. One such issue is overfishing, the practice of taking more fish out of the ocean than is biologically sustainable, frequently in contravention of an international agreement. Overfishing is a serious international problem; one study in *Science* extrapolates that there will be no saltwater fish living at a commercially viable level by 2048 (Smith 2006). After decades of growth, the amount of fish harvested annually from the world's oceans has been at a plateau since the late 1980s (see Figure 1).

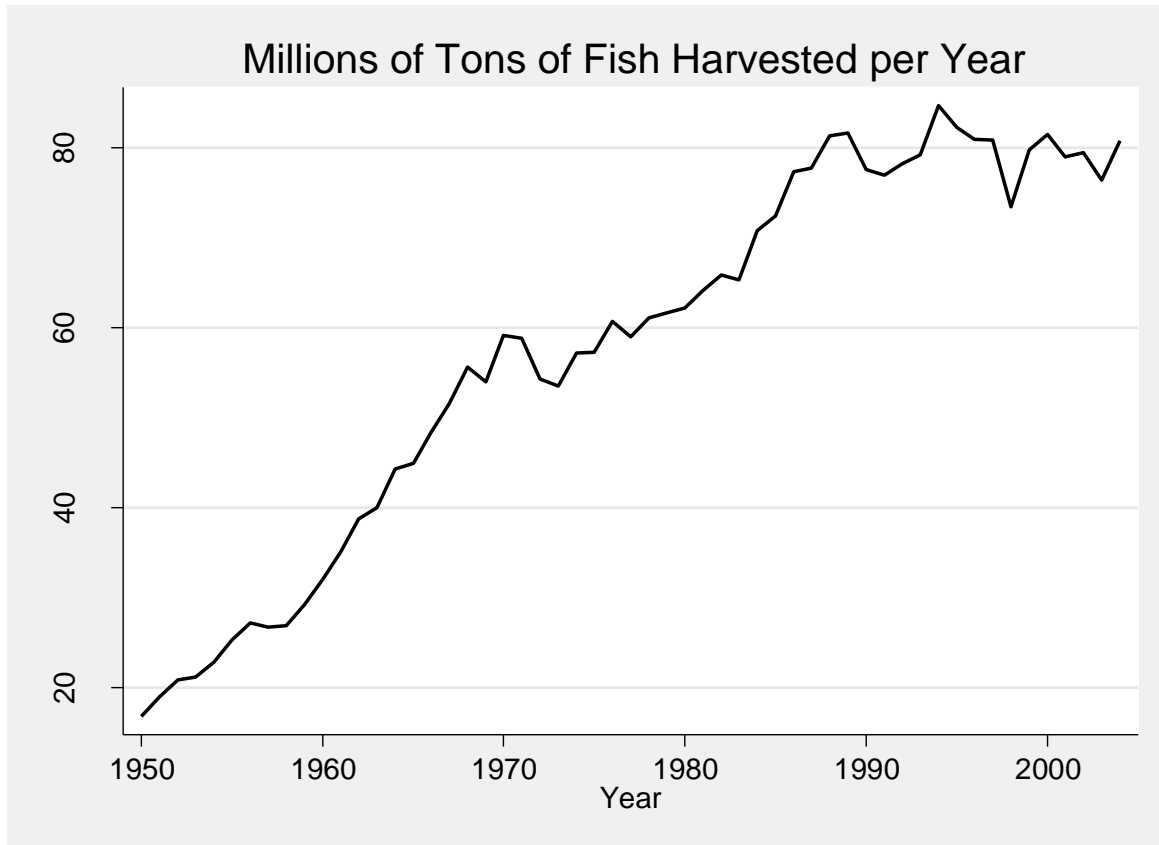


Figure 1. Source: Pauly and Watson 2001.

Because it tends to occur in international waters and among shared stocks, overfishing is both a biological and a political problem. The international solution to overfishing has been a series of regional fisheries management organizations (RFMOs), covering most of the world's oceans and restricting fishing to varying degrees. RFMOs have proliferated in the years since World War II (see Figure 2).

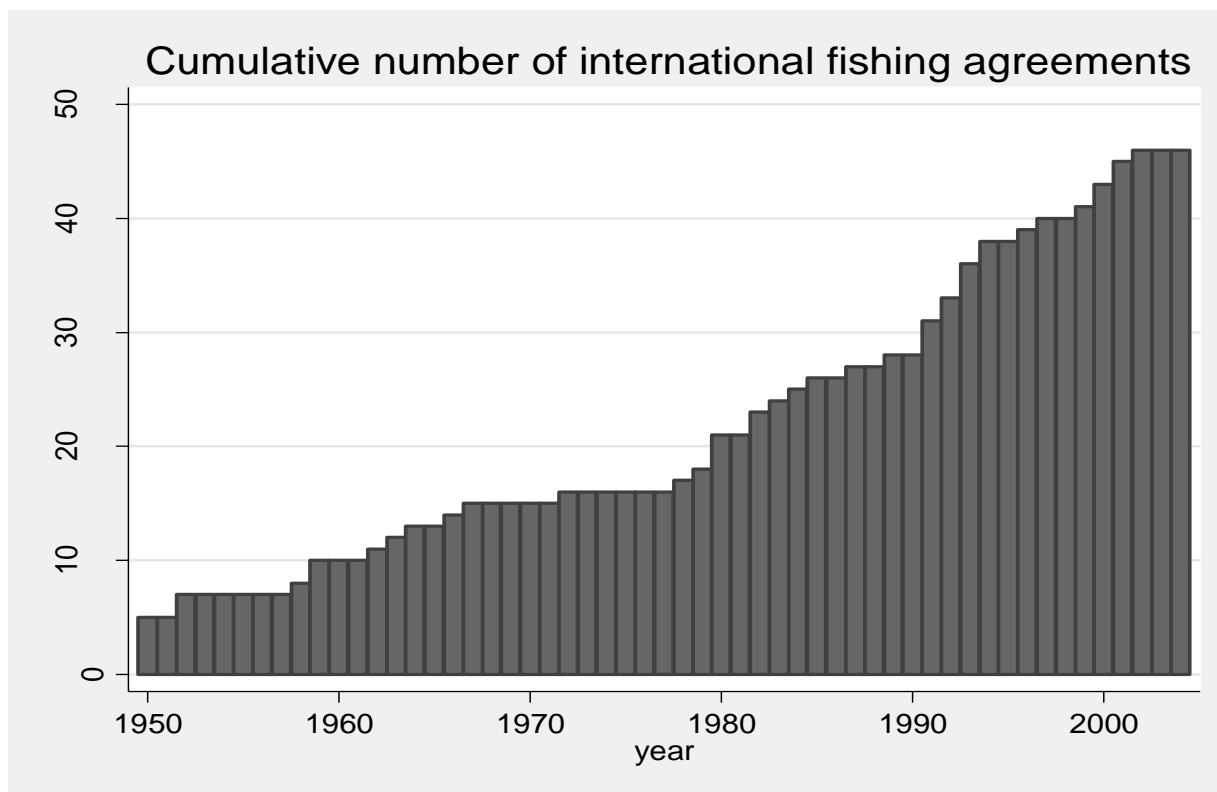


Figure 2. Source: Mitchell 2010.

But there is a lot of variation in the degree of overfishing by developed-world states.<sup>1</sup> Look only at Europe: Finland, per-capita, consumes more fish annually than Denmark, yet the Danish fishing fleet overfishes more than the Finnish fleet.<sup>2</sup> Spanish fishing vessels overfish more than Portuguese, though Portugal consumes more fish than Spain per capita. The British consumed more fish in 2004 than they did in 1985, but their fleet overfished less. The Dutch consumed less fish but overfished more. What explains this variation in the level of overfishing, even among members of the same RFMO? This question leads, in turn, to a broader question: why do levels of cooperation under certain types of international treaties vary?

<sup>1</sup> With the exception of Peru, few developing-world states have distant-water fleets fishing in international waters. Even China, with the largest fishing fleet on the globe, gets more than 90 percent of its fish from territorial waters.

<sup>2</sup> From a political perspective, overfishing can be defined as the practice whereby a state's fishing fleet takes more fish than that state was allotted in an international agreement. From an environmental perspective, overfishing is any practice that takes more fish from a stock than can be replenished through breeding.

One explanation of variation in the level of cooperation might involve the strength or type of domestic special interests in a given state. Support for special interests has been a part of politics for centuries, from Henry II's granting of coastal fishing rights to individuals and estates in 12<sup>th</sup>-century England to cash subsidies for deep-water fishermen in 20<sup>th</sup>-century Norway. Scientific evidence rarely dissuades politicians from protecting favored groups. For example, the International Commission for the Exploration of the Sea called for a complete ban on fishing for cod in the North Sea each year from 2002 to 2005. Representatives of European Union member states, meeting to determine how much the cod quota should be reduced, left the amount of allowable catch largely the same. (Clover 2006)

In political science, recognition that small, well-organized groups can receive favors from the government dates back at least to Olson (1965). What is less clear are the conditions under which governments are more likely or less likely to grant favors to special interests, in particular aspects of electoral systems which create incentives towards one category of special interest or another. Rogowski (1987) argued that large electoral districts provided insulation from social pressures, avoiding "pork-barrel politics," but writing 15 years later, Rogowski and Kayser (2002) directly contradicted that theory. McGillivray (2004) offered a theory that built in electoral competition and geographic concentration, resulting in predictions that sometimes confirm Rogowski and sometimes confirm Rogowski and Kayser. Empirical evidence, depending on the issue area examined, seems to provide support for all three works.

What is needed is a bridge between these literatures, determining the scope conditions under which each applies. This dissertation attempts to begin the process of bridge-building by introducing the concept of marginal costs in terms of special interest provision. Some favors for special interests are quite costly, whether in terms of future support from voters who do not

receive the favor, or in terms of direct cost to a government budget. Direct subsidies to farmers or fishermen would fall under this heading. Other favors are very cheap, both because they cost a government next to nothing, and because they will not be noticed by other voters. One example of a low-cost favor would be allowing special interests to cheat on certain types of international common-pool resource agreements. In this dissertation, I will test the theory on a domain which varies in the level of marginal costs to political parties: compliance with international common-pool resource regimes.

We know from existing literature, particularly the work of Ostrom, that common-pool resource problems are solved by strong institutions. But the European Union, the strongest international institution in the world, has admitted failure on its Common Fisheries Policy and is virtually beginning again, due in part to widespread non-compliance and overfishing (Irish Times 2009; personal interview, June 2010). An agreement in which everyone considers the burden of consumption on the collective instead of the individual leads to a beneficial outcome for all, but it does not remove the incentive to cheat. Even if we assume a world in which the only international agreements made are the ones with which states already planned to comply (as argued by Downs, Rocke, and Barsoom 1996), why would we still see variations in the “error term” around the expectation of compliance? Why do countries sign agreements designed to benefit the common interest, then defect from those agreements at differing levels? What explains cross-country / cross-time patterns of compliance with international common-pool resource agreements? I argue that to answer this question, one must consider the special interests that would prefer non-compliance and their importance to political parties’ electoral futures.

## Background

Fishing is but one example of an international common-pool resource problem. A common-pool resource is “a resource to which no single decision-making unit holds exclusive title” (Wijkman 1982). It is owned by no one (*res nullius*), or everyone (*res communis*). The idea of the common pool resource comes from Hardin (1968), who recalls the village commons of medieval England, where anyone in the village could graze their livestock. When there is unrestricted access to a common pool resource, each user will consume the resource and subtract from the quantity available to others to an extent which eventually produces diminishing returns to all users and in some cases the exhaustion of the resource (Ostrom 2000). In the case of fish, this means ecological collapse of the stock, as has already happened with North Atlantic cod. Some common-pool resources are pools, with concern placed on the amount of the resource being taken out, while others are sinks, wherein the problem is putting too much contaminant into the resource. The supply of clean air is one example of a common-pool sink (Ostrom, Dietz, et al. 2002).

## Theory

In this dissertation, I will argue that an answer to varying compliance with international common-pool resource agreements lies in the domestic institutions of individual states, as well as domestic characteristics of the industries contributing to the common-pool resource problem. There have been two previous broad theories looking at the issue of electoral systems’ influence on politicians’ ability to reward special interests. The first (exemplified by Rogowski 1987, see also Nielson 2003) argues that large electoral districts provide insulation from social pressures, avoiding “pork-barrel politics”, and that proportional systems are more likely to reflect the

interests of large blocs of voters. Therefore, single-member district systems should see more spending for special interests than large-district, proportional-representation systems.

The second theory (McGillivray 2004) takes the first and builds upon it. Electoral competition matters in this theory; all electoral districts in a given state are not uniform in terms of their importance to political parties, who, after all, will form the governments that make decisions on the provision of goods to special interests. The importance of a special-interest group to a political party is magnified by geographic concentration. Geographically concentrated industries can help politicians in small districts, especially when those districts are marginal. Narrow special interests in safe seats in small districts do not need the same attention, because their support is not necessary to retain the seat. This theory finds that single-member district systems see more spending for special interests than large-district systems when the districts in question are contested; when they are not, the reverse is predicted.

This second theory predicts industrial policy well; in PR systems, parties should reward their strongholds. This has to do with cost – a party cannot realistically promise industrial subsidies or non-tariff barrier trade protection to every industry in the state, because the per-unit costs of such support are higher than the per-unit benefits, statewide. There is a finite level of resources available in those areas to offer the public. For that reason, strongholds would be favored over competitive districts.

However, non-compliance with an international common-pool resource agreement (within reason) is relatively costless; the per-unit cost is less than the per-unit benefit.<sup>3</sup> Such

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<sup>3</sup> Non-compliance with fishing agreements, for example, requires no financial outlay or legislative act. In Europe, non-compliance is achieved through simple acts like delaying the closing of fishing ports by a few days after a state's quota has been reached, thus allowing a few thousand extra tons of fish to be brought in.



policies can be offered to various groups throughout the state. Party X can make appeals to polluting industries in its stronghold as well as appeals to a more competitive, fishing-intensive area. Moreover, Party X would not then be punished by voters in other districts for rewarding these industries, because compliance with international agreements is not on the radar of the average voter in the same way that a redistributive policy might be. In this case, the deadweight loss from the reduction in the common-pool resource is borne entirely by consumers in the form of increased future prices for fish, which is scarcely noticed in the present.

The concept of marginal costs is crucial to the theory that will be presented in Chapter 3. I define the concept as the cost to a political party to benefit a special interest. This cost could be thought of in terms of actual money, or in potential votes. When marginal costs are high, benefiting the special interest will require a budgetary outlay, and/or it will cost the party votes in an upcoming election, because it will be unpopular. When marginal costs are low, either benefiting the special interest requires little to no budgetary outlay, or voters are not likely to notice, or both.

International common-pool resources such as the supply of clean air or the number of edible animals in the sea are public goods. Typically, the international agreements and organizations that are formed to preserve the resource lack stringent monitoring or enforcement provisions. States that are non-compliant with such agreements risk at worst minimal fines and being “named and shamed.”

Politicians help groups that can help politicians. They wish to either obtain or maintain power, and will reward constituencies that enable them to achieve their goals. Political institutions such as electoral rules whittle down the types of constituencies to which politicians

must appeal in order to stay in office. Increasing the magnitude of an electoral district and/or adopting a proportional-representation system induces appeals to narrower constituencies, as it takes smaller and smaller numbers of votes in order to earn a seat in parliament. Decreasing the magnitude of an electoral district and/or adopting a majoritarian system has the opposite effect, inducing appeals to broader constituencies. The exception in majoritarian systems would be if a single-member district is hotly contested between two parties, so that a small swing in votes from one party to the other would result in the latter party winning the seat. In such a case, an industry concentrated in and around the marginal districts, even if small, could become quite important in the outcome of the election (McGillivray 2004).

For an example of a special interest group affecting an international common-pool resource agreement, take the fishing industry. Fishing is a special interest, and one which is naturally geographically concentrated (restricted by its very nature to coasts). If the fishing industry is located in regions which are not electorally salient, then electoral rule and district magnitude are the key explanatory variables. In a high-district magnitude, proportional-representation system like the Netherlands, a party does not have to win the election to get a seat in Parliament; it only has to get a small percentage of the vote. This induces appeals to narrow constituencies such as fishing. But in a low-district magnitude, majoritarian system like Canada, the party has to win the election to get the seat. If one party holds a large lead in the district, the industry will not be supported.

If the fishing industry is located in regions which are electorally salient, the effect of the electoral rule is magnified by electoral competition. In both high-district magnitude and low-district magnitude states, we would expect to see the industry being supported and, as a result,

higher levels of non-compliance. One would still expect to see more non-compliance in the high district magnitude state, however.

In a high-competition, pure-proportional-representation state, the nature of the electoral system dictates that most parties competing will get at least some seats in the parliament. But by appealing to narrow constituencies, they can work at the margins to increase their number of seats, potentially retaining or earning a majority. In a high-competition, single-member-district state, the outcome of the election in each district is zero-sum. Putting resources into a close election does not erase the risk that the party making the appeal will not get the seat. Therefore, I predict one would see better compliance with a common-pool resource regime in a high-competition single-member district state than in the high-competition, pure-PR state.

By contrast, in a safe single-member-district state, there is no incentive to make appeals to narrow constituencies. Indeed, in Westminster systems such as Canada and Great Britain, the top Cabinet officials are running in the safest seats and may not spend a great deal of time campaigning in their home districts. If the relevant districts are concentrated in safe seats, we would expect to see little if any non-compliance allowed. In a safe, pure-proportional-representation state, you may see some appeals to narrow constituencies. Perhaps a few extra seats will allow the largest party to form a more-preferred coalition. So you would expect to see some non-compliance, but not as much as in either high-competition scenario. Therefore, when there are higher levels of electoral competition, we should expect to see less compliance with a common-pool resource agreement than when there are low levels of electoral competition, especially when the relevant industry is concentrated in marginal districts.

Previous theories have posited that competition in PR systems does not matter; I would argue that it does. It is true that in a pure proportional-representation system, with one district covering the whole state, parties do not care what region of the state their votes come from. This is part of the logic behind the hypothesis that parties reward strongholds in PR systems. However, imagine a scenario where our aforementioned Party X believes it has maxed out its votes in the strongholds, and the election is still competitive. One would expect Party X to campaign harder in marginal areas. In single-member-district systems, marginal districts are often protected no matter the outcome of the national election; witness McGillivray's example of the steel industry in Scotland receiving protection from the Conservative Party in the 1980s despite sweeping Conservative majorities. In PR systems, however, we would only expect marginal districts to be rewarded when the national election is roughly as competitive.

As an empirical example of the theory, take the case of Norway. Four of the first five Norwegian Labor Party members to be elected to the Storting were from the fishing districts of Troms and Finnmark. These two districts have been key strongholds for the Labor Party since it first took office in 1935. By the 1960s, fishing households made up about 12 percent of the Labor Party vote, much of it from the North (Rokkan 1968).

The theory advanced in this dissertation would predict that in a proportional representation system like Norway's, with high district magnitude, that parties would reward special interests in their strongholds with high-marginal-cost favors. This has been largely the case. In the 1930s, fishermen lobbied for legislation that would give them exclusive right to sell fish through co-operatives. Two years after the Labour government first took power, the Wetfish Law of 1938 was passed. The law was made permanent in 1951, shortly before the Labour

Party's fourth-consecutive electoral victory. Direct subsidies to the fishing industry began in 1964, again shortly before an election.

Predictably, support for Labour in Finnmark and Tromsø remained very high from the 1930s until the late 1980s, but between the 1985 and 1989 elections, Labour lost a substantial number of votes. In the 1985 election, Labour polled 59 percent in Finnmark and 47.7 percent in Tromsø, gaining 6 seats of the 9 available in the two districts. But in 1989, those vote totals dropped to 36.4 percent and 37.6 percent, respectively, and only five seats. Subsidies, which had regularly increased, were frozen in 1990 (Hannesson 1996). However, non-compliance with Norway's international fishing agreements, particularly a pact with Russia over Arcto-Norwegian cod in the Barents Sea, continued. The theory would predict this behavior, because non-compliance is less costly than subsidy provision and should therefore be continued even in marginal areas in high-district-magnitude, proportional-representation states.

### **Dissertation Organization**

In researching this topic, I have collected both qualitative and quantitative data. In addition to reports from international organizations, I have interviewed policymakers, fishermen, lobbyists, union officials, and bureaucrats. I have also collected archival data on compliance with common-pool resource regimes.

The dissertation will be organized as follows: Chapter 2 will discuss the existing literature on common-pool resource problems, special interest provision, and electoral rules. Chapter 3 will go into greater detail on the theory and causal mechanisms at work. The theory will then be tested both qualitatively and quantitatively on three separate empirical domains: the European Union's Common Fisheries Policy, the system of quotas on fishing enacted by the

Northwest Atlantic Fisheries Organization (NAFO), and enforcement of the Gothenburg, Oslo, and Helsinki Protocols restricting sulfur dioxide and nitrogen oxide emissions among much of the developed world. Much of the theory rests on the assumption that per-unit costs are less than per-unit benefits when it comes to facilitating non-compliance with an international common-pool resource agreement. While I do not believe it is possible to precisely measure the marginal cost of assistance to a special interest, I do believe utilizing these three empirical domains will help demonstrate the validity of the assumption.

*Chapter 4. The Common Fisheries Policy.* The Treaty of Rome (1957) forming the European Community put fisheries products under the same heading as agricultural products, and a separate Common Fisheries Policy was put into place in 1970 at the behest of France which included structural aid to modernize the fishing industry and free access for fishing vessels into the territorial waters of other member states. A separate regulation was adopted in 1983 adding the conservation and management of fisheries to the CFP, and instituting total allowable catches (TACs) and quotas. (Lequesne 2000)

The different aspects of the CFP should provide leverage on the marginal cost assumption. There are two ways the fishing industry can be helped in any given EU member state: relaxed compliance with quotas and supranational subsidies from the European Union. Each will be considered as the dependent variable in turn. Supranational subsidy payments involve almost no cost at all to individual states, and, perversely, their provision should be even higher than the amount of overfishing allowed. I predict that the outcomes for safe districts will

be roughly the same across the three cases, and vary substantially for electorally-competitive districts.<sup>4</sup>

*Chapter 5. The Northwest Atlantic Fisheries Organization.* NAFO is the first organization to enforce a complete ban on fishing. The cod stock on the Grand Banks southeast of Newfoundland has collapsed, and fishing there is outlawed until it recovers, if it ever does. NAFO is one of only three RFMOs with the legal competence to regulate high-seas fishing.<sup>5</sup> The organization bans fishing for plaice following the commercial extinction of that stock, and has instituted sharply lower quotas on Greenland halibut (Koslow 2007). Most notably, NAFO instituted a ban on cod fishing that lasted more than 15 years, only being partially lifted in the spring of 2010 (personal interview, July 2010).

The EU's CFP regulates fishing in territorial waters; NAFO regulates high-seas fishing. Non-compliance with a high seas fishing agreement should be less costly than non-compliance with a territorial waters fishing agreement because there is less chance of being blamed and/or punished by voters. The issue is simply not a salient one. Therefore, I predict a stronger relationship than the one in Chapter 4.

*Chapter 6. The Gothenburg, Oslo, and Helsinki Protocols,* signed in 1999, 1994, and 1985, respectively, under the auspices of the Convention on Long-Range Transboundary Air Pollution

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<sup>4</sup> I define electoral competition as a continuous measure of the degree of "safeness" of a given seat. Because non-compliance requires action (or inaction) by the executive, I focus on the winning party or parties (if a coalition results) in a given national election. A safe district is one in which the incumbent party expects to win a strong majority of votes. Utilizing a tweak on the Vanhanen (2000) measure of electoral competition, I operationalize the concept as 100 minus the share of votes going to the incumbent party or parties in the election. I will also control for the size of the electoral threshold, reasoning that the higher this is, the lower the actual electoral competition.

<sup>5</sup> The North East Atlantic Fisheries Commission (NEAFC) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) are the other two.

(CLRTAP). They set maximum allowable levels for sulphur dioxide and nitrogen oxide emissions by each member state by 2010 (Wettestad 2002). The Helsinki Protocol simply set a uniform 30 percent cut from 1980 levels, while the Oslo and Gothenburg Protocols instituted defined national targets, differentiated by state (Sorrell and Skea 1999). Forty-nine states are parties to the protocol, including most of Europe and North America.

Because air pollution achieves different levels of salience in different states (France, Britain, and Ireland emit pollution, but do not feel its effects because of easterly winds), we should expect different levels of non-compliance based on district magnitude, electoral competition, and public awareness of pollution. In states like Sweden and Germany, giving benefits to polluters may be too costly, meaning the relationship would look more like what McGillivray would predict, while in states like Britain and France, the relationship would look more like the overfishing example. The concluding chapter, Chapter 7, discusses several avenues for possible future research. An appendix documents the field research conducted for this dissertation, which included interviews with policymakers, lobbyists, and fishermen in Belgium, the Netherlands, and Canada, and archival work at the archives of the European Union and Northwest Atlantic Fisheries Organization.

### **Contributions and Implications**

This dissertation's primary contribution is to build bridges between previous work on a key question in political science: when are governments more or less likely to grant favors to special interests? In order to do this, I introduce the concept of marginal costs in terms of special interest provision. Previous work has only looked at cases where marginal costs are high. For the first time, I examine cases where marginal costs are low.



The theory put forth in this dissertation has implications for both international relations and comparative politics, specifically on the literatures on compliance, electoral rules, and special interests. The evidence presented in favor of the theory suggests more attention should be paid to the costs of deviation when designing international agreements. From the perspective of constructing domestic electoral rules, evidence in favor of the theory adds to the body of literature on the pitfalls of proportional representation (Rogowski and Kayser 2002, Milesi-Ferretti, Peretti, and Rostagno 2002, Kerner and Kucik 2010, among others).

## Chapter 2

### Literature Review

Common-pool resources are of major concern to social scientists around the globe. Scholars have learned from previous literature, especially the work of Elinor Ostrom, that common-pool resources are solved by strong institutions, but it is also evident that such problems are more difficult to solve as the common pool gets larger. In this chapter, I plan to examine the literatures on common-pool resources, diffusion, regulation, international regimes, and electoral rules as well as the nature of the empirical domains to be examined in the remainder of the dissertation.

#### Common-pool Resources

The idea of the Tragedy of the Commons goes back to Hardin's seminal article (Hardin 1968). Each person who uses a common pool resource has two components to his or her individual utility function. Using one additional unit of the resource brings one unit of positive utility to the user and creates one unit of negative utility that is shared by all. Because the portion of negative utility accruing to the individual user is a small fraction of one, overall utility to each user is positive. What is individually optimal becomes collectively sub-optimal.

Feeny and his co-authors (Feeny et al. 1990) identify two characteristics to any common-pool resource: excludability and subtractability. Excludability, the ability to control access, is at the very least non-trivial and costly and in many cases impossible (Ostrom 2003). Subtractability, sometimes known as rivalry in the common-pool resource literature, refers to the ability of each user to subtract from the welfare of other users. A common-pool resource, then, is

one “for which exclusion is difficult and joint use involves subtractability.” (ibid.; also see Ostrom and Gardner 1993)

This definition places common-pool resources somewhere between public goods and private goods. Like public goods, it is difficult to keep one person from receiving the benefit that all others are receiving.<sup>6</sup> Like private goods, one person’s use can prevent another person from equal use.<sup>7</sup>

While groups providing public goods seek to become as large as possible in order to share the costs of providing a good, Olson (1965) expected groups governing common-pool resources to keep their size small so as to obtain 100 percent participation, because one free-rider acting in a brazen enough fashion can cause a common-pool resource to collapse (also see Tuck 2008).

Wijkman defines a common-pool resource as one “to which no single decision-making unit holds exclusive title” (Wijkman 1982). Such a resource is not divisible, its size is unknown, and its exploitation requires external economies: the rate at which boat A overfishes affects the exploitation costs for boat B, and vice-versa. Therefore, the sooner a user can take from the common pool, the lower the costs for that user, prompting all users to extract as quickly as they can. And the more users share jurisdiction, the less likely voluntary agreements can work, because each user is a potential free-rider.

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<sup>6</sup> Indeed, Olson (1965), drawing on the Musgrave (1959) definition of public goods, found excludability to be the key attribute of a public good and argued that common-pool resources were simply a subtype of public goods in which individual consumption subtracts from total consumption.

<sup>7</sup> Others would disagree on this point. Utilizing Snidal’s definitions, one can think of huge common-pool resources like large-scale oceanic fishing grounds as free goods; goods where the amount available is so vast anyone can take what they want at no extra cost until scarcity arises (Snidal 1979). Few fishing grounds still operate this way in the present day.

Common-pool resource users are depicted as norm-free profit maximizers interested in immediate gains, while the resource itself creates a Prisoner's Dilemma situation (Ostrom 1999). Later scholarship has challenged aspects of Hardin's account. Ostrom (2007) argues Hardin's model is correct, "but highly limited in applicability." In small- to medium-sized common-pool resources, where users can communicate with each other and learn how to engage in reciprocal behavior, the traditional assumptions about the Tragedy of the Commons lose validity. However, it is important to note that both open-seas fishing and the supply of clean air are very large common-pool resources, "where appropriators are alienated from one another or cannot communicate effectively," (Ostrom 2000) and in such situations, the Hardin theory of common-pool resources applies.

Institutions to manage common-pool resources share eight principles (Yandle 2003): they have clearly-defined boundaries, they are congruent to local conditions, they operate under principles of collective choice, they are monitored actively, sanctions are graduated, low-cost local arenas are available for conflict resolution, resource appropriators have the right to design the institution, and there are multiple layers of nested enterprises within the institution. Current institutions governing high-seas fishing and air pollution do not satisfy even half of these principles.

Many have argued that property rights are the key to solving the Tragedy of the Commons. Medieval society was largely based on common property, but with a large enough population, maximum profit can only come from privately-owned land (Cohen and Weitzman 1975). Owning property concentrates benefits and costs in one person's hands, and creates incentives to use that property more efficiently (Demsetz 1967). But again, straddling stocks and the jet stream make property rights impossible for the domains discussed in this dissertation;

property rights require resources be spent to assert claims (through fences, armed forces, etc.) or to punish violators (Snidal 1979). Neither is the case in existing international organizations.

Property rights consist of five operational-level rights (Yandle 2007): access (the right to enter an area), withdrawal (the right to extract a resource), management (the right to regulate use and make improvements), exclusion (the right to determine who has access and how access rights are transferred, and alienation (the right to sell or lease management / exclusion rights). All five are extremely difficult to control in large-scale common-pool resources.

The simplest way to correct a problem of overuse in common-pool resources is the proportional cutback: all users agree to reduce by the same proportion. However, when users are heterogenous with regards to appropriation levels, benefits, and/or costs, proportional cutbacks lead to distributional conflict (Gardner et al. 2000). The most successful example of the proportional cutback is the Montreal Protocol, which banned chlorofluorocarbons in an effort to preserve the ozone layer.

States that obtain disproportionate benefits from restrictions on the use of a common-pool resource may be willing to bear most of the costs necessary to achieve an agreement on restrictions, as well as a majority of the costs of the subsequent organization's operations. This can be seen to some degree in Canada's leadership and hosting of NAFO.

The lion's share of the common pool resource literature, including the output of Ostrom and the participants in the Workshop in Political Theory and Policy Analysis (see Ostrom et al. 2002, Dolsak and Ostrom 2003, among others), is focused on small-scale resources and organizations devoted to managing those resources. The literature thus far rarely focuses on

large, less-manageable resources like the atmosphere or the global oceans, which are seen as too vast for the perspective taken.

### **Nature of the domains**

As stated in Chapter 1, this dissertation will examine three different common-pool resource regimes: two dealing with international fisheries (common pools), and one governing levels of pollution in the air (a common sink).

Governments have been absorbed with fisheries issues for centuries; the first attempts to control fisheries date back at least to the 1400s, when Dutch “keur-meisters” ensured compliance with laws on when herring could be fished and what types of salt could be used to cure them. James I of England is believed to be the first ruler to create territorial waters and ban foreign boats from them, in the early 17<sup>th</sup> century (Smylie 2004). For centuries, the oceans were based on a principle of “maximum open access;” any state could do anything outside of thin (usually 2-mile) strips of territorial waters (Haas 1983). Arguments over ownership of the ocean began in the 17<sup>th</sup> century between Hugo Grotius’ conception of *mare liberum* (no nation owned the ocean) and John Selden’s *mare clausum* (nations can exercise control over water, and the ocean is no different than a river or a lake). Grotius was writing to buttress Dutch claims on trading in the East Indies, while Selden sought to defend English efforts to prevent foreigners from fishing the English coast. Ultimately, Grotius’ perspective won out, and by the 19<sup>th</sup> century, international law held that the sea and the air were the property of all men (Banner 2008).

The Hague Conference of 1930 was the first to attempt to codify an international law of the sea. It was primarily concerned with the ability to extend or proscribe fishing authority in certain waters; the large fishing states of the time were adamant in maintaining a three-mile limit.

(Miles 1969) Regional fisheries management organizations (RFMOs) began to appear after World War II, some independently, some under the auspices of the United Nations. Many in the 1950s attempted to encourage greater fishing under the mistaken belief that there were enough fish in the sea to feed the world's hungry people. Economists like Schaefer (1954) first began to design mathematical models of man's effect on fishing stocks, finding that the natural rate of change of the stock was decreased by fishing. This introduced the concept of maximum sustainable yield, which scientists argued would allow the stock to remain unchanged.

Still, early RFMOs used unanimity rules, ensuring that any member that had a special interest in a given stock could veto efforts to conserve that stock (Miles 1971). Each RFMO set up its own research arm to ensure that all members agreed with numerical estimates and projections (Scott 1974).

The idea of the Total Allowable Catch, or TAC, dates to 1930 and the International Pacific Halibut Commission, still one of the more successful RFMOs (due in part to having only four members). TACs, however, tend to result in a "race for fish," with governments subsidizing their own fleets in a competitive build-up, leading to excess capacity, a fishing season that may only last days, and then idle manpower and equipment for long closed seasons. (Copes 1986) This free-for-all dynamic is most evident in the International Whaling Commission prior to 1982, which set global quotas rather than national quotas, creating a "whaling Olympic" and hurting the stocks further (Bernauer 1995).

Harvesting irregular or fluctuating resources like fish can lead to a "ratchet effect:" investment takes place in good times. Without any external restraint, the amount of fishing increases until stock depletion causes the profit margin to fall to the point where further

expansion is no longer desired. Then there are appeals to government for direct or indirect subsidies to maintain overcapacity in bad times (Clark 1987, Ludwig et al. 1993).

In the Atlantic alone, there are numerous fishing-related organizations. In addition to the regional organizations, there is also the International Commission for the Conservation of Atlantic Tunas (ICCAT), which controls 30 species across the Atlantic, and the North Atlantic Salmon Conservation Organization (NASCO).

Why has scientific advice on reducing fish quotas not been put into practice at the EU level? Daw and Gray (2005) find that the advice of scientists is not adopted, technical and structural measures are stalled, and CFP regulations are poorly enforced. Their analysis, however, only concerns the reason why quotas are inefficient and still larger than is environmentally sustainable, not why there is substantial variation among the member states when it comes to overfishing; like Franchino and Rahming, they are looking at inefficiency in the setting of policy, not inefficiency in its implementation. Alcock (2002) notes that the basic distributive politics of who gets what are key to understanding fisheries policies in coastal states.

Lindroos (2008) finds that RFMOs are tools for inefficient fishing states to control efficient fishing states. States that have relatively low unit cost of fishing effort are hamstrung by states with higher cost of fishing effort. The more efficient country  $y$ , and the less efficient the other  $z$  countries are, the larger a stable RFMO can be sustained. Issue linkage matters here, as well. The Common Fisheries Policy is tied in to a plethora of other European initiatives. As Munro (1979) argues, side payments can greatly ease the resolution of conflicts when two or more states are sharing a renewable resource.



Trans-national air pollution is a much more recent international concern. The Convention on Long-Range Transboundary Air Pollution (CLRTAP) was first founded in 1979, and has been strengthened several times in the following decades (Wettestad 2002). Three protocols have been signed by European and North American states under the auspices of CLRTAP: the Gothenburg, Oslo, and Helsinki protocols, which regulate sulphur dioxide and nitrogen oxide emissions by each contracting party.

### **Compliance**

How do we account for variation in the level of compliance with international agreements? Underdal (1998) offers three models. In a unitary rational actor model, agreements will work if the costs of compliance are less than the costs from damage caused by the agreement and the costs of sanctioning, and successful agreements have to leave no pivotal player worse off. In a domestic politics model, the less symmetric the impact of a problem, the more conflict is generated in society, leading to pressure from affected groups. Implementation, then, should be most successful when it provides private benefits for organized interest groups and public virtue (witness the EU's combination of fishing quotas with increased subsidies for affected fishermen). In an ideational model, compliance reinforces compliance as shared norms and strengthened epistemic communities foster a process of political momentum in establishing and maintaining international organizations. The issue areas discussed in this dissertation seem to best fit a domestic politics model, as will be seen in Chapter 3.

Two main arguments stand out in the compliance literature. On the one hand, Chayes and Chayes (1993) argue that high levels of compliance provide proof that enforcement is not an issue for international cooperation. On the other, Downs, Rocke, and Barsoom (1996) find that enforcement problems do limit cooperation because states take future non-compliance into

account when fashioning agreements. As Carrubba (2005) has pointed out, even deep agreements with well-developed, effective adjudication can suffer from enforcement problems.

Mitchell (1994), on the other hand, finds that rules coming from a regime can elicit compliance through higher transparency in monitoring and enforcement, and reduced opportunities for violation. Compliance can be thought of, then, as a two-dimensional phenomenon, encompassing both compliance and the treatment of accusations of noncompliance. Non-compliance may arise from outright cheating, ambiguity of a rule, a normatively “wrong” rule that is being challenged, or an impractical rule (Breitmeier et al. 2006)

Moravcsik (1993) finds that domestic interest groups matter. If governments agree on international accords that certain domestic interest groups oppose, and if these groups have patrons in government, then the level of non-compliance will increase. Niche interest groups may not be able to prevent agreements from being made, but they can hinder compliance to some degree.

Federalism may lead to greater difficulties in environmental implementation due to four factors, Underdal (1998) hypothesizes (but again does not test): pollution in one region causing externalities in another, pollution emanating from mobile sources like automobiles, regional and local authorities given the discretion but not the experience or manpower to act, and poorly-developed vertical networks and procedures for communication and interaction.

Mbaye (2001) counts infringements in the European Union, which she defines as instances of member-state failure to fulfill treaty obligations. She finds three reasons for infringements: bureaucratic efficiency (or lack thereof), bargaining strategy, and length of membership in the organization. A similar tactic is used by Perkins and Neumayer (2007), who

find that infringements increase as intra-EU trade dependence decreases and as net fiscal transfers per capita increase. They speculate that Eurosceptic member states may be allowed to infringe treaties to a greater degree than those with a large number of European Union supporters.

Falkner and her co-authors follow infringement procedures in the area of EU labor law and find that failures of transposition occur most frequently when EU directives demand major changes in pre-existing law, when there are administrative shortcomings or as a form of “opposition through the backdoor,” a means of protest at being outvoted in the policy process in Brussels (Falkner et al. 2004).

### **Electoral Rules**

If compliance is affected by domestic politics, then the structure of domestic political institutions will be a key factor. Political institutions, particularly the district magnitude and the electoral system, whittle down the types of constituencies to which politicians must appeal in order to earn an office or remain in that office.

There have been two previous ways of looking at the impact of electoral rules on special interest provision. Rogowski (1987) argued that large electoral districts provide insulation from social pressures, and proportional systems reflect the interests of large blocs of voters. So under Rogowski’s theory, one should see the provision of private goods (those tailored toward special interests) decreasing as the district magnitude increases. However, Rogowski neither looked at electoral competition nor took into account differences between constituencies.

The key point in Rogowski is that proportional representation systems with parliamentary government and large districts are the best way to ensure open markets and trade. Large

electoral districts allow for greater representative autonomy; by representing a larger constituency, the legislator does not have to bring home as many “pork-barrel” projects.

McGillivray (2004), on the other hand, argued that theories of special interest provision have to take into account electoral competition, as well as domestic characteristics of a given constituency such as geographic concentration. She found that geographically concentrated industries can help politicians in small districts, particularly when those districts are marginal (witness the cutlery industry near Sheffield, England or the steel industry near Glasgow, Scotland). In large districts, however, she argued that parties prefer to reward their strongholds, so as to ensure future votes.

As can be seen, previous literature on the relationship between private goods and domestic electoral regimes has been quite muddled, with opposing predictions being offered by the same author in different decades. In the next chapter, I will present a theory that attempts to take a step back from McGillivray, and consider the marginal cost of special interest provision.

Cox (1990) divides electoral systems by how they affect the position-taking incentives of parties and candidates. Some systems produce centripetal incentives (towards centrist policies), and some produce centrifugal incentives (towards extreme policies).

For Cox, the particular structure of electoral formulas, ballot structures, and district magnitude in a given state is the electoral system. The most important parts of Cox’s electoral system for our purposes are the electoral formula (the method by which vote totals are translated into seats in the legislature) and district magnitude (the number of seats voters in each district are

entitled to fill).<sup>8</sup> Increasing the district magnitude can promote both ideological dispersion and minority representation (Cox 1990).

Underdal and Hanf (2000) hypothesize that unified cabinet government (where a single party is in power) do a better job of implementing environmental policy than coalition governments. Unified cabinets raise the threshold of access by actors not already affiliated with the governing party, and collective responsibility can prevent disaffected members of a Cabinet from pursuing their own path. However, they do not test this hypothesis.

### **Diffusion**

It could be that states' reaction to international agreements of any type is dependent on other states' reactions. One state's non-compliance could cause a ripple effect of non-compliance by other contracting states through a process of diffusion. Scholars have argued for processes of diffusion in oil nationalizations (Kobrin 1985), the spread of democracy (Starr 1991) and neoliberalism (Simmons, Dobbin and Garrett 2006), privatization in electricity and telecommunications systems (Levi-Faur 2005), and the proliferation of bilateral investment treaties (Elkins, Guzman, and Simmons 2006, but see Neumayer and Plumper 2010), among other phenomena.

Diffusion, defined as "the process by which an innovation is communicated through certain channels over time among members of a social system," (Rogers 1983) can take place within geographic regions, among states which share a sociocultural heritage, or, most interestingly for the purposes of this dissertation, among the members of an international organization (Starr 1991). Diffusion processes may be due to the promotion of dominant actors,

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<sup>8</sup> Other aspects of the electoral system such as the number of votes cast by each voter, the ability to abstain, etc. exhibit less variance and are less important for the purposes of this dissertation.

due to social emulation, resulting from a desire to compete economically, or caused by a learning process. Elkins and Simmons (2005) argue for a distinction between two types of diffusion: adaptation to altered conditions, wherein the policy decisions of one government alter the conditions under which other governments make decisions, and learning, wherein states observe the success or failure of policies in other states, then make decisions.

Notably absent from current discussions of diffusion processes is the role domestic politics plays in conditioning policy diffusion, as Meseguer and Gilardi (2009) have pointed out. Do state actors learn from the electoral consequences and economic results of policies in other states? How can patterns of diffusion be affected by upcoming elections, expectations of incumbent survival, or the distributive impact of proposed policies? Does the presence of strong epistemic communities, such as occur in and around most international common-pool resource regimes, inhibit the impact of domestic politics?

## **Regulation**

Regulation, as defined by Majone (1996) consists of “rules issued for the purpose of controlling the manner in which private and public enterprises conduct their operations... sustained and focused control exercised by a public agency over activities that are socially valued.”

Early work on regulation focused on market failures, which create an incentive to regulate. Public commodities that provide benefits to society beyond their actual cost should not be left solely to private investors, who would be overly conservative and act only according to their profit motive: “if some distribution of the burden is possible such that everyone concerned is better off than without the new investment, then there is a prima facie case for making the

investment.” (Hotelling 1938) The preceding statement is classified by Majone as an example of the normative view of regulation: the idea that regulation is instituted primarily for the protection or benefit of the public (or some subclass of the public). Stigler (1971) posits the opposite, positive view: that regulation is acquired by industries that are then regulated primarily for the industry’s benefit, through direct subsidies, control over entry by new rivals, and price fixing. Take, for example, the trucking industry in the US. Prior to 1925, trucks primarily only operated within cities due to technological limitations (bad roads, weak trucks). Once trucks became a threat to short-haul railroads, the rail industry used state regulation to limit the dimensions and weight of trucks. Later theories, especially Peltzman (1976; building off Stigler 1971) argued that political actors were utility maximizers seeking to maintain political power, and that in order to maximize utility, regulation providing a mix of consumer and producer protection would result that was typically weighted toward producers.

Industries seeking regulation must be prepared to pay with both votes and resources for parties. As in Olson (1965), there is a collective action problem at work: the benefit of regulation to an industry is smaller than the costs to society at large, though much more concentrated. If we assume political actors are utility maximizers, interested in maintaining political power, then political actors need votes and money. Regulatory agencies become captured by producers because producers can trade money and/or votes for favorable regulatory decisions. A transfer from diffuse consumer interests to concentrated producer interests then takes place.

Becker builds on both Peltzman and Stigler by explaining why monopolistic industries are regulated more heavily than competitive industries. In his model, the political process is drawn towards regulation which enhances efficiency. Anything that reduces deadweight loss (even if it tilts toward producers) will be supported by all parties.

The positive theory of regulation assumes regulatory institutions are passive and controlled by politicians. Later studies, mostly of the United States, bring in regulators as an actor and rely on principal-agent theory and delegation. One of the key findings in the regulation literature is that regulation costs governments comparatively little. If one takes Lowi (1979)'s three functions of government: redistributive policies, distributive policies, regulatory policies – the cheapest by far are regulatory policies. And, I would argue, common-pool resource regulation is extremely cheap.

The issue areas discussed in this dissertation essentially concern regulation of domestic industries. When a state's high-seas fishing fleet takes more than the state's share of the fish in the Atlantic, the state is failing to regulate. When factories produce more sulfur dioxide in a given state than was agreed upon, the state is, again, failing to regulate.

### **International Regimes**

Does it help to conceive of international solutions to common-pool resource regimes as being part of an international regime? Do international regimes matter? There has been evidence for (Haas 1989, arguing that regimes can serve as vehicles for "international learning") and against (see Young 1989 for a description). The standard definition of a regime comes from Krasner (1983, building on Ruggie 1975): Regimes are "principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue-area."

The literature on international regimes is expansive to the point of being voluminous (see Haggard and Simmons 1987 for one overview; the literature has taken on discussions of regime formation (Young 1989, Moravcsik 1989, Young 1991, Lipson 1991, Sprinz and Vaahtoranta 1994), regime strength (Zacher 1987, Nayar 1995), regime change (Cowhey 1990, Nadelmann



1990), and regime design (Mitchell 1994) among other topics), and the concept ultimately took on a fairly nebulous character (see Zacher 1987 for a critique in this vein), encompassing formal agreements, informal agreements, collections of norms, single-issue organizations, multi-issue organizations, two-state regimes, global regimes, and nearly any instance in which more than one country cooperated on an issue.

Why cede authority to an international secretariat for regulation in the international environmental realm? The secretariat facilitates the collection of information and reduces the costs of cooperation. It reduces transaction costs (Coase 1960, Keohane 1984). Regimes can be a hands-tying mechanism, providing a way to control the behavior of other countries. They can also minimize the cost of conducting multiple bilateral negotiations (Aggarwal 1985). All of this assumes that no agency problems arise (see Nielson and Tierney 2003).

In many international organizations, one ends up with the exploitation of the great by the small, resulting in collectively-irrational results and a less-than-optimal amount of the desired public good being provided (Olson 1971), although Zacher (1987) argues that strong regimes only emerge when there is a hegemonic power or a coalition of the most powerful states in a given issue area. International institutions suffer from a second-order collective action problem: each potential member of an international organization realizes the original problem could be solved by an institution, but each prefers that others initiate, construct, and monitor the new institution (Holm 1998) Managing international marine resources, for example, requires three tasks: providing information on fish stocks, regulating fisheries, and enforcing the regulations (Hoel 1998). The problem in the issue area of high-seas fishing has been that implementation of regulations (and enforcement) has been handled at the national level, and not all participants in

international agreements have the same interests in conservation over the same time periods (Miles 1971).

In issue areas such as high-seas fishing and air pollution control, with a number of international organizations with partially-overlapping jurisdictions, we have what Raustiala and Victor (2004) have termed a regime complex. Regime complexes are characterized by legal inconsistencies and the existence of enough distinct negotiating forums that actors can seek out the one most favorable to their interests.

In the environmental realm, Sprinz and Vaahtoranta identify four categories of states based on their vulnerability toward pollution and the economic costs of abating that pollution: pushers (high vulnerability, low cost), intermediates (high vulnerability, high cost), draggers (low vulnerability, high cost), and bystanders (low vulnerability, low cost). Pushers want strong international regulation of environmental problems, while draggers and bystanders are unconcerned. Intermediates support regulation but are unwilling to shoulder the cost.

### **Special Interests**

Weingast, Shepsle, and Johnsen (1981) called distributive spending “a political decision that concentrates benefits in a specific geographic constituency and finances expenditures through generalized taxation.” The reason for this is the same as Hardin’s Tragedy of the Commons: all the benefits accrue to one district, while the costs are spread out amongst all districts. The key difference is that legislators actually have to vote on pork-barrel spending, whereas overuse of a common-pool resource is something that governments can simply allow to happen; government action would only be to stop the resource.

Franzese et al. (2008) find that party unity matters: periods of weaker party unity push legislators toward geographic constituencies (and pork-barrel spending toward those constituencies), while stronger party unity pushes legislators to appeal to partisan constituencies. Jusko (2009) argues for the impact of electoral geography, defined as the joint geographic distribution of citizens of different types and seats, on modifying the incentives electoral rules create. In the domain of distributions to the poor, she finds that district magnitude interacts with the concentration of low-income voters in a district to enhance or diminish the power of those voters. When low-income citizens are concentrated in rural regions and elections are in multi-member districts of varying sizes, policy is more responsive to low-income citizens than when elections are in single-member districts. This finding is particularly germane to the domain of fishing, which is generally practiced by lower-income citizens.

## **Conclusion**

What I have attempted to show in this review is that several strands of literature in both international relations and comparative politics overlap when it comes to the main interest of this dissertation, compliance with international environmental agreements. This will be fleshed out more fully in the next chapter, which examines the theory underpinning the dissertation, and examines common-pool resources that are far too large for the institutions that Ostrom and her co-authors see as solutions to the Tragedy of the Commons. Institutions governing large common-pool resources do not share the same principles as those for small common-pool resources. Such agreements tend to be weak in terms of enforcement and monitoring, widening the scope of opportunities for non-compliance.

In this dissertation, I will more closely examine some of the determinants of non-compliance. One of the goals of the next four chapters is to link the literatures on compliance (until now primarily filed under international relations) and electoral rules (until now primarily considered to be comparative politics). I argue in Chapter 3 that the electoral rule directly affects compliance with an international common-pool resource regime. Following Cox (1990), if increasing district magnitude promotes minority representation, then increasing district magnitude should also promote catering to minority interests. And minority interests such as fishermen benefit from non-compliance with international agreements.

Why would domestic politics affect international agreements? The literature on regulation is pertinent here: benefits to producers are concentrated; costs to consumers are diffuse. In the case of the protection of a non-salient common-pool resource, consumers may not even notice the costs, or the costs may be deferred to some point in the future. Regulation may cost governments very little, but if marginal costs are low, the cost of non-regulation may be even less.

The diffusion literature, while important, will not be directly addressed until Chapter 7. It is possible that patterns of non-compliance develop as states see that other states are not adequately punished for non-compliance with international agreements. However, I believe the ultimate decision to allow non-compliance is most affected by the marginal cost of non-compliance and the electoral rule.

I also do not directly address the international regimes literature further. Regimes do exist both for international fishing and international air pollution control, but the evidence that they have served as a hands-tying mechanism is weak. A re-statement of the key research question in

this dissertation might be: why have the regimes for international common-pool resources largely failed? Given that they have largely failed, why do we still see variation in non-compliance?

In the next chapter, I will outline the main theory and hypotheses of the dissertation, focusing on the role that electoral rules and electoral competition play in influencing decisions to allow non-compliance with international common pool resource agreements.

## Chapter 3

### Theory

As discussed in the previous chapter, the type of common-pool resources governed by the agreements discussed in this dissertation are so large that they are still reasonably classed under Hardin's "Tragedy of the Commons," and the work of Ostrom and her students does not explain the difficulties in maintaining such resources.

Assume that deviations from ideal governance of a common-pool resource benefit some minority of people in a state in the near-term. Deviation from a fisheries management regime results in short-term gains for fishing boat owners and the fish processing industry. Deviation from a clean-air regime results in short-term gains for polluting industries, which do not have to undertake expensive retrofits to their factories. Therefore, we can think of such deviations as private goods, provided to special interests.

Politicians help groups that can help politicians. They wish to either obtain or maintain power, and will reward constituencies that enable them to achieve their goals. Political institutions whittle down the types of constituencies to which politicians must appeal. Increasing the magnitude of an electoral district and/or adopting a proportional-representation system induces appeals to narrower constituencies, as it takes smaller and smaller numbers of votes in order to earn a seat in parliament. Decreasing the magnitude of an electoral district and/or adopting a majoritarian system has the opposite effect, inducing appeals to broader constituencies. The exception in majoritarian systems would be if a single-member district is hotly contested between two parties, so that a small swing in votes from one party to the other would result in the latter party winning the seat. In such a case, an industry concentrated in and

around this marginal district, even if small, could become quite important in the outcome of the election (McGillivray 2004). A marginal district is one in which a swing of less than 10 percent of the vote will change which party receives the seat. In a proportional representation system, such a swing may cause multiple seats to change hands.

The principal expectations of the literature presented in the previous chapter on special interest provision were contradictory and muddled: following Rogowski (1987), the provision of private goods should decrease as the district magnitude increases, because larger districts can insulate parties from pressure by smaller blocs of voters and give representatives greater autonomy. But following McGillivray (2004), provision of private goods should increase as the district magnitude increases, within strongholds of the party providing the goods.

In this chapter, I will present a theory on the impact of domestic politics on international common-pool resource agreement effectiveness. This theory has implications for both international relations and comparative politics. If there is evidence in favor of the theory, this suggests more attention should be paid to the costs of deviation when designing international agreements. From a domestic, electoral engineering perspective, evidence in favor of the theory would add to the body of literature on the perils of proportional representation (Rogowski and Kayser 2002, Milesi-Ferretti, Peretti, and Rostagno 2002, Kerner and Kucik 2010, among others).

A political party can distribute resources for private goods in several ways: it can reward party strongholds or marginal seats (or conceivably, another party's stronghold, but that would seem to be a losing strategy). If the party chooses to reward its strongholds, then the party's share of the vote in those strongholds will most likely increase, unless that share is at a maximum

due to some sort of structural (ethnic, linguistic, or religious) constraint. In a state where the district magnitude is high, rewarding the stronghold can produce positive results: perhaps now the party receives seven out of the nine seats available in the electoral district, rather than six. In states where the district magnitude is low, increasing the share of the vote will have less value; receiving 70 percent of the vote instead of 65 percent of the vote still results in only one seat when the district magnitude is 1.

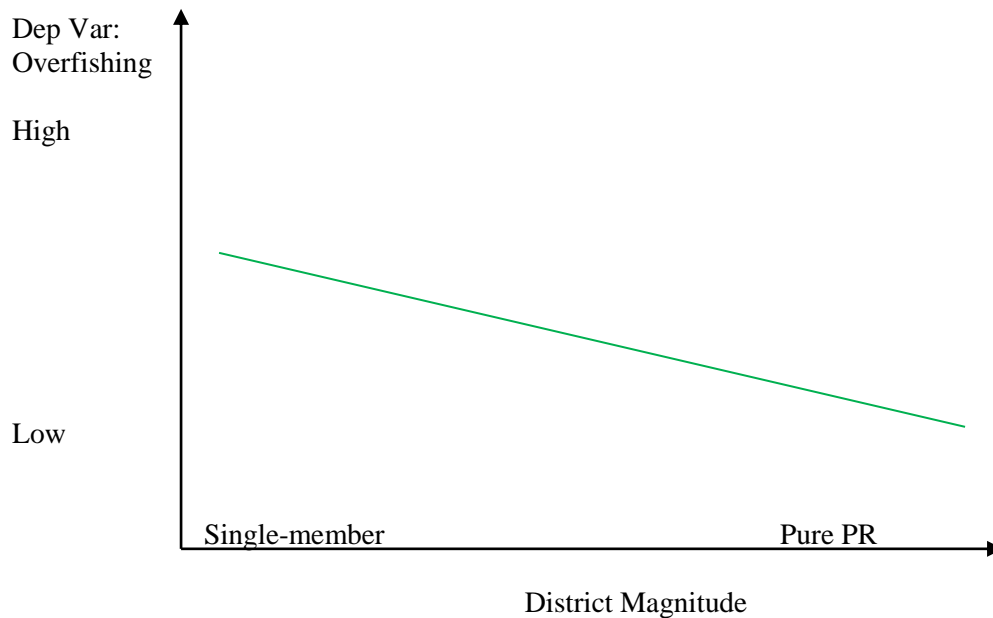
If a party chooses to reward marginal districts, they can also expect to receive a greater share of the vote (again assuming no structural constraints). In a marginal district, the effect of more votes is less dependent on the electoral rules; an increase in one party's share of the vote is likely to produce more seats for that party. This effect may be amplified in high-district-magnitude states, where a shift in the voting patterns can result in multiple extra seats for a party. In this chapter, I will go into greater detail on the mechanisms of the theory, and offer several hypotheses, some specific to the individual issue areas that will be the subject of subsequent chapters.

Why do we see variation in the levels of non-compliance with international environmental regimes? In this chapter, I will argue that an answer lies in the domestic institutions of individual states, as well as domestic characteristics of the industries contributing to the common-pool resource problem. There have been two previous ways of looking at the issue of electoral systems' influence on politicians' ability to reward special interests. Rogowski (1987) argues that large electoral districts provided insulation from social pressures, avoiding "pork-barrel politics", and that proportional systems are more likely to reflect the interests of large blocs of voters (see also Nielson 2003). Under Rogowski's theory, the universe of



overfishing should look like Diagram 1, in which single-member district systems overfish more than large-district, PR systems.

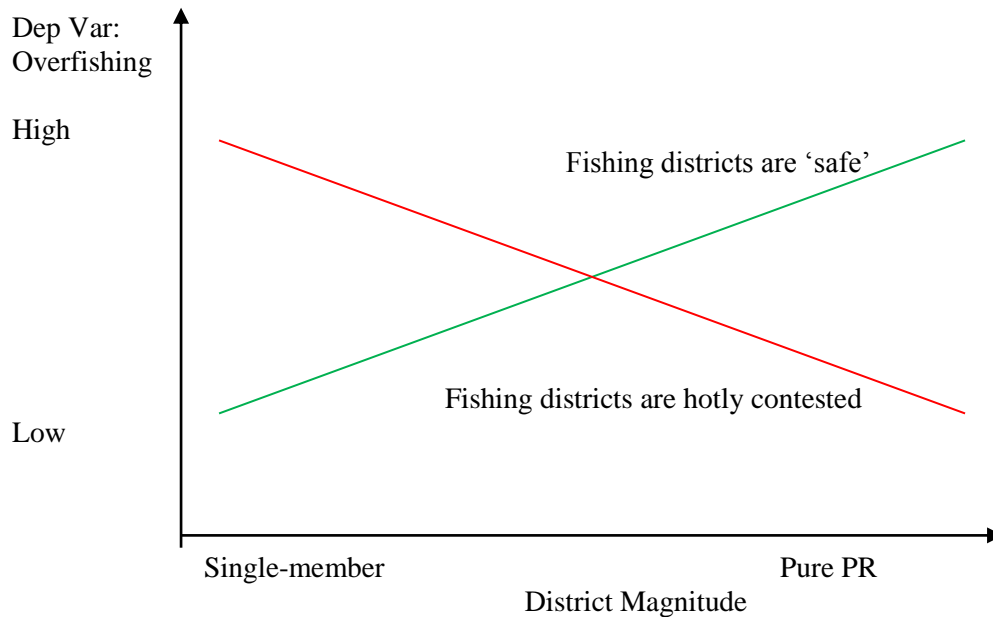
**Figure 1: Rogowski 1987**



However, Rogowski's theory does not take into account electoral competition, and implicitly assumed all districts in a given state are uniform in terms of the degree of importance to parties. It does not matter where the narrow constituencies were, merely that they existed. McGillivray (2004) attempts to build in electoral competition and geographic concentration. Geographically concentrated industries can help politicians in small districts, especially when those districts are marginal. Narrow special interests in safe seats in small districts do not need the same attention, because their support is not necessary to retain the seat. In McGillivray's theory (Diagram 2), the Rogowski prediction is correct for contested districts: one should see more policy geared toward narrow special interests in small-district, majoritarian systems than in large-district, proportional representation (PR) systems. In safe districts, however, the prediction

is opposite that of Rogowski; McGillivray posits that parties in large-district PR systems will support industries in their strongholds, seeking to ensure future votes, while parties in small-district majoritarian systems will not.

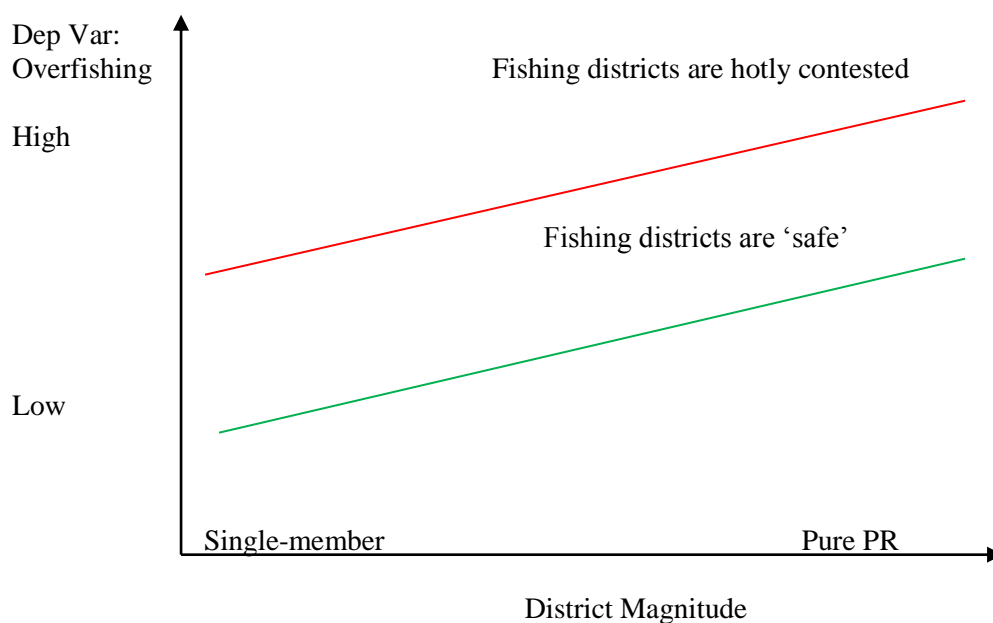
**Figure 2: McGillivray 2004**



McGillivray's theory predicts industrial policy well; in PR systems, parties should reward their strongholds. This has to do with cost – a party cannot realistically promise industrial subsidies or non-tariff barrier trade protection to every industry in the state, because the per-unit costs of such support are higher than the per-unit benefits, statewide. There is a finite level of resources available in those areas to offer the public. For that reason, strongholds would be favored over competitive districts.

However, non-compliance with an international common-pool resource agreement (within reason) is relatively costless; the per-unit cost is less than the per-unit benefit.<sup>9</sup> Such policies can be offered to various groups throughout the state. Party X can make appeals to polluting industries in its stronghold as well as appeals to a more competitive, fishing-intensive area. Moreover, Party X would not then be punished by voters in other districts, because compliance with international agreements is not on the radar of the average voter in the same way that a redistributive policy might be. If one relaxes McGillivray's assumption on marginal cost, one would expect to see a relationship similar to Diagram 3:

**Figure 3: Dissertation theory**



<sup>9</sup> Non-compliance with fishing agreements, for example, requires no financial outlay or legislative act. In Europe, non-compliance is achieved through simple acts like delaying the closing of fishing ports by a few days after a state's quota has been reached, thus allowing a few thousand extra tons of fish to be brought in. Canada's fisheries minister has a wide latitude in fishing policy and rarely needs the affirmation of Parliament.

Fishing is a special interest, and one which is naturally geographically concentrated (restricted by its very nature to coasts). If the fishing industry is located in regions which are not electorally salient, then electoral rule and district magnitude are the key explanatory variables. In a high-district magnitude, PR system like the Netherlands, a party does not have to win the election to get a seat in Parliament; it only has to get a small percentage of the vote. This induces appeals to narrow constituencies such as fishing. But in a low-district magnitude, majoritarian system like Canada, the party has to win the election to get the seat. If one party holds a large lead in the district, the industry will not be supported.

If the fishing industry is located in regions which are electorally salient, the effect of the electoral rule is magnified by electoral competition. In both high-district magnitude and low-district magnitude states, we would expect to see the industry being supported and, as a result, higher levels of non-compliance. One would still expect to see more non-compliance in the high district magnitude state, however.

In a high-competition, pure-proportional-representation state, the nature of the electoral system dictates that most parties competing will get at least some seats in the parliament. But by appealing to narrow constituencies, parties can work at the margins to increase their number of seats, potentially retaining or earning the plurality needed to form the government. In a high-competition, single-member-district state, the outcome of the election in each district is zero-sum. Putting resources into a close election does not erase the risk that the party making the appeal will not get the seat. Therefore, I predict one would see less non-compliance with CPR regimes than in the high-competition, pure-PR state.

*H1: States with higher district magnitudes are likely to be more non-compliant with international common-pool resource regimes than states with low district magnitudes.*

By contrast, in a safe, single-member-district state, there is no incentive to make appeals to narrow constituencies. Indeed, in Westminster systems, the top Cabinet officials are running in the safest seats and may not spend a great deal of time campaigning in their home districts. If the fishing districts are concentrated in safe seats, we would expect to see little if any overfishing. In a safe, pure-proportional-representation state, you may see some appeals to narrow constituencies. Perhaps a few extra seats will allow the largest party to form a more-preferred coalition. So you would expect to see some overfishing, but not as much as in either high-competition scenario.

*H2: States with higher levels of electoral competition are likely to be more non-compliant with international common-pool resource regimes than states with lower levels of electoral competition, when the industry relevant to the resource is concentrated in marginal districts.*

McGillivray's theory posits that competition in PR systems does not matter; I would argue that it does. It is true that in a pure proportional-representation system, with one district covering the whole state, parties do not care what region of the state their votes come from. This is part of the logic behind McGillivray's theory that parties reward strongholds in PR systems. However, imagine a scenario where our aforementioned Party X believes it has obtained a structural maximum of votes in the strongholds, and the election is still competitive. One would expect Party X to campaign harder in marginal areas. In single-member-district systems, marginal districts are often protected no matter the outcome of the national election; witness McGillivray's example of the steel industry in Scotland receiving protection from the

Conservative Party in the 1980s despite sweeping Conservative majorities. In PR systems, however, we would only expect marginal districts to be rewarded when the national election is roughly as competitive.

As an empirical example of the theory, take the case of Norway. Four of the first five Norwegian Labor Party members to be elected to the Storting were from the fishing districts of Troms and Finnmark. These two districts have been key strongholds for the Labor Party since it first took office in 1935. By the 1960s, fishing households made up about 12 percent of the Labor Party vote, much of it from the North (Rokkan 1968).

The theory advanced in this dissertation would predict that in a proportional representation system like Norway's, with high district magnitude, that parties would reward special interests in their strongholds with high-marginal-cost favors. This has been largely the case, as fishermen received benefits that directly benefited their interest, frequently at the expense of other interests. In the 1930s, fishermen lobbied for legislation that would give them exclusive right to sell fish through co-operatives. Two years after the Labour government first took power, the Wetfish Law of 1938 was passed. The law was made permanent in 1951, shortly before the Labour Party's fourth-consecutive electoral victory. Direct subsidies to the fishing industry began in 1964, again shortly before an election.

Predictably, support for Labour in Finnmark and Tromso remained very high from the 1930s until the late 1980s, but between the 1985 and 1989 elections, Labour lost a substantial number of votes. In the 1985 election, Labour polled 59 percent in Finnmark and 47.7 percent in Tromso, gaining 6 seats of the 9 available in the two districts. But in 1989, those vote totals dropped to 36.4 percent and 37.6 percent, respectively, and only five seats. Subsidies, which had

regularly increased, were frozen in 1990 (Hannesson 1996). However, non-compliance with Norway's international fishing agreements, particularly a pact with Russia over Arcto-Norwegian cod in the Barents Sea, continued. The Norwegian fleet was allowed to continue to overfish. The theory would predict this behavior, because non-compliance is less costly than subsidy provision and should therefore be continued even in marginal areas in high-district-magnitude, proportional-representation states.

When electoral competition was low, as was the case between 1964 and 1985, the Labour Party provided Norwegian fishermen with high-marginal-cost benefits in the form of direct subsidies. When electoral competition increased, the benefits to the fishing industry shifted to low-marginal-cost benefits, such as tolerated overfishing, in contravention to international fishing agreements.

The theory will be examined in three different issue-areas, with additional subsidiary hypotheses specific to the domain being examined:

*The Common Fisheries Policy of the European Union.* The Treaty of Rome (1957) forming the European Community put fisheries products under the same heading as agricultural products, and a separate Common Fisheries Policy was put into place in 1970 at the behest of France which included structural aid to modernize the fishing industry and free access for fishing vessels into the territorial waters of other member states. A separate regulation was adopted in 1983 adding the conservation and management of fisheries to the CFP, and instituting total allowable catches (TACs) and quotas (Lequesne 2000).

There are two ways the fishing industry can be helped in any given EU member state: relaxed compliance with quotas and EU subsidies.<sup>10</sup> Both are low-marginal-cost, and each will be considered as the dependent variable in turn. Overfishing involves little marginal cost for reasons discussed above, and should look more like Diagram 3. Supranational subsidy payments involve almost no cost at all to individual states, and, perversely, their provision should be even higher than the amount of overfishing allowed. I predict that the outcomes for safe districts will be roughly the same across the two cases, and vary substantially for electorally-competitive districts.<sup>11</sup>

*H3a. The higher the district magnitude, the more overfishing when fishing districts are electorally-competitive.*

*H3b. The higher the district magnitude, the more supranational subsidies when fishing districts are electorally-competitive.*

*The Northwest Atlantic Fisheries Organization (formerly the International Commission for Northwest Atlantic Fisheries).* NAFO is the first organization to enforce a complete ban on fishing. The cod stock on the Grand Banks southeast of Newfoundland has collapsed, and fishing there is outlawed until it recovers, if it ever does. NAFO is one of only three RFMOs with the

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<sup>10</sup> As part of the agreement on the Common Fisheries Policy in 1983, domestic subsidies to fishing fleets were banned. As a domestic subsidy is high-marginal-cost, I would have expected the provision of such subsidies to best resemble Diagram 2 above, had they been allowed.

<sup>11</sup> I define electoral competition as a continuous measure of the degree of “safeness” of a given seat. Because non-compliance requires action (or inaction) by the executive, I focus on the winning party or parties (if a coalition results) in a given national election. A safe district is one in which the incumbent party expects to win a strong majority of votes. Utilizing a tweak on the Vanhanen (2000) measure of electoral competition, I operationalize the concept as 100 minus the share of votes going to the incumbent party or parties in the election. I will also control for the size of the electoral threshold, reasoning that the higher this is, the lower the actual electoral competition.



legal competence to regulate high-seas fishing.<sup>12</sup> The organization bans fishing for cod or plaice following the commercial extinction of those stocks, and has instituted sharply lower quotas on Greenland halibut (Koslow 2007).

The EU's CFP regulates fishing in territorial waters; NAFO regulates high-seas fishing. Non-compliance with a high seas fishing agreement should be less costly than non-compliance with a territorial waters fishing agreement because there is less chance of being blamed and/or punished by voters. The issue is simply not a salient one. Therefore, I predict a relationship similar to Diagram 3.

*The Gothenburg, Oslo, and Helsinki Protocols*, signed in 1999, 1994, and 1985, respectively, under the auspices of the Convention on Long-Range Transboundary Air Pollution (CLRTAP). They set maximum allowable levels for sulphur dioxide and nitrogen oxide emissions by each member state by 2010 (Wettestad 2002). The Helsinki Protocol simply set a uniform 30 percent cut from 1980 levels, while the Oslo and Gothenburg Protocols instituted defined national targets, differentiated by state (Sorrell and Skea 1999). Forty-nine states are parties to the protocol, including most of Europe and North America.

Because air pollution achieves different levels of salience in different states (France, Britain, and Ireland emit pollution, but do not feel its effects because of easterly winds), we should expect different levels of non-compliance based on district magnitude, electoral competition, and public awareness of pollution. In states like Sweden and Germany, giving benefits to polluters may be too costly, meaning the relationship would look more like what

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<sup>12</sup> The North East Atlantic Fisheries Commission (NEAFC) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) are the other two.

McGillivray would predict, while in states like Britain and France, the relationship would look more like the overfishing example.<sup>13</sup>

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<sup>13</sup> Data on district magnitude and electoral threshold have been obtained from the Database of Political Institutions (Beck, Clarke et al. 2001). Data on fishing levels, quotas, and subsidies in the European Union comes from the European Commission's DG-Fish and EU Transparency, an NGO. Data on fishing levels in NAFO and its predecessor, the ICNWAF, was obtained from the organization's archives, held at Dalhousie University in Halifax, Nova Scotia. Data on emissions comes from the United Nations Economic Commission on Europe, through the Centre on Emission Inventories and Projections (CEIP; <http://www.ceip.at>), and covers 1980 to 2007.

## Chapter 4

### The European Union's Common Fisheries Policy

*"It is a fact that there has been cheating going on in this country and in all member states," – British Shadow Fishing Minister Elliott Morley (Labour) to the Aberdeen (UK) Press and Journal, Dec. 21, 1991.*

When other states began enforcing 200-mile exclusive economic zones (EEZs) off their coasts in the late 1970s, the members of the European Community chose to create a shared EEZ. All waters between 3 miles and 200 miles are Community waters, not national waters.<sup>14</sup> In the realm of fisheries, the EU has sought to control access to Community waters through a system of quotas under the Common Fisheries Policy (CFP). Under this policy, which has been in place since 1983, each EU member state is given a quota for the number of fish its fleets may catch in a given area. These quotas were initially determined based on historical fishing patterns, with some additional quotas allocated to economically-depressed fishing ports. Since that time, adjustments to the quotas are made through intergovernmental bargaining (Lequesne 2000).

However, there is consistent evidence that most of the EU member states regularly break their quotas; they overfish, but at varying levels. Member states which are otherwise similar culturally, economically, and geographically (Sweden, Denmark, and Finland; Spain and Portugal; the UK and Ireland) overfish at varying levels, and commit infringements of the CFP at varying amounts (see Table 1 for an example from 2002). Given that the level of the quotas themselves are biologically unsustainable (Daw and Gray 2005), further overfishing only hastens the day when Europe's waters become a fish-free zone. What explains this variation in the level of overfishing among EU member states?

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<sup>14</sup> Note that this does not apply to any mineral resources underneath the seabed.

Member State	# of CFP infringements, 2002	% over CFP quotas, 2002
Belgium	49	22.77
Denmark	442	3.05
Finland	2	0
France	288	0.75
Germany	118	0.05
Greece	1021	*
Ireland	26	1.86
Italy	1074	*
Netherlands	122	0.49
Portugal	1579	0.25
Spain	1785	3.5
Sweden	125	1.02
United Kingdom	125	0

Table 1: Infringements of the Common Fisheries Policy and percentage caught over CFP quotas, 2002.

*\*Italy and Greece do not fish in waters covered by CFP quotas, but are covered by CFP regulations on mesh size, the sale of underaged fish, etc.*

I argue in this chapter that an answer to variation in the level of overfishing lies within the domestic institutions of the EU member-states, in particular the incentives to assist domestic special interests that are created by various electoral rules. If we assume parties that seek to maximize their votes in regular elections, then party leaders and other politicians will have short time horizons (Olson 1993), passing up the long-term good (such as protecting fish stocks for future generations) in favor of policies that will provide immediate vote maximization. Non-compliance with an international common pool resource agreement offers short-term gains for certain producers, which leads to gains for political parties, at the long-term cost of dereliction of the resource. However, the amount of seats that can be gained in a legislature from appeasing common-pool resource exploiters varies depending on the electoral rule and the level of competition in the affected districts, therefore changing the incentives for politicians to provide such a private good.

The chapter proceeds as follows: I provide some background on the Common Fisheries Policy, highlighting the structure of penalties and the ability of both individual fishermen and

member states to evade the rules. I then present and test several of the hypotheses identified in Chapter 3, using an original dataset of non-compliant activity collected from European Commission reports in the European Union archives, as well as data on supranational subsidies from the European Union to fishing interests.

### **History of the CFP**

The Treaty of Rome (1957) forming the European Community put fisheries products under the same heading as agricultural products, though there was little impetus for a common fisheries policy, because the original six members (France, West Germany, Belgium, Netherlands, Luxembourg, and Italy) took about 90 percent of their fish outside their own territorial waters (Farnell and Elles 1984). A separate Common Fisheries Policy was first put into place in 1970 and included structural aid to modernize the fishing industry as well as free access for fishing vessels into the territorial waters of other member states.<sup>15</sup> The extension of 200-mile exclusive economic zones for all coastal states in 1977 put the European Commission in charge of a large swath of the North Sea and Northeast Atlantic, but it took until 1983 for a separate regulation to be adopted by the European Council adding the conservation and management of fisheries to the CFP. That plank has received the greatest focus in the succeeding two decades. In 1983, total allowable catches (TACs) and quotas became part of the CFP. The European Council first instituted specific limits on catches and licenses in December 1992. (Lequesne 2000) Responding to the continued erosion of fish stocks in EU waters, reforms were initiated in 2002 to increase stakeholder involvement and transparency (Gray and Hatchard 2003), and

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<sup>15</sup> This provision is one of the main reasons Norway voted against accession to the EC in 1972; while support for EC membership was above 60 percent in the metropolitan areas, the fishing-intensive areas in the far north opposed membership by more than 70 percent (Leigh 1983).

further reforms began in earnest in 2010, as stocks have continued to diminish<sup>16</sup>. The Directorate-General for Fisheries (formerly DG XIV, now DG-FISH) is in charge of the CFP.

Today, the fisheries sector remains one of the smaller components of the European economy. Just over 270,000 people were employed in the EU-15 in the fishing and fisheries industries in 1995, and the number has dropped since then;<sup>17</sup> moreover, the value of fish catches is less than 1 percent of gross domestic product in all member states. But fishing remains important for historical and cultural reasons; fish makes up a large part of the diet for protein in many European nations, and the traditional image of the fisherman powerfully hearkens back to previous maritime exploits in a nation's past for many.<sup>18</sup> In addition, job losses from fisheries fall disproportionately on certain already-depressed areas, and according to the fishing industry, four to five jobs on land (in processing, distribution, marketing, shipbuilding, and harbor work) are dependent on each fishing job (Leigh 1983).

Empirical work on the EU Council of Ministers has shown that fisheries are one of the more contested areas in council negotiations, second only to agriculture in 1993-1994 and third to agriculture and internal market issues from 1998 to 2004. (Hayes-Renshaw et al. 2006) The Council of Fisheries Ministers has direct control over fishing regulation in the EU and can issue regulations (instead of directives, which must be implemented by member state governments). Prior to the Treaty of Lisbon's ratification in 2009, the European Parliament only had the right to be consulted on fisheries issues, and was largely shut out of the policy process. For much of the

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<sup>16</sup> As of May 2012, the latest set of reforms were still being negotiated, but were focused on curbing illegal discards of fish at sea and not re-evaluating the TAC / quota system.

<sup>17</sup> The expansion of the EU to 27 members increased the European fleet greatly, particularly through the addition of the fishing fleets of Poland, Estonia, Latvia, and Lithuania.

<sup>18</sup> Witness the large Fishing Heritage Research Center, a museum to distant-water fishing in Grimsby, UK, and one among several fishing-related museums and cultural centers in the EU.

CFP's history, actual fisheries policy has been set by the individual member states, acting in the Council and only sometimes taking the Commission's recommendations into account.

The European Commission has the ability to take offending states to the European Court of Justice and impose penalties for overfishing, which happens on a regular basis. (Lequesne 2000) Penalties for overfishing at the national level are handed down by the European Court of Justice, upon the recommendation of the Commission and after a multi-step process culminating in a hearing. The process by which states are brought before the ECJ for CFP violations is fairly political, arbitrary and not uniform across states (source: interview, June 2010). Some member states are treated differently than others by the Commission when it comes to bringing infringements before the Court; other member states act more quickly to avoid appearing before the Court. (Borzel 2001). Only one state (France) has ever been fined a large amount by the Court (the fine was paid by the state; the costs do not trickle down to individual fishermen); the normal recourse is an order that a given member state improve its compliance procedures.<sup>19</sup> Moreover, the legal process can take decades: France was first brought before the ECJ in 1991 for failure to carry out compliance controls in regard to fishing conservation measures between 1984 and 1987.<sup>20</sup> The ECJ found against France, and ordered it to take action to improve its compliance measures. Commission inspectors over the next 11 years found no evidence that France had improved compliance measures, and again referred the case to the ECJ. In Case C-304/02 (12 July 2005), the Court ruled that France was still non-compliant, and fined France

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<sup>19</sup> See, for example, Case C-52/91 (July 8, 1993), in which the Netherlands was found to have failed to close ports to fishing after stocks were exhausted in 1986. There was no financial penalty, and each side was ordered to pay its own court costs.

<sup>20</sup> The case provides a window into the ways in which states can allow non-compliance with the CFP. In the case, France was found to have inadequate controls in relation to minimum mesh sizes, inadequate controls in relation to prohibited nets; a failure to fulfill obligations in regard to bycatch (the catching of species other than the targeted species, as when a cod fishermen takes in haddock or whiting), a failure to fulfill obligations to prohibit the sale of undersized fish, and a failure to take action in respect of infringements.

115.5 million euros. By the time the final judgment was pronounced, France's fishing fleet had been able to contravene the rules of the CFP for 21 years.

Individual fishermen or fishing companies can not be punished by the European Union's infrastructure; however, they can be charged in national courts with violations of the CFP and fined. Different member states take different approaches to imposing penalties on fishermen. In Portugal, infringement of fisheries laws is an administrative offense, not a criminal one, while in other states, violations of fisheries law go through criminal courts. The maximum fine imposed is not uniform across member states, either, despite repeated attempts by the European Commission to encourage the member states to adopt uniform fines (see, for example, Report on Enforcement 1986, Fisheries Monitoring 1998 and Behavior which infringed the CFP 2000). The Commission found in 2006 that the total amount paid by the European fishing industry in penalties was roughly 0.2 percent of the landing value of the fish caught. "Such an amount entails the risk that the fishing industry may consider penalties imposed for infringements to the CFP rules just as an ordinary running cost for the enterprise and see no real incentive to be compliant," the Commission document states (COM(2006) 387, July 14, 2006, quoted in Court of Auditors report 2007).

Frequently, however, fishermen caught in non-compliance with CFP rules and regulations never appear in a court. A 2007 report by the European Court of Auditors found that, in the UK in 2005, 202 infringements were identified by national authorities: 167 resulted in oral warnings, 14 in written warnings, and the remaining 21 were passed to judicial authorities.

It is clear from the above evidence that while EU member states are willing to sign on to stringent quotas on fishing, they are unwilling to agree to uniform penalties or compliance



mechanisms that would truly restrict infringements. In addition, there is significant variation in the methods and tactics used by member states to ensure the compliance of their own fishermen. I will argue in this chapter that that variation is at least partially the result of the structure of incentives for governments vis-à-vis the fishing industry, and that that structure of incentives is affected by the electoral rule and electoral competition.

The current quota system covers some 120 fish stocks in the North Sea, Baltic Sea, and Atlantic Ocean.<sup>21</sup> Each year's total allowable catch is set in December; as a whole, TACs increased about 30 percent from 1985 to 2003 (Franchino and Rahming 2003).<sup>22</sup> The quota system is implemented at the national level in different ways: the UK leaves TAC management to producer organizations, France allocates quotas to producer organizations by geographical criteria and those organizations then manage the TAC, while the Netherlands uses a system of individual transferable quotas (similar to the "cap and trade" system proposed for global greenhouse gas emissions), making total allowable catch a property right. None of these implementation techniques, however, have affected overfishing noticeably; all three countries overfish, in varying amounts.

Overfishing is probably worse than the EU officially records; illegal landings and "black fish" have been known to occur, though there is no evidence that the number of "black fish" landed differs appreciably by member state. EU inspectors must be accompanied by national authorities to inspect boats, and cannot undertake independent inspections; in addition, national inspectorates are sometimes accused of impeding Commission inspectors (see, for example,

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<sup>21</sup> A TAC for bluefin tuna has been established in the Mediterranean Sea, but the Mediterranean is not zoned in the same way as the EU's other territorial waters, given the large number of non-member states who also fish there.

<sup>22</sup> In addition to the TAC and quota systems, the EU also attempts to restrict fishing by limiting time fleets can spend at sea, controlling the holding capacity of fleets, setting minimum allowable sizes for species, and regulating fishing gear (Daw and Gray 2005)

Report on Enforcement 1986), and have not formed a transnational network. The Commission recognizes this as a problem, and as early as 1985 was proposing to allow Community inspectors to make non-notified visits (Report on Enforcement 1985). Such proposals have been consistently struck down by the Council.

Since the early 1980s, the Council has worked to strengthen conservation rules and expand data collection. A 1992 amendment gave the Commission the power to close fishery resources, and established a transnational system to monitor conservation. Various attempts have been made by the Commission since 1983 to document in official publications the extent of non-compliance among member states; the most publicized attempt occurred from 2001 to 2004, when DG XIV published “compliance scorecards” detailing the amount of overfishing occurring, and member states’ compliance with EU regulations concerning fisheries. Those scorecards were discontinued beginning with 2005, and are not expected to resume (source: e-mail, November 2007 and interview, June 2010).

At the European level, then, there is a second common pool resource problem: each member is concerned with itself, and does not consider the implications of overfishing on fish stocks as a whole in the region. As a British House of Commons report in 1999 put it, “Fisheries ministers fight for their fishermen’s share of the fish rather than ensuring that fish will be there for the fishermen of the future” (quoted in Valatin 2002). There are two ways to deal with this in an efficient manner (Hallerberg 2004): delegation (vesting a certain minister with decisionmaking power) and commitment (contracts, with formal rules and targets). The Common Fisheries Policy is an example of commitment, which is to be expected if one thinks of the EU as a government with a coalition containing many ideological differences (the European Council). No moves have been made in successive rounds of reforms toward delegation.

Fishing is a special interest, and one which is naturally geographically concentrated (restricted by its very nature to coasts). Daw and Gray (2005) note that fisheries ministers face pressure from domestic fishing lobbies, and that unemployment and economic loss caused by the CFP are regularly reported by the national press. With advances in technology and boat size, it takes fewer crew to work fishing boats, and there are fewer commercial fish in European waters today than in the past, especially large, high-value fish like cod. The fishing industry in Europe faces technological pressure, economic pressure, and pressure from the EU's restrictions. Finland's fishing fleet has been more than halved just since 2000 (source: interview, May 2010). There is no focused lobbying campaign by consumers to maintain fishing restrictions.<sup>23</sup> Because of domestic pressure from producers and a lack of domestic pressure from consumers, politicians have a strong incentive to allow some overfishing, especially when a close election is looming.<sup>24</sup>

For example, facing a small majority and difficult elections in 1997, the British Conservative government promised to "stand up for British fishermen." But the EU Fisheries Council did not meet until the Labour Party had won a sweeping majority, and Britain supported a policy that was less supportive of British fishing interests. Daw and Gray note they could afford to do so because of the size of their majority, as defection of the fishing lobby to another party would not have been critical in the subsequent election.

The fishing industry is quite concentrated in Europe: western Galicia and the Basque Country in Spain, southern Brittany in France, and the Shetland Islands in the UK are

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<sup>23</sup> Or even some political parties; the Green Party of Ireland, for instance, mentions nothing about the protection of fish habitats or restrictions on fishing in its platform.

<sup>24</sup> It should be noted that overfishing is rational on the part of individual fishermen. Economic discount rate theory would argue that the economically efficient strategy regarding a diminishing common pool resource is to take as much of the resource as possible, then invest the profits (the discount rate is even higher when one considers mortgaged boats and equipment). (Daw and Gray 2005) Moreover, the penalty for overfishing is not stringent enough to discourage individual overfishing.

particularly dependent on fishing and fisheries. Scotland, with 8.6 percent of the British population, brings in more than 60 percent of the total British fish catch each year. (Royal Society 2004). Total employment dependent on the fishing industry in Scotland (taking into account indirect effects) is about 48,000, roughly half the employment of the North Sea oil industry in Scotland.

This level of regional concentration has resulted in political action, as might be expected: the Committee for Survival in Brittany committed some violent acts against public buildings, while Save Britain's Fish in the UK has demonstrated regularly since 1990 (Lequesne 2000). However, fishing interests are not the same across the EU: in Spain and France, different organizations represent coastal fishermen and deep-sea fishermen. The Scottish Fishermen's Foundation has traditionally supported the CFP, seeing it as protection in the North Sea from Norwegian fishermen, while the National Federation of Fishermen's Organisations, which represents fishermen in England, Wales, and Northern Ireland, has tended to oppose many aspects of the CFP. There is an EU-wide lobbying group known as Europeche, but not all national fishermen's organizations are members; several are unwilling or unable to pay the membership dues (source: interview, June 2010). Within each EU member state, then, the fishing industry is fairly concentrated, though when taking the EU as a whole, the industry is fairly dispersed. This concentration is relevant, because it means in certain types of electoral systems and during closely-contested elections, the fishing industry may matter to politicians.

How do fishing interests in Europe tend to act politically? The answer varies by member state, and it does not appear that European fishermen hold a consistent ideology across boundaries. In the Netherlands, fishermen are long-time traditional supporters of the Christian Democratic Appeal (CDA) and the smaller Reformed Political Party (SGP), both right-leaning,

religious parties (source: interviews, June 2010). Fishing interests in the Basque Country of Spain tend to vote for the PNV, the Basque nationalist party, while fishing interests in Galicia tend to vote for the People's Party, both right-leaning parties. In Scotland, the three constituencies that are most fishing dependent (Caithness, Sutherland & Easter Ross, Orkney & Shetland, and Na h-Eileanan an Iar) currently elect two Liberal Democrat MPs and a Scottish National Party MP, while English fishing interests tend to be strong Labour supporters. All three are considered center-left to left parties.<sup>25</sup> Therefore, when examining attempts to woo the fishing vote, one cannot simply look at the left-right dimension; different parties in different states at different times will attempt to gain the support of the fishing industry.

### **Theory**

Recall from Chapter 3 that this dissertation's main contribution to an understanding of the provision of private goods to special interests is the notion of marginal costs to politicians. Politicians want to reward groups that can, in turn, help politicians. Political institutions whittle down the types of constituencies to which politicians must appeal; increasing the magnitude of an electoral district and/or adopting a proportional-representation system induces appeals to narrower constituencies, as it takes smaller and smaller numbers of votes in order to earn a seat in parliament. Decreasing the magnitude of an electoral district and/or adopting a majoritarian system has the opposite effect, inducing appeals to broader constituencies. The exception in majoritarian systems would be if a single-member district is hotly contested between two parties, so that a small swing in votes from one party to the other would result in the latter party winning the seat. In such a case, an industry concentrated in and around the marginal districts, even if small, could become quite important in the outcome of the election (McGillivray 2004).

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<sup>25</sup> While not in the EU, Norwegian fishermen are considered to be strong supporters of leftist parties as well.

A political party can distribute resources for private goods in several ways: it can reward party strongholds or marginal seats. If the party chooses to reward its strongholds, the party's share of the vote in those strongholds may or may not increase, depending on structural constraints. If a party chooses to reward marginal districts, they can also expect to receive a greater share of the vote (again assuming no structural constraints). In a marginal district, the effect of more votes is less dependent on the electoral rules; an increase in one party's share of the vote is likely to produce more seats for that party. This effect may be amplified in close elections in high-district-magnitude states, where a shift in the voting patterns can result in multiple extra seats for a party.

Non-compliance with an international common-pool resource agreement (within reason) is relatively costless; the per-unit cost is less than the per-unit benefit.<sup>26</sup> Politicians can afford to let multiple groups fail to comply with international common-pool resource agreements, because non-compliance costs governments very little.<sup>27</sup> And compliance with international agreements is not on the radar of the average voter in the same way that a redistributive policy might be.

The theory predicts that the higher the district magnitude, the more likely it is that a government will reward the fishing industry by tolerating some level of non-compliance. If the fishing industry is located in regions which are electorally salient, the effect of the electoral rule is magnified by electoral competition. In both high-district magnitude and low-district magnitude states, we would expect to see the industry being supported and, as a result, higher levels of non-compliance.

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<sup>26</sup> Non-compliance with fishing agreements, for example, requires no financial outlay or legislative act. In Europe, non-compliance is achieved through simple acts like delaying the closing of fishing ports by a few days after a state's quota has been reached, thus allowing a few thousand extra tons of fish to be brought in, or allowing undersized fish to be sold at market.

<sup>27</sup> Recall that France is the only EU member state to have ever paid a fine for non-compliance with the CFP.

## Research Design

The different aspects of the Common Fisheries Policy should provide some leverage on the marginal cost assumption discussed in Chapter 3. There are two ways the fishing industry can be helped in any given EU member state:

1. relaxed compliance with quotas and other aspects of the CFP, or
2. direct EU subsidies.

Each will be considered as the dependent variable in turn. Tolerating overfishing incurs few costs to member-state governments, while supranational subsidy payments involve no direct cost, with the true cost to taxpayers more hidden from voters' view than a domestic subsidy would be. I predict that the outcomes for safe districts will be roughly the same in either issue area, and vary substantially for electorally-competitive districts.

*H3a. The higher the district magnitude, the more overfishing.*

*H3b. The higher the district magnitude, the more supranational subsidies.*

*H4a. The higher the level of electoral competition, the more overfishing.*

*H4b. The higher the level of electoral competition, the more supranational subsidies.*

District magnitude and electoral competition should each have a unique effect on the level of compliance with the Common Fisheries Policy. The total effect will be additive, not interactive. I test the hypotheses on a newly-created dataset utilizing reports from the European Commission's archives in Brussels and case filings of the European Court of Justice. The unit of analysis is the country-year, with data ranging from 1983 to 2005, depending on the measure used.

## How do we know a country is overfishing?

Overfishing can be difficult to prove, given the diffuse nature of the industry and the resource. I define overfishing as occurring when a state's fishing fleet takes more fish out of a given zone than it was allocated under the CFP. There are several ways to measure this: counting infringements, marking percentage over a quota reference point, or examining whether or not a member state is turning in accurate reports.

Under the CFP, each state is allocated a quota within the total allowable catch, or TAC. The distribution of quotas has been the same since 1983, and is based on historical fishing patterns. The states with the largest quotas have the largest historical rights. However, many states with large quotas still overfish to a significant degree.

The most accurate way to measure overfishing is to take the simple ratio of catch to allocation for each member-state in any given year. Unfortunately, this measure is only available for certain years in the EU. Since the introduction of the CFP, DG-XIV's methods of measuring compliance with the policy have not remained consistent. In fact, new methods have tended to be introduced roughly twice a decade, as other methods are discarded. Included in the dataset are several different measures of compliance with the CFP. Among them are:

- *Overrun*, a count variable of the number of quotas overrun by a given member state in a given year. For example, Denmark overran 6 separate quotas in 2001, but only 1 in 2002. This data comes from European Commission reports and covers 2001 to 2004.
- *% overfished*, a continuous variable measuring what percentage over the total quota a given state was in a given year. This data comes from European Commission reports and



covers 1983, 1988-89 and 2001-2004 for all member states, with additional data from Finland in 1995 (self-reported to the European Commission).

- *Infringements per boat*, a continuous variable measuring the number of infringements of the Common Fisheries Policy for each member state in each year, divided by the total number of fishing boats in a state's fleet. This data comes from European Commission reports and covers 2001-2003 and 2005, with additional data from 1995 in Belgium (self-reported to the European Commission).
- *Report compliance*, a binary variable, asking if a given member state turned in correct and complete data on the activities of its national fleet to the Commission. This data covers from European Commission archives and covers the years 1997-2001. If a member state turned in largely incomplete data on national fleet activities, or failed to turn in data at all, the variable is coded as 0. If the Commission reports that the member state turned in complete and correct data, the variable is coded as 1. The implication is that a member state failing to turn in correct or complete information in its annual report is more likely to have a non-compliant fishing fleet, given that there are no issues of bureaucratic capacity in the EU's developed democracies.
- *National infringements*, a continuous variable of the percentage of infringements detected in a member state's waters that were committed by that member state's nationals. The implication is that the higher this number is, the better job a member state is doing of enforcing the Common Fisheries Policy within its own waters. The data comes from European Commission reports and covers the years 2000-2004.

There is no data after 2005; multiple sources indicated that quantitative indicators of overfishing were no longer being collected as of 2010. See Table 2 for a visual representation of data coverage for overfishing variables.

The overfishing variables are correlated with each other, as would be expected. The number of overruns, number of infringements, and percentage over the quota are all strongly correlated with each other. The likelihood of reporting compliance is less strongly correlated with the other variables.

Measure	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Overrun																			X	X	X	X	X	
% Overfished	X					X	X						X							X	X	X	X	
Infringements per boat													X							X	X	X		X
Report compliance															X	X				X				
National infringements																			X	X	X	X	X	

Table 2: Data coverage for overfishing variables

Why has the European Commission attempted to measure non-compliance in so many different ways? New measurements may have been introduced by new people, as Commission staff are seconded to various Directorates-General on a regular basis, some from national governments and some from other DGs. It is somewhat rare for a Commission staffer to spend their entire career in one DG. Measurement problems may be an unfortunate byproduct of this. Current DG-FISH employees interviewed in 2010 were unable to provide answers as to why the indicators have changed so many times.

Several of the above indicators are continuous variables. In other studies of compliance with European Union policies (Bernauer 1995, Mbaye 2001, Perkins and Neumayer 2007), ordinal-level scales or count data of infringements brought before the European Court of Justice have been used. I choose an alternative of a continuous variable because it allows for a more nuanced examination of the hypothesized effect. This project is able to distinguish between a small amount of non-compliance and a large amount, whereas the aforementioned studies would count both as one instance of non-compliance.

As an alternative, one could count the number of penalties for overfishing handed down by the European Court of Justice. However, this would introduce selection bias, as not all cases of overfishing are brought before the Court. The same problem would occur if we were to count the number of criminal cases brought in national courts for non-compliance with CFP regulations.

See figures 1-4 for histograms depicting the distribution of the five dependent variables. As can be seen, non-compliance is not pervasive; the modal outcome in all five data sources is compliance. However, non-compliance does occur and varies in its severity.

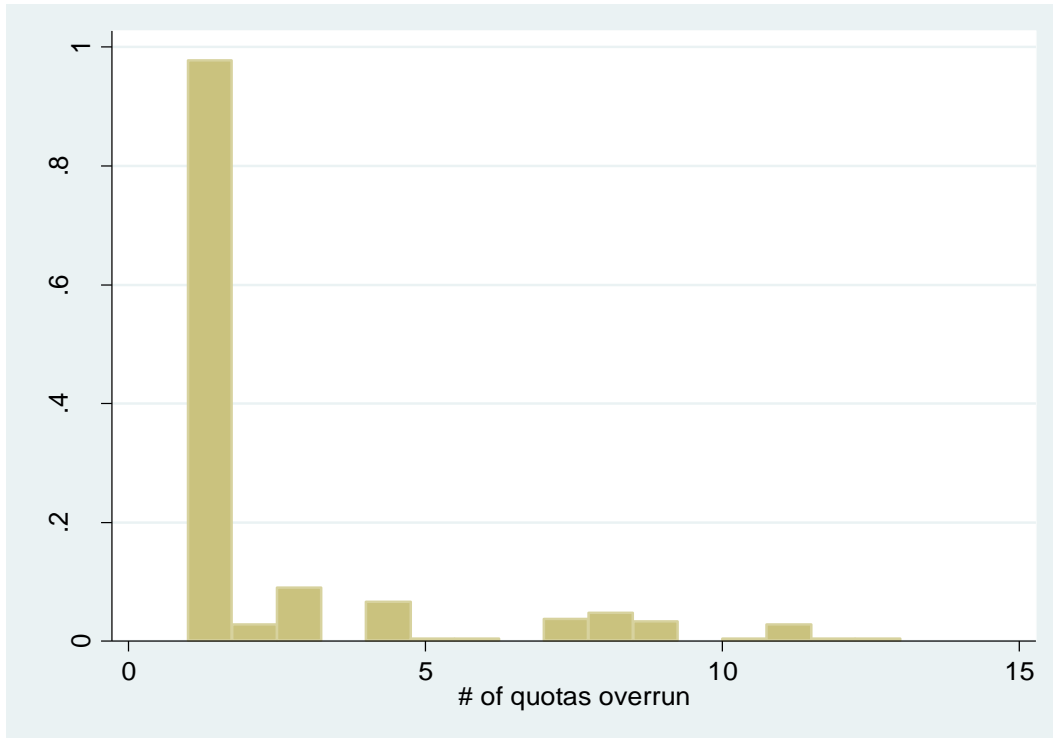


Figure 1. Histogram of the quota overrun variable

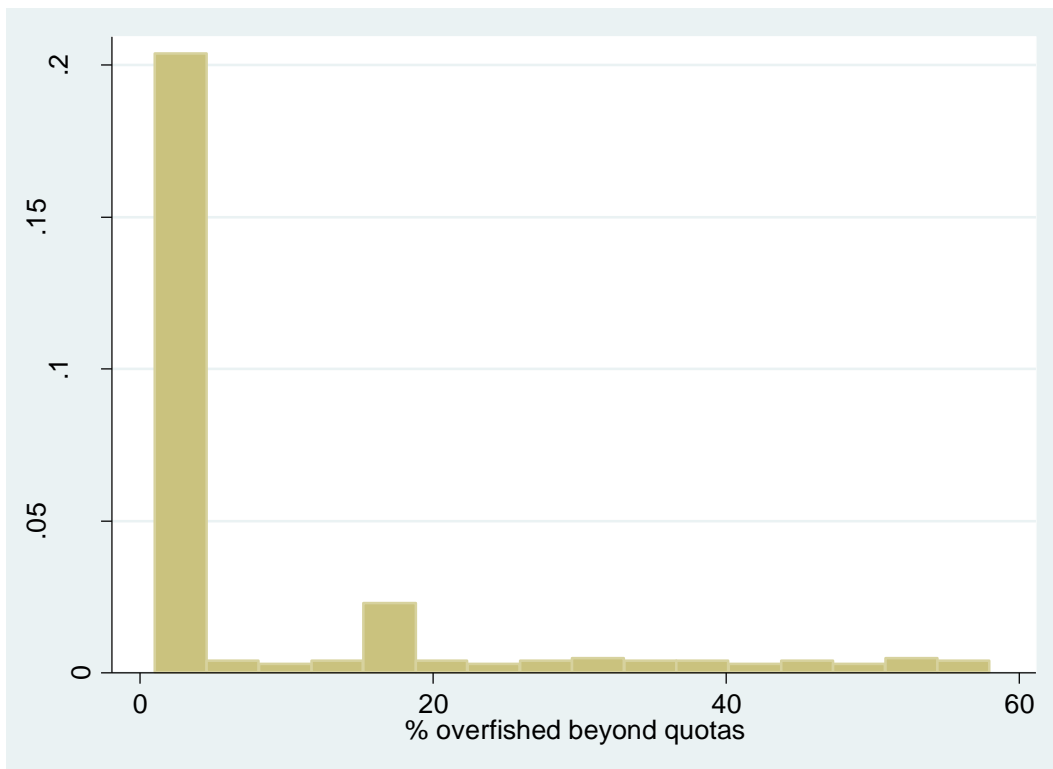


Figure 2. Histogram of percent-overfished variable

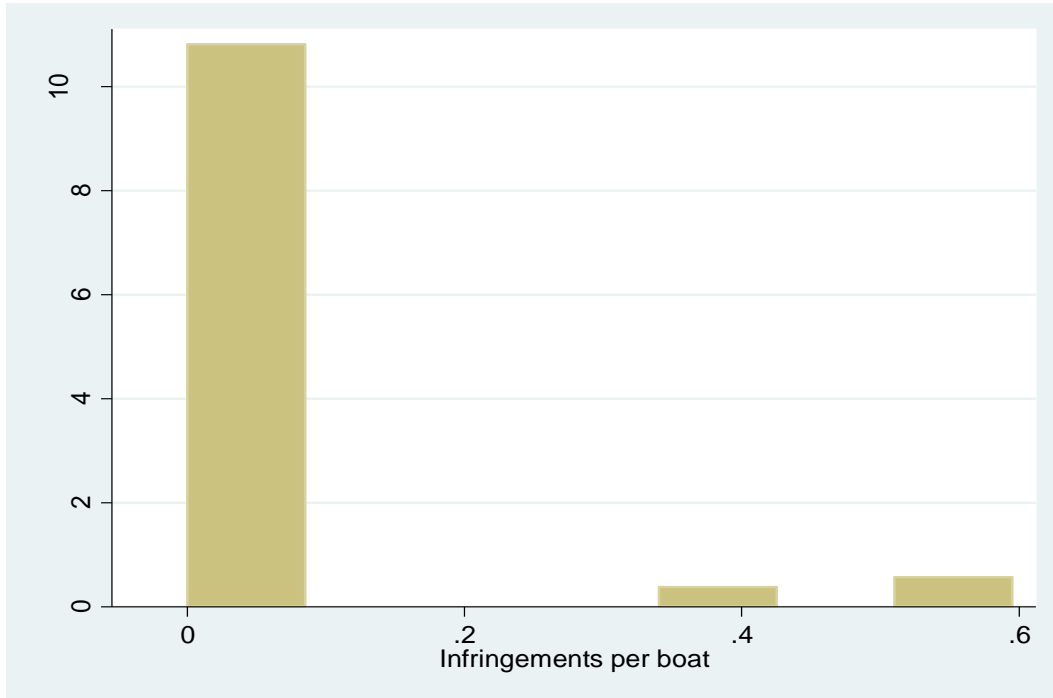


Figure 3. Histogram of infringements-per-boat variable

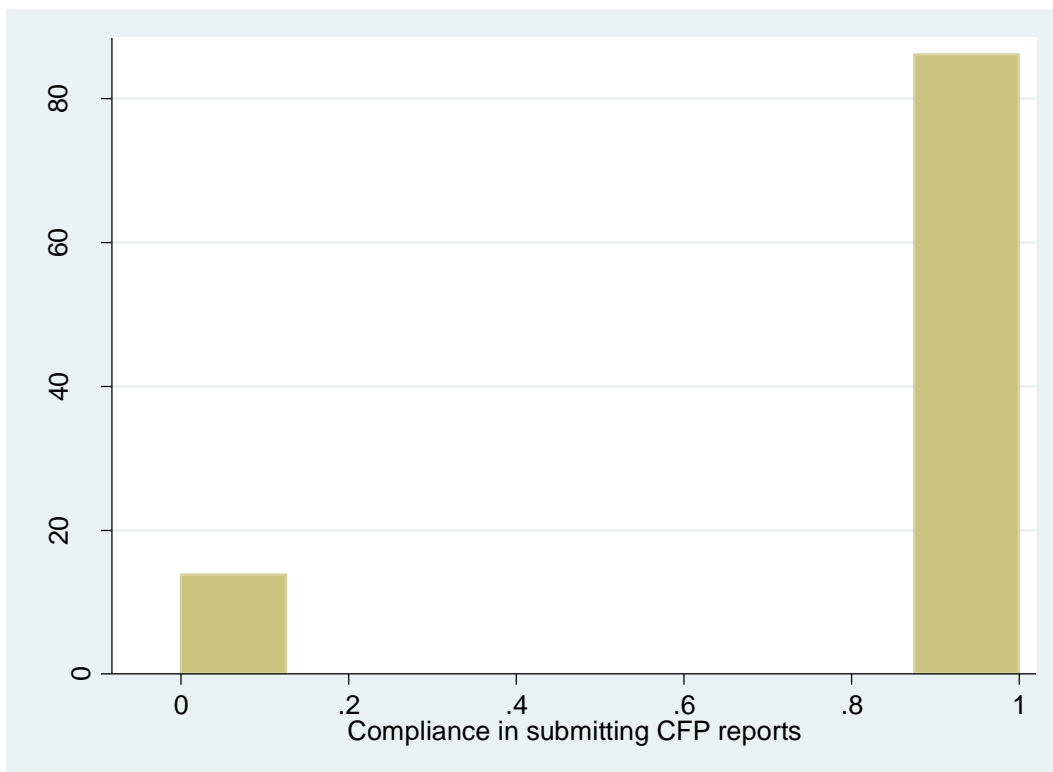


Figure 4. Histogram of report compliance variable

## Other Dependent Variables

In the EU, subsidies for the fishing industry have taken place through four channels: the Financial Instrument for Fisheries Guidance (FIFG), which provides support for infrastructure development, vessel renewal, and vessel scrapping, the European Regional Development Fund, the European Agriculture Guidance and Guarantee Fund, and the European Social Fund. The latter three are primarily used for support to other industries and only provide a small percentage of their funds to fisheries, so I use FIFG funds as the key measure of subsidies to fishing-intensive areas.<sup>28</sup> This is a continuous variable, with data from 1994 to 2004 obtained from the annual General Report on the Activities of the European Union, covering all EU member states with fishing fleets.<sup>29</sup>

The subsidies variable is positively correlated with the overfishing variables, strongly so with the number of infringements, the number of national infringements, and the likelihood of turning in compliant reports, weakly so with the number of over-runs and the percentage over the quota. In the short-term, subsidies may be a direct substitute for overfishing. In year X, a fisherman receives subsidies rather than resorting to making extra money through black-market overfishing. I would argue subsidies are a complement to overfishing in the long-term; fishermen can use the subsidy money to refurbish old vessels, which facilitates larger catches in year X+Y.

## Case selection and unit of observation

The cases selected are all EU member-states with assigned quotas under the CFP. Member states which do not have quotas (Austria, Hungary, Slovakia, Czech Republic, Cyprus,

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<sup>28</sup> A fifth fund, the PESCA initiative, was in place from 1994 to 1999 and sought to provide employment training for fishermen that wished to diversify away from the fishing industry (see Pauly and MacLean 2003). As this fund was clearly designed to reduce employment in fishing, I do not consider it to be a subsidy in the same spirit as the FIFG. In addition, several authors (including Leigh 1983, Farnell and Ellis 1984 and Deere 2000) consider bilateral fishing access agreements between the EU and developing-world states to be subsidies. Unfortunately, it is extremely difficult to parse which EU member states are receiving advantages from such third-party agreements.

<sup>29</sup> Thereby excluding Hungary, Austria, the Czech Republic, Slovakia, and Luxembourg.

Malta, and Luxembourg) are left out. The unit of observation across analyses is the country-year.

### **Independent Variables**

The first key independent variable is district magnitude. Because the special interest being examined in this chapter is the fishing industry, I operationalize the variable as the district magnitude in fishing-intensive districts. To determine which electoral districts are fishing-dependent, I rely on a 2006 study commissioned for the European Commission (Salz, Buisman, et al. 2006) which determines the dependence rate of given subnational areas on fishing by employment in both fishing and the overall fisheries sector (which would include fish processing). Data on district magnitude and electoral competition for these districts comes from the Constituency-Level Elections dataset (Brancati 2007); for those member states which are not yet represented in the CLE dataset, district magnitude was coded utilizing the Psephos election archive.<sup>30</sup>

The second key independent variable is electoral competition. I operationalize electoral competition as a continuous measure of the degree of “safeness” of a given seat. A safe district is one in which the incumbent party expects to win a strong majority of votes. Utilizing a tweak on the Vanhanen (2000) measure of electoral competition, I operationalize the concept as 100 minus the share of votes going to the incumbent party or parties in the election. Districts with higher “unsafeness scores” are more competitive than those with lower “unsafeness scores.” Most data comes from the CLE dataset and the Psephos election archive; additional district-level data was obtained for Belgium, 1995-1997; Denmark, 1990-1999; Portugal, and the United Kingdom (Craig 1989).

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<sup>30</sup> <http://psephos.adam-carr.net>. Additional data on Denmark and Portugal came from <http://electionresources.org/>; additional data on the UK came from Craig 1989.



## **Control Variables**

I use four control variables in the analysis. Cochrane (2000) argues that overfishing worldwide is affected by the number of people employed in the fisheries industry, and amount of fish consumed per person. Data on employment in fisheries is available from the World Resources Institute's Earth Trends database and the Organization for Economic Cooperation and Development's STAN database for industrial analysis. Data on fish consumption comes from the Food and Agriculture Organization of the United Nations' FAOSTAT database, and is operationalized as kilograms of fish consumed per capita per year. These variables should estimate whether or not producers (employment in fisheries) or consumers (fish consumed per person per year), or both, are correlated with overfishing. I predict that employment in fisheries will have a positive effect on non-compliance, while amount of fish consumed may also have a positive effect, though I expect it to be small. I also control for tons of fish produced (also from FAOSTAT), as a measure of the size of a state's fish processing industry. I anticipate this will have a positive effect on non-compliance. Finally, I control for the length of a state's coastline after using the logarithm, reasoning that it is harder for governments to prevent overfishing in countries with large coastlines than in countries with small coastlines; Denmark has 700 landing places for fishing boats, while Belgium has three (Long and Curran 2000). Therefore, I expect the length of a coastline to have a positive effect on non-compliance. See Table 2 for descriptive statistics.\

TABLE 3: Descriptive Statistics

	Mean	Median	Standard Deviation	Minimum	Max
<b><i>Dependent variables</i></b>					
# of infringements	543.29	123	856.75	0	3662
Fleet data compliance	0.862	1	0.348	0	1
# of overruns	2.28	1	2.64	0	13
% over CFP quota	8.43	7	14.37	-29.8	193.5
Infringements per boat	0.0544	0.008	0.136	0.0003	0.595
EU subsidies	36.6	22.6	57.83	0	259.6
<b><i>Independent Variables</i></b>					
Fishing district magnitude	20.34	5.17	43.79	1	150
Electoral Competition	0.599	0.568	0.094	0.4	0.7962
<b><i>Control Variables</i></b>					
Miles of coastline	8527	6437	7951	41.2	31119
# of people employed in fishing	18267	10116	17663	231	75434
KGs of fish eaten per person	25.2	22.18	12.2	5.1	62.4
Fish production	66329	20687	131747	0	630737

For the fleet data compliance variable, which is binary and unbalanced (9 instances of non-compliance to 48 instances of compliance), I utilize a rare-events logit model. For the continuous dependent variables, I utilize a between-effects model because the key variable of interest is invariant over time; district magnitude changes very rarely, if ever, within established developed states (Wilson and Butler 2004).<sup>31</sup> For the count variable measuring numbers of overruns, I use a negative binomial regression, given that the data better fits a negative binomial distribution than a Poisson distribution, according to a likelihood-ratio test.

<sup>31</sup> While between-effects models are rare in political science, they are useful in cases where the independent variable does not vary over time. See Rodden 2002 for an example of the technique in practice.

What follows are simple two-way scatter plots, showing the basic relationship between selected dependent variables and the two independent variables.

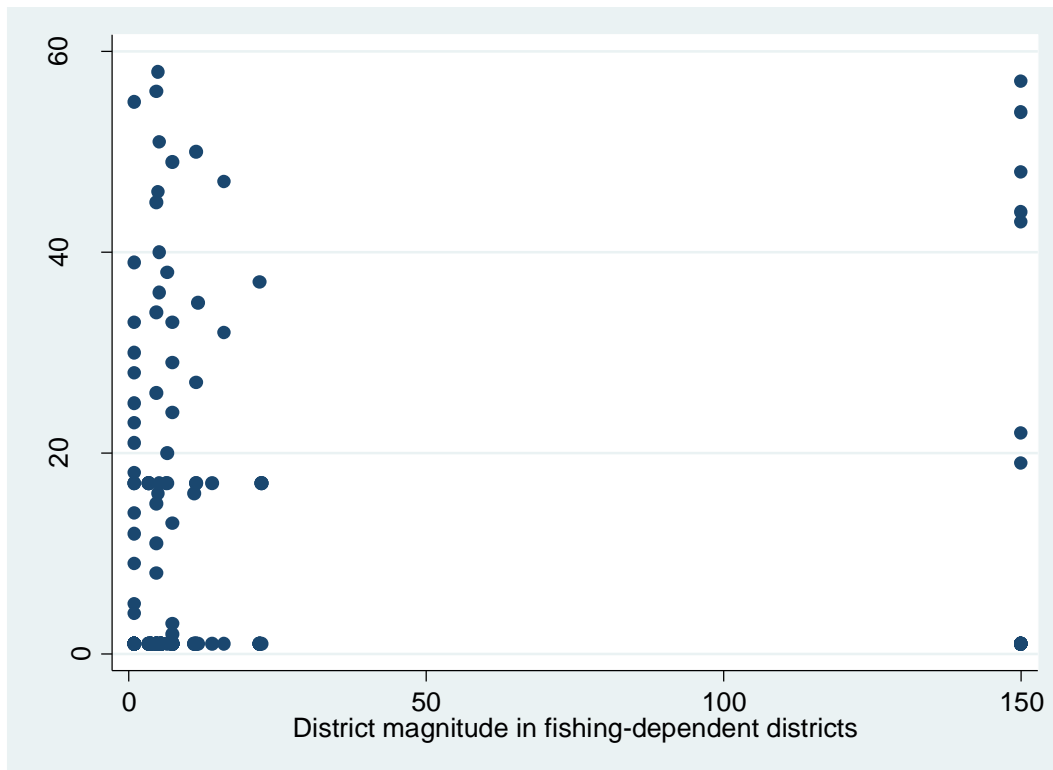


Figure 5. A two-way graph comparing overfishing and district magnitude.

Two-way graphs utilizing the fishing-dependent district magnitude variable are relatively uninformative, given that the Netherlands is such an outlier from other EU member states. Nevertheless, it does appear unlikely that the Netherlands will be driving any results; its instances of non-compliance and overfishing are within a range over the time period of the dataset.





DV	DV	DV	DV	DV
Infringements per boat	% over quota	Fishing Subsidies	Report of fleet compliance	# of GFP quota overruns

Model	Between-effects	Between-effects	Between-effects	Rare-events logit	Negative binomial
IV: District Magnitude	0.006 (0.006)	<b>8.425</b> <b>(2.2)</b>	<b>6.04</b> <b>(1.2)</b>	<b>-1.011</b> <b>(0.25)</b>	<b>-0.102</b> <b>(0.028)</b>
IV: Electoral Competition	0.279 (0.4)	<b>118.28</b> <b>(38.9)</b>	<b>-260.3</b> <b>(67.5)</b>	<b>483.19</b> <b>(32.56)</b>	<b>3.84</b> <b>(1.97)</b>
Employment	0.00003 (0.00003)	-0.0001 (0.0002)	<b>0.007</b> <b>(0.0006)</b>	0.00001 (0.00001)	0.00001 (0.00001)
Food consumption	-0.005 (0.003)	0.263 (0.229)	<b>-2.67</b> <b>(0.56)</b>	-0.72 (0.65)	-0.00008 (0.00007)
Processed-fish production	-0.00001 (0.00001)	<b>0.00004</b> <b>(0.00001)</b>	0.00001 (0.00003)	0.0002 (0.0003)	<b>0.00002</b> <b>(0.000009)</b>
Coastline (log)	<b>-0.08</b> <b>(0.02)</b>	<b>-9.72</b> <b>(1.98)</b>	-8.37 <b>(2.92)</b>		-0.062 (0.087)
Constant	0.69 (0.32)	<b>52.15</b> <b>(17.39)</b>	<b>241.5</b> <b>(56.8)</b>	-339.97 (10.9)	-0.93 (1.67)
N	42	101	86	52	84
R <sup>2</sup>	0.88	0.27	0.89	0.39	0.06
F / Chi	7.59	32.31	38.49	12.29	18.13
Years of coverage	2001-2003, 2005	1983, 1988-89, 2001-2004	1994-2004	1997-2001	2001-2004

## Results

The results of the statistical models (presented in Table 4) are mixed. The district magnitude variable is generally consistent with the hypotheses and statistically significant, across the different dependent variables: as district magnitude increases in fishing-intensive districts, one sees more non-compliance with the terms of the Common Fisheries Policy. A member-state with higher-district magnitude fishing districts is less likely to turn in correct reports to the Commission on fishing, more likely to overfish a greater percentage over the quota, and more likely to receive more subsidies from the supranational FIFG fund. The exception occurs with the number of overruns; as fishing district magnitude increases, the number of CFP quotas overfished (and therefore the number of individual species overfished, as each quota covers a different species), decreases slightly. This may simply reflect taste for different species of fish in different EU member states. The model using infringements per boat as the dependent variable is not statistically significant.

The direction of the electoral competition variable, on the other hand, is generally opposite the predictions of the theory. As electoral competition increases, member states become more likely to turn in correct reports on fishing activity, and less likely to receive subsidies. However, as electoral competition increases, a member state is more likely to overfish more.<sup>32</sup>

The control variables, more often than not, do not meet even loose standards of statistical significance. The size of the coastline may have a negative impact on non-compliance, with states with longer coastlines more compliant than those with shorter ones. This could reflect the fact that longer coastlines may allow for fishermen to unload illegal catches without being

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<sup>32</sup> When using infringements per boat as the dependent variable, electoral competition is not statistically significant.

detected at all. The variable measuring the size of the fish processing industry is usually insignificant, and in the one instance where it is significant, the impact is very small. In one case, the variable measuring fish consumption is significant, but negative. This is weak evidence that consumers are not pushing for non-compliance, which was predicted. Employment in the fishing industry has a weak effect on subsidies, but we cannot say what the effect is on non-compliance; the variable is quite statistically insignificant across models.

Interestingly, subsidies are negatively affected by the taste for fish and by the size of the coastline, indicating perhaps a level of pork-barrel spending unaccounted for. One could imagine perhaps that member states with smaller coastlines and less consumption of fish are able to more convincingly paint their fishing industries as “endangered” and in need of subsidization.

### **Possible problems with the electoral competition variable**

Why would electoral competition have a negative effect on non-compliance? There are several possible explanations for this finding:

- Neither McGillivray, nor Rogowski, nor the predictions of this dissertation are correct. Districts become safe in the first place because parties are able to efficiently deliver pork to groups of voters in those districts. Safe districts, then, get the most pork, regardless of the electoral rules.
- Missing data. Because of the limitations of both the CLE dataset and the Psephos archive, data is missing for Belgium 1983-1994, Denmark 1983-1989, and France 1983-1996. It appears that alternate sources for those variables are only available in Brussels, Copenhagen, and Paris.



- A poorly-operationalized variable. In PR systems with large-enough district magnitude and a large number of parties, few if any seats are ever “safe.” Even a party that decisively defeats all others in an election may only receive 30-35 percent of the vote, which would still be scored as “unsafe” under the current coding guidelines.
- There is an upper-bound on the number of parties where preference ordering matters (Carey and Hix 2011). Above seven or more choices, cognitive psychologists have found that voters are incapable of distinguishing clearly. Therefore, in systems with more than seven effective parties, it may do parties no good to offer favors to special interests. I believe this to be implausible, however; even in states with a high number of parties such as Belgium, ethnic, regional, or linguistic divides mean that the effective number of parties per district is less than 7.

### **Re-examining McGillivray: Why isn't competition having the expected effect?**

While the above evidence demonstrates that, under conditions of low marginal cost, there is a distinction between proportional electoral systems (larger districts do exhibit different effects than smaller ones), the model presented here offers the opposite prediction on electoral competition than both this dissertation and McGillivray (2004). Why isn't competition having the effect either of us would expect?

McGillivray notes that parties want to increase their vote share because that also increases their seat share, which provides more seats in the Cabinet and, therefore, more influence. All parties would like to be the largest party, because this usually comes with the first opportunity to form a government. However, there may be less advantage to being the second-largest party. In Germany, for example, most coalitions over time have been between the first-

and third-largest or first- and fourth-largest parties. So perhaps it is the case that electoral competition is overstated in proportional representation systems, and most parties simply want to maintain their vote share.

Can proportional representation systems have marginal districts? McGillivray (2004) argues that they can not. In Belgium, Denmark, Germany, and Sweden, unused votes are re-allocated in a separate, nationwide mechanism. Perhaps in these four cases, electoral competition in individual districts matters less. This can be tested (see the following section).

### **Robustness checks**

There are several possible flaws in the data that could be driving the results of the models. I will test each in turn.

1. *The Netherlands as an outlier.* With a district magnitude of 150, the Netherlands is some distance away from other states in Europe. In order to make sure that the Netherlands is not driving the results, I took the logarithm of fishing district magnitude and re-ran the five models. There was no change, though in the model using percentage over the quota as the dependent variable, the independent variables both lost statistical significance.
2. *Missing data.* As stated above, data is missing prior to 1996 in Belgium, Denmark, and France. I ran all five models looking at only post-1996 data in order to ensure a consistent timespan for all countries in the dataset, and the results did not change.
3. *Taking account of “top-up” electoral systems.* Belgium, Denmark, Germany, and Sweden reallocate “unused” votes (those not going to the winner) in each district through a separate, nationwide mechanism. This could change the effect of both district magnitude and electoral competition through changing the incentives governments face.

In order to test this, I added a dummy variable for Belgium, Denmark, Germany, and Sweden, and re-ran all five models. The results for the independent variables did not change, and the dummy variable was only significant in one model: having a reallocation system is positively linked with increased fishing subsidies. There could be a host of omitted variables responsible for this, however, and the fact that the variable was significant in only one out of five models makes one somewhat leery of drawing broad conclusions.

4. *Adding a quadratic term for electoral competition.* The scatterplots presented earlier in the chapter seemed to indicate a non-linear functional form for electoral competition. In order to test this, I added a quadratic term and re-ran all five models with both the quadratic term and the original electoral competition variable. The results, in general, were unchanged with two exceptions. First, in the model using percentage over the quota as a dependent variable, the sign of the electoral competition coefficient flipped from negative to positive and was significant. Second, the quadratic term itself was negative but statistically insignificant in all models except the rare-events logit model utilizing the likelihood of turning in compliance reports as a dependent variable. In that model, the quadratic term was negative and significant.
5. *Add an interaction term.* It may be that, as McGillivray (2004) theorized, district magnitude and electoral competition have an interactive effect. In order to test this, I created a multiplicative interaction term, and estimated all five models with it and the two component terms. The results did not change, and the interaction term was not statistically significant, with one exception: when an interaction term is added to the rare-events logit model, the combination of high levels of electoral competition and a high

district magnitude means a state is significantly-less likely to turn in compliance reports to Brussels.

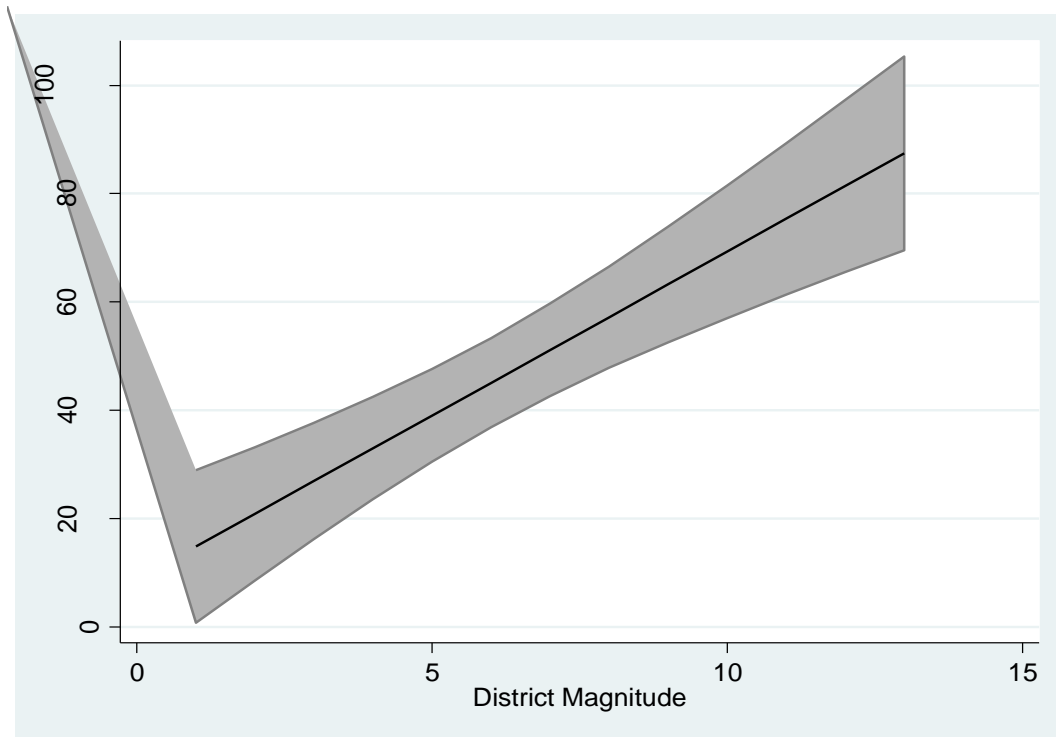
6. *An alternate electoral competition variable.* Carey and Hix (2011) have a measure of government survival days. This could be used as a proxy variable for electoral competition; governments that survive for a shorter amount of time would be presumed to have smaller majorities and be engaged in tighter electoral competition than those that survive for a longer period of time. In addition, this variable is available for all EU member states from 1983 to 2005. I re-estimated all five models using the government survival days variable as an independent variable instead of the electoral competition variable. The results did not change. Though in four of the five models the government survival days variable did not attain a standard level of statistical significance, the sign of the coefficient did not change from the previous electoral competition variable.

### **Predicted values and probabilities using simulations**

Simulations of predicted probabilities can better demonstrate the substantive effects of the models. The simulations show that, for example, a state changing its district magnitude from 7 legislators elected per district to 8 (a change that Belgium made in the 1990s) would be 5.5 percent less likely to turn in accurate compliance forms. A state making a more drastic change in its electoral rules, such as France did for a brief period in the mid-1980s, moving from 1 legislator per district to 7, would be 8.7 percent less likely to correctly report its level of compliance.

Predicted values for the between-effects model examining the effect of district magnitude on subsidies are in Figure 3. As district magnitude increases, the state is predicted to receive

greater and greater FIG subsidies from the European Union. A state changing its district magnitude from 7 legislators per district to 8 would be predicted to receive 6.05 million euros in additional FIG subsidies.



*Figure 9: Predicted values (with 95 percent confidence interval) of district magnitude's effect on FIG subsidies from the European Union.*

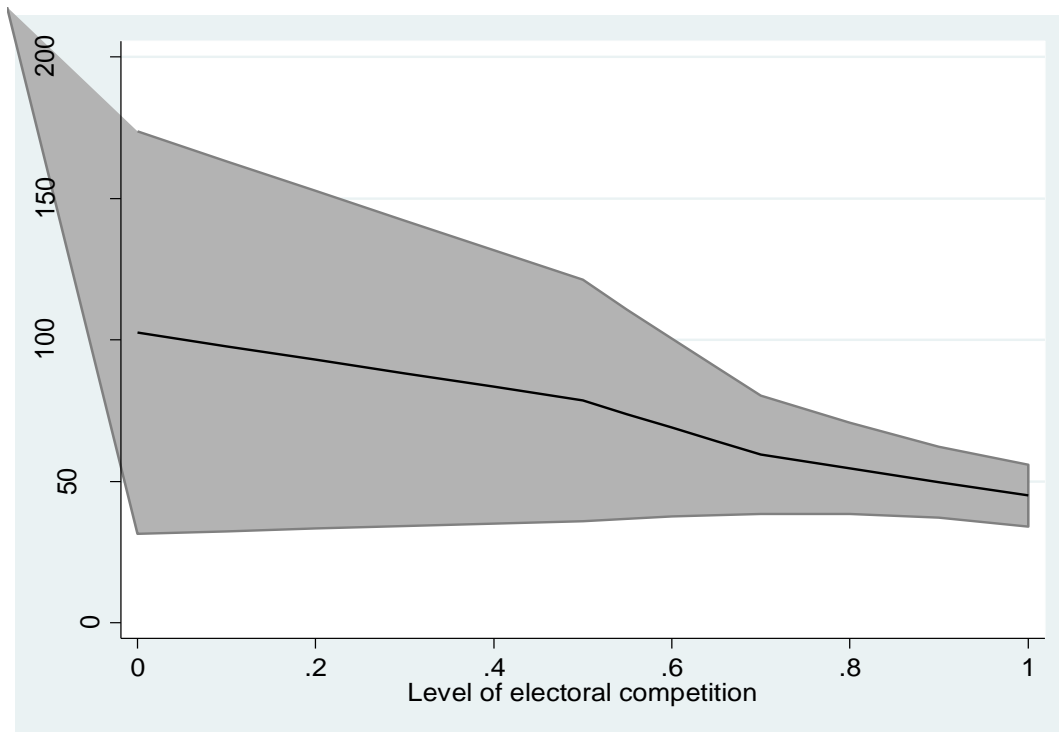


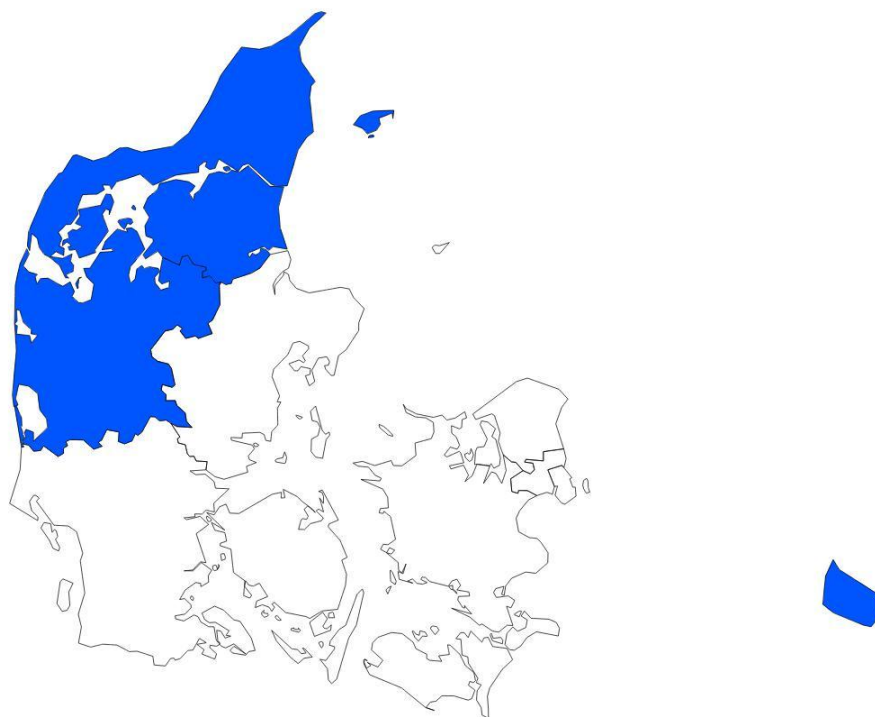
Figure 10: Predicted values (with 95 percent confidence interval) of electoral competition's effect on FIFG subsidies from the European Union.

## Case Studies

In this section, I attempt to more closely examine the microprocesses of my theory through short case studies. I look at three cases: one with low district magnitude and electoral competition in fishing-intensive districts (Denmark), one with low district magnitude and very little electoral competition in fishing-intensive districts (Great Britain), and one with high district magnitude and electoral competition in fishing-intensive districts (the Netherlands). Due to the nature of large district-magnitude elections, there are no examples of large-district-magnitude states with little to no electoral competition in their fishing-intensive districts.

	Electoral competition in fishing-intensive districts	No electoral competition in fishing-intensive districts
Small district magnitude	Denmark	Great Britain
Large district magnitude	The Netherlands	

### Denmark



Map 1. Denmark, with the three most fishing-intensive multi-member constituencies (*storkredse*) marked in blue.

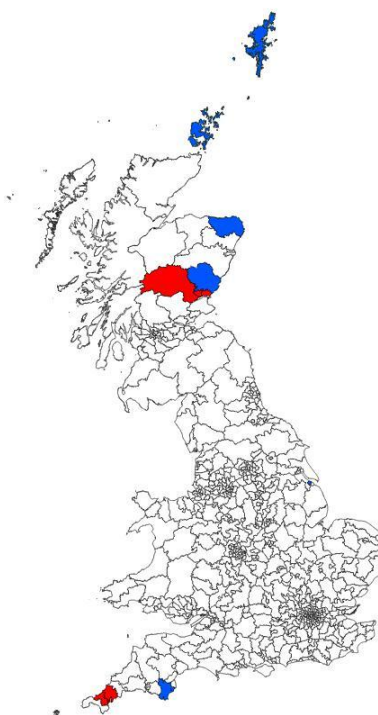
Denmark is a case with a small to medium-sized district magnitude (an average of 7.33 in fishing-intensive electoral districts) and electoral competition in fishing-intensive districts. In Denmark, fisheries policy has traditionally attracted little attention from the broader Folketinget. Fishing industry leaders interviewed by Hegland and Raakjaer (2008) said only two or three active MPs on a fishing-related issue could influence a bill. From 1989 to 1993, both the fisheries minister, Kent Kirk (Conservative People's Party), and the agriculture minister, Laurits Tornaes (Ventres / Liberals), were from Esbjerg, the largest fishing port in Denmark. Tornaes was a former chairman of the Sea Fishermen's Association. Prior to 1989, the Danish fishing

fleet had actually underfished its quotas. Data on specific overfishing of quotas is not available for Denmark between 1990 and 2000. We know that there were 182 infringements by Danish boats reported to DG-XIV in 1994 and that the number of infringements per boat increased from 1995 to 2003, so it is possible to infer that some overfishing took place during this decade, but we cannot be sure.

In Ribe County, where Esbjerg and other, smaller fishing ports are located, the Ventres-Conservative coalition received 39.7 percent of the vote combined in the 1990 election, 7 points more than the Social Democrats. Each group received 3 seats. Tornaes and Kirk fast-tracked regulatory approval of the construction of new, larger trawlers for the Esbjerg fleet. Kirk was known to downplay the importance of sticking to European regulations when meeting with fishermen, and was accused more than once of obstructing civil servants from pursuing cases of non-compliant behavior with the CFP (Hegland and Raakjaer 2008).



*Great Britain*



Map 2. The United Kingdom, with fishing-intensive constituencies marked.<sup>33</sup>

Great Britain is a case with low district magnitude (one, as a single member district system), and limited electoral competition in fishing-intensive districts during the time under study, with one notable exception (1987). The geography of fishing changed drastically in Britain from 1975 on. As access to waters off the coasts of Iceland and Norway became tenuous due to EEZ restrictions, the position of Hull and Grimsby, Labour strongholds on the English East Coast, became more tenuous. Hull, the richest fishing port in the UK in 1976 in terms of landings with 28.7 million pounds, was out of the top five by 1982, with less than 8 million

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<sup>33</sup> Constituencies in blue have had relatively static boundaries since 1983; constituencies in red have had some boundary changes since 1983.

pounds in value. The center of the fishing industry shifted drastically north, to Peterhead, Ullapool, and Aberdeen in the northeast of Scotland (Shackleton 1986).

Five of the seven most fishing-intensive districts were held by the Conservative Party in the early 1980s, but in the 1987 election, the Tories lost three of them, two (Angus East and Banff and Buchan) to the Scottish National Party, and one (Argyll and Bute) to the Liberal Party. In the two fishing districts the Conservatives held, their share of the vote decreased, and in the two remaining districts, the Labour Party sharply increased its margin of victory in Great Grimsby and the Liberal Party somewhat increased its margin of victory in Orkneys and Shetlands.

Overfishing percentages deposited in Brussels show underfishing occurring in 1983 and 1989. However, the European Commission also has records of raw numbers (tons above the quota) for the UK in 1985-1988 and 1990-1996. These show a sharp spike in overfishing in 1988, the year after the election (from 2880 tons over the quota to 23,620 tons over the quota) and a second, smaller spike in 1991, the year before the next election (from underfishing in 1989 to 389 tons over the quota in 1990 to 9222 tons over the quota in 1991; see Figure 4).

We have no concrete evidence of government interference in overfishing in the UK, but it is instructive to note that in the 1992 general election, all parties held their seats in fishing-intensive districts, despite the tremendous overfishing that had taken place on two separate occasions since the previous election. And since 1992, overfishing has never again reached the heights it did in 1988 and 1991, rarely even crossing 500 tons above the overall quota. The British government turned in all of its compliance forms on time for the period in which we have data, and has generally remained compliant with the CFP, according to the measures we have.

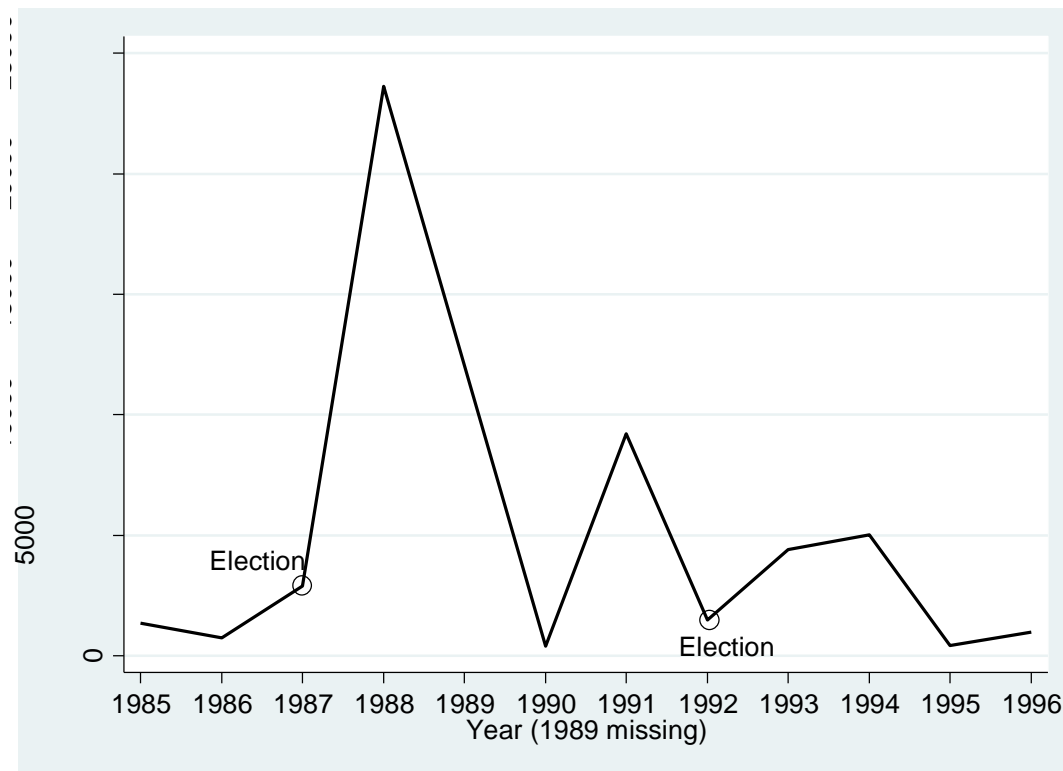


Figure 11. Overfishing in the UK, 1985-1996 (election years denoted with circles)

The Thatcher and Major governments had traditionally distanced themselves from fisher's organizations, but in the two-year run up to the 1997 general election, contact increased, with Major himself meeting fishermen federation leaders, and the government taking an increased role in fisheries issues in Brussels (Gray 1998). This of course came at a time of deep uncertainty for the Conservatives' electoral prospects. However, elections in the fishing-intensive districts were not particularly competitive, and overfishing did not increase in 1996 or 1997. In opposition, the Conservatives became fiery critics of the CFP. For example, in 2003, Conservative fisheries spokesman John Hayes, himself not a representative of a fishing-intensive district, sponsored "radical action" on the CFP through renegotiation of existing EU treaties. "We will give fishing back to Britain," Hayes told a meeting of Save Britain's Fish. "The rules...

are a disgrace.” (Yorkshire Post 2003). However, the Conservative-Liberal Democrat coalition that has been in place in the UK parliament since 2010 appears to support the current reforms of the CFP, perhaps because the seven fishing-intensive parliamentary districts remain with the same parties that have held them since 1987. Since the Cameron government took power, enforcement has stepped up, however. In March 2012, 27 skippers and three processing factories in the Shetland Islands pled guilty to illegally landing fish from 2007 to 2012. In May 2012, a trawler skipper from Peterhead, Scotland, Ian Buchan, had one million pounds seized by a court after pleading guilty to illegally landing £4.5 million in mackerel in an attempt to evade CFP quotas (Carrell 2012).<sup>34</sup> It should be noted that none of the fishermen charged in the most publicized cases were from constituencies held by the Conservative Party, and there have been no major illegal-landing cases brought against fishermen in Conservative-held districts.

### *The Netherlands*

The Netherlands has the highest district magnitude in Europe, with one, 150-member district for the entire country. Elections since the early 1980s have been quite close; in six of the nine elections since 1980, the top two parties have been within five seats of each other. In the early 1980s, Dutch fishermen systematically cheated the CFP through a system of double bookkeeping, with the knowledge of Dutch government officials. Bureaucrats from the Dutch Transport Ministry would operate quayside fish sales at the five main Dutch fishing ports: Scheveningen, Ijmuiden, Den Helder, Harlingen, and Stellendam. Part of the day’s landings would be excluded from the official reports that were turned in to Brussels. In addition, a gentlemen’s agreement existed between fishermen and the Dutch Ministry of Justice, whereby

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<sup>34</sup> Buchan was landing fish through an underground pipe into a hut disguised with “Danger: High Voltage” signs some distance from the main processing plant.

skippers were not prosecuted more than once a year for under-declaration of catches (Lichfield 1984).

In a separate scheme, Dutch government officials in Den Haag categorized any mackerel found west of Ireland as horse mackerel, a more abundant and less valuable species. This allowed the pelagic fleet to catch more than double its assigned quota of mackerel. The scheme was exposed in 1984, and the Dutch government was prosecuted before the European Court of Justice. The Agriculture and Fisheries Minister at the time was from the Christian Democratic Appeal party, one known to regularly appeal to Dutch fishing interests.

## **Conclusion**

In this chapter, I sought to demonstrate that provisions to special interests were more prevalent when such provisions were low-cost to the governments providing them. Allowing non-compliance with an international environmental regime and obtaining supranational subsidies are special-interest provisions that entail little noticeable cost to the average citizen, and are therefore unlikely to be protested. Moreover, such non-compliance varies according to the incentives created by electoral rules. European Union member states with proportional representation electoral systems (those that elect a larger number of legislators per district than other states) do a poorer job of enforcing the quotas under the Common Fisheries Policy, and as a result, fishing fleets in these states are likely to overfish to a greater degree than do fleets in states with smaller numbers of parties. The evidence on the effect of electoral competition on non-compliance is more mixed, and further work is necessary.

This chapter focused on an international agreement on shared territorial waters. In the next chapter, I examine the Northwest Atlantic Fisheries Organization, an international

organization that governs the high seas, more than 200 miles from any state's coast. The expectation is that such distant water fishing will be even less noticed by the voting public than fishing in territorial waters. In such a situation, electoral competition and electoral rules should spur on an even greater level of non-compliance, as the costs to governments of allowing non-compliance will be even lower.

## Chapter 5

### Overfishing in the Northwest Atlantic

*“There are a whole lot of members in the Eastern Fishermen’s Federation who can’t wait, not to get their traps in the water this season, but for the next federal election,” – Allan Billard, executive director, Eastern Fishermen’s Federation, Halifax, Nova Scotia, March 26, 1983.*

*“We are not stealing. These are nobody’s waters,” – Manuel Nogueira, crew member on the Estai, 1995<sup>35</sup>*

In the previous chapter, I examined the impact of electoral rules and electoral competition on the European Union’s Common Fisheries Policy, which governs the EU member states’ shared territorial waters (those between 3 miles and 200 miles from shore). This chapter uses data from two high-seas fishing organizations in the Northwest Atlantic, ICNWAF and its successor, NAFO. Because the common-pool resource in question lies much farther offshore, it is fished by comparatively fewer (though larger) boats and the chances of industry overuse being noticed by the voting public should be even less.<sup>36</sup>

The chapter will proceed as follows: I will first discuss the nature of the resource in question, followed by brief histories of the two international organizations that have governed it. I will then reintroduce the hypotheses from Chapter 3 in the context of the Northwest Atlantic fisheries, as well as a new hypothesis based on the unique membership of ICNWAF and NAFO. I close with a case study examining electoral competition in Canada, in many respects the key member of both organizations.

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<sup>35</sup> The *Estai* was the Spanish boat fired upon by Canadian authorities for fishing illegally off Newfoundland. This incident became known in the press as the “Turbot War.”

<sup>36</sup> Granted, stock collapse, as happened with cod in the early 1990s in the Northwest Atlantic, will be noticed, but at that point, there is no common-pool resource left to overfish.

## **Fishing in the Northwest Atlantic**

Early European explorers found the waters of the Northwest Atlantic to be exceedingly rich with cod, haddock, flounder, and herring, and reported this fact to their home ports; as a result, fishing was by far the dominant economic activity in northern North America for much of the 16<sup>th</sup>, 17<sup>th</sup>, and 18<sup>th</sup> centuries, with most of the fleets coming from western Europe, summering in small shelters in and around modern-day Newfoundland, then returning to Europe. Some communities in Spain have been sending boats to fish the Northwest Atlantic for more than 500 years. (Warner 1983)

Diplomacy and warfare in the region tended to touch on control of fisheries; to cite one example, the Treaty of Utrecht of 1714, ending the War of the Spanish Succession, contained specific provisions allowing French fleets to fish in British waters around Newfoundland which remained until the signing of the *entente cordiale* in 1904 (Adams 2005). And indeed, the waters of the Northwest Atlantic were rich enough to withstand nearly 400 years of intensive fishing before problems began to surface. The Atlantic halibut fishery collapsed in the early 1880s, and has never recovered. Further declines spurred the creation of the North American Council on Fishery Investigations, founded by the United States and Canada and in existence from 1920 to 1938 (Koers 1973).

## **ICNWAF**

As in the Northeast Atlantic, World War II saw a cessation of overfishing, which resumed in 1945. Initially, the total catch increased, though it is recognized now that this was due to the discovery of new stocks, which were themselves then depleted. The International Commission for the Northwest Atlantic Fisheries (ICNWAF) was established in February 1949,



and entered into force on July 3, 1950. Initial members were Canada, Denmark, France, Iceland, Italy, Norway, Portugal, Spain, the United Kingdom and the United States. The Commission was tasked with reviewing information pertaining to fisheries and making recommendations to its member governments on conservation action that may be necessary to maintain “a maximum level of sustained production.” (International Organization 1951)

When founded, the ICNWAF was charged with keeping stocks at a level which permitted maximum sustainable yield. The only regulations approved in the first two decades of the organization’s existence were on minimum mesh size for fishing nets. Even those measures were fought by some member states on the basis of “hardship on fishermen.” (IO 1955)

The first proposal to restrict catch in the Northwest Atlantic was by the Canadian delegation in 1962, on haddock. The proposal quickly died (Weber 2002). By 1964, ICNWAF members were openly discussing conservation and what could be done to maintain stocks, with a recognition that the catching effort was basically saturated, with increases in fishing effort no longer likely to produce increases in catch (Annual Proceedings 1965). Catches of cod, the basis of the fishing industry after World War II in the Northwest Atlantic, rose from 240,000 tons in 1955 to 700,000 tons in 1968, then began to decline sharply. Much of this increase came from Eastern Bloc fleets, which began distant-water fishing with large factory trawlers in 1956; by 1965, there were 561 trawlers of various sizes in the Northwest Atlantic fishing under Soviet flags, and numerous others from Warsaw Pact states (Warner 1983).

1968 was the high-water mark for fishing in the Northwest Atlantic, with a total catch of 2,400,000 tons, the majority of that caught by distant-water fleets from Europe. The best fishing grounds were within 200 miles of Canadian territory, but at the time, Canada only had a three-

mile territorial sea (Weber 2002). The Canadian Liberal Party, under intensive pressure from domestic fishing interests and holding a narrow majority with the expectation of a close upcoming election,<sup>37</sup> adopted a two-pronged strategy: insisting in ICNWAF on reduced catches by distant water fleets, and unilaterally imposing a 12-mile exclusive fishing limit on its borders.

Gradually, quotas were introduced: in 1969 for haddock in two areas of the Northwest Atlantic, Georges Bank and Browns Bank; in 1971 for yellowtail flounder; shortly thereafter for salmon.<sup>38</sup> (Koers 1973) The first quotas were not nationally-based; once reports came in that catches were up to 80 percent of the total quota, all states were told to instruct their fleets to cease fishing. A plan was put in place to have a maximum sustainable catch of roughly 400,000 tons a year by the late 1980s. Landings since the mid-1970s have never risen above 260,000 tons, and a stock-assessment review in 1988 found that the stock of cod was much smaller than previously believed by scientists. (Sustaining Marine Fisheries 1999)

Ultimately, the ICNWAF was judged to be ineffective for the purposes of conservation. At the 1972 annual meeting, U.S. officials used the opening address to threaten to leave the organization and take unilateral measures (Annual Proceedings 1972). European members of the organization responded by agreeing to allow inspection at sea of their trawlers. The U.S. Coast Guard performed a number of inspections, but was powerless to take any further measures with a foreign ship beyond writing up a report and forwarding it to the offending ship's government (Warner 1983).

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<sup>37</sup> Many of the most fishing-dependent districts in the Maritimes had voted narrowly for the Progressive Conservatives in the 1968 election, and the districts were seen as possible swing seats.

<sup>38</sup> Salmon is no longer covered under NAFO; it has its own international organization, the North Atlantic Salmon Conservation Organization.

Before further reforms to ICNWAF could be made, matters outside the organization changed the playing field. As part of negotiations within the United Nations Convention on the Law of the Sea in the late 1970s, most coastal states extended exclusive economic zones out to 200 miles.<sup>39</sup> This covered the majority of the prime fishing grounds, with the exception of two areas on the outer Grand Banks (see map).



**Map 1: NAFO / ICNWAF divisions, and the 200-mile exclusive economic zone (source: NAFO)**

<sup>39</sup> See Chapter 4 for more on the extension of EEZs.

## NAFO

With the loss of most of the sea area it was designed to regulate, the ICNWF dissolved itself, and its members reformed as the Northwest Atlantic Fisheries Organization, which obtained full regulatory power over all species except salmon and tuna upon coming into existence in 1978. More than 20 states are or have been members of the organization, including all major users of the resource.

Two significant divisive issues have arisen during NAFO's tenure regulating the Northwest Atlantic. The first is opt-outs, especially by the European Union. With the introduction of the Common Fisheries Policy in 1983 (see Chapter 4), the EU also obtained sole jurisdiction over Community negotiations in regional fisheries management organizations.<sup>40</sup> Beginning in 1985, European Community representatives at NAFO meetings began demanding total allowable catches (TACs) higher than those recommended by NAFO's scientific council. When these requests were not approved, they filed formal objections, which allowed EC-flagged boats to opt out of TAC and quota decisions. This took place with some 40 stocks between 1986 and 1990 (Wiseman and Steinbock 2000). On cod, the most valuable species, the EEC used NAFO objection procedures to increase their TAC for cod beyond that agreed upon by a total of 155,400 tons from 1986 to 1992. By the early 1990s, EU negotiators simply opted out of NAFO quotas and set their own unilateral quotas, which were higher than the recommended TAC (Churchill 1998).

This activity culminated in the complete commercial collapse of cod stocks in the Northwest Atlantic, and a moratorium on fishing for cod beginning in 1992, as well as the 1995

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<sup>40</sup> Representatives from France (on behalf of St. Pierre and Miquelon) and Denmark (on behalf of Greenland) still attend NAFO meetings, but agreements on quotas to be used by French or Danish ships are taken by EU negotiators.

“Turbot War,” when a Canadian naval vessel fired on a Spanish boat that had allegedly crossed the 200-mile line and was illegally fishing for Greenland halibut. Ultimately, the incident was settled in the International Court of Justice, which found for Canada.

The second longstanding issue has been flags of convenience, wherein boats obtained the flag of states which were not members of NAFO, then fished illegally. Flag-of-convenience states in the 1980s and 1990s included Panama, Belize, St. Vincent, Sierra Leone, Dominica, Georgia, and Vanuatu (Churchill 1998). This problem was ultimately solved in 1994 by refusing to let so-called “outlaw ships” (those flying flags of non-members) land in NAFO ports.<sup>41</sup> With the stock located far away from any non-NAFO ports, most flag-of-convenience fishing vessels were forced to fish elsewhere.<sup>42</sup> (Nordquist and Moore 2000)

Like the European Union’s Common Fisheries Policy, third-party inspection in NAFO is still somewhat restricted. Wiseman and Steinbock (2000) argue that NAFO’s enforcement regime is more comprehensive on paper, but is ultimately “toothless.” Nonetheless, efforts have been made to increase enforcement; satellite tracking was introduced in 2001. Today, vessel monitoring systems allow a monitor on shore to see where every boat within the NAFO treaty area is. If a boat is in an area where fishing has been closed because the quota has been reached, it can be cited. Full-time inspectors make random inspections of boats fishing in the area as well (source: interview, July 2010).

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<sup>41</sup> The Canadian version of the law, for example, prohibited any “stateless vessel” or any vessel flying the flag of a non-NAFO member state from landing in its ports.

<sup>42</sup> Many moved to the waters around Antarctica, where the Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR) has strict prohibitions on IUU (illegal, unregulated, unreported) fishing, but few vessels are available to monitor. Trawler technology designed for cod is equally useful for orange roughy and Patagonian toothfish / Chilean sea bass.

However, punishment is still consistent with national laws of member states, and is not reported back to NAFO, particularly as regards European fleets. Because the EU is the sole representative of its member states at NAFO, NAFO reports infringements to EU offices in Brussels, which then informs individual states of the infringements. Punishments that member states impose, if any, are neither reported back to Brussels nor Halifax.

## **Hypotheses**

Recall the key hypotheses from Chapter 3:

*H1: States with higher district magnitudes are likely to be more non-compliant with international common-pool resource regimes than states with low district magnitudes.*

*H2: States with higher levels of electoral competition are likely to be more non-compliant with international common-pool resource regimes than states with lower levels of electoral competition, when the industry relevant to the resource is concentrated in marginal districts.*

These hypotheses deal with the incentives facing leaders in democracies. But the membership of ICNWF and NAFO includes both democracies and authoritarian regimes, particularly pre-1989. The Soviet Union and many of its Warsaw Pact allies joined beginning in 1969, as did Cuba and the post-fascist dictatorships of Spain and Portugal.<sup>43</sup> Clearly, the incentives facing dictatorial regimes with regards to compliance with an international agreement are different than those facing democracies. Leaders in authoritarian regimes neither have to worry about electoral competition nor the size of electoral districts. The decision calculus for a

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<sup>43</sup> Between 1973 and 1983, the following states were members of ICNWF and/or NAFO: Bulgaria, Canada, Cuba, Denmark, France, West Germany, East Germany, Italy, Japan, Norway, Poland, Portugal, Romania, Spain, UK, USA, and the USSR.

dictator in regards to an international common-pool resource agreement is much more realist: in the absence of any international power that can force compliance, there is no need to be particularly compliant. So why comply at all? For one, particularly in the 1970s, the US Coast Guard showed itself to be quite willing and able to board and search Eastern Bloc fishing vessels for evidence of non-compliance. Such actions could delay and lengthen the voyage of the large freezer trawlers, increasing the expense of operating them; complete non-compliance is too expensive. Therefore, I predict that dictatorships will be less likely to comply with NAFO restrictions, but that there will not be complete non-compliance.

*H5: Dictatorships are more likely to be non-compliant with international common-pool resource regimes than democracies.*

### **Data and Research Design**

Data for this chapter comes from original ICNWAF and NAFO reports housed at Dalhousie University in Halifax, Nova Scotia. There is a wealth of data on specific allocations and catches for most years since 1973. But there is one problem for the purpose of statistical inference: post-1983, the European Union receives one lump quota, then divides it amongst its members in internal negotiations. This means EU catches are reported back to NAFO in a lump sum, not by individual member state. As the EU makes up the majority of the users, this is an issue. Moreover, the EU unilaterally extended its quotas from 1985 until the late 1990s, and allocation numbers are meaningless if one state simply creates its own allocation from thin air. Therefore, this chapter utilizes data from 1973 to 1983.

The data consists of allocation and quota totals for various species and NAFO zones from 1973 to 1983. The dependent variable is the ratio of catch to quota, and the unit of analysis is the

country-species-year. Values higher than 1 indicate overfishing has occurred. As with the European Union, individual quotas are based on “historical rights.” In the case of NAFO, the quota allocations were decided in 1979 upon the organization’s founding, and are still in place. So any bargaining within NAFO is for the total TAC, not each member’s share in that TAC. (source: interview, July 2010)

Electoral competition is, as in Chapter 4, defined as the degree of safeness of a given seat. Higher values are less safe; lower values, more safe. I average the safeness values for fishing-intensive districts in a given state.

Currently I do not yet have enough district-level electoral data from the 1970s to make any real cross-national inference. However, Carey and Hix (2011) have a measure of government survival days for the time period in question.<sup>44</sup> This variable simply measures how long a government survived, from investiture to a vote of no confidence or the next election. Governments that survive for a shorter amount of time would be presumed to have smaller majorities and be engaged in tighter electoral competition than those that survive for a longer period of time. A simple scatterplot of government survival against overfishing appears to show a possible negative relationship (see Figure 3).

To measure dictatorship and democracy, I rely on Polity scores. I also utilize two dummy variables measuring whether or not a state has a coast bordering the Northwest Atlantic (only applicable for Canada, the United States, and Denmark), reasoning that the decision calculus for overfishing is different depending on how close a home port is, and whether or not a state has a federal system, reasoning that additional layers of government can create additional

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<sup>44</sup>Data available and obtained from [http://www.dartmouth.edu/~jcarey/Data\\_Archive.html](http://www.dartmouth.edu/~jcarey/Data_Archive.html). Data on district magnitude also comes from this dataset, as district-level magnitudes for fishing-intensive districts for the 1970s have not yet been found.



space for interests advocating non-compliance to be heard.<sup>45</sup> I again use two control variables from Chapter 4's analysis, total employment in the fishing and fish-processing industry, and amount of fish consumed annually per capita. Both variables are taken from the World Resources Institute's database.

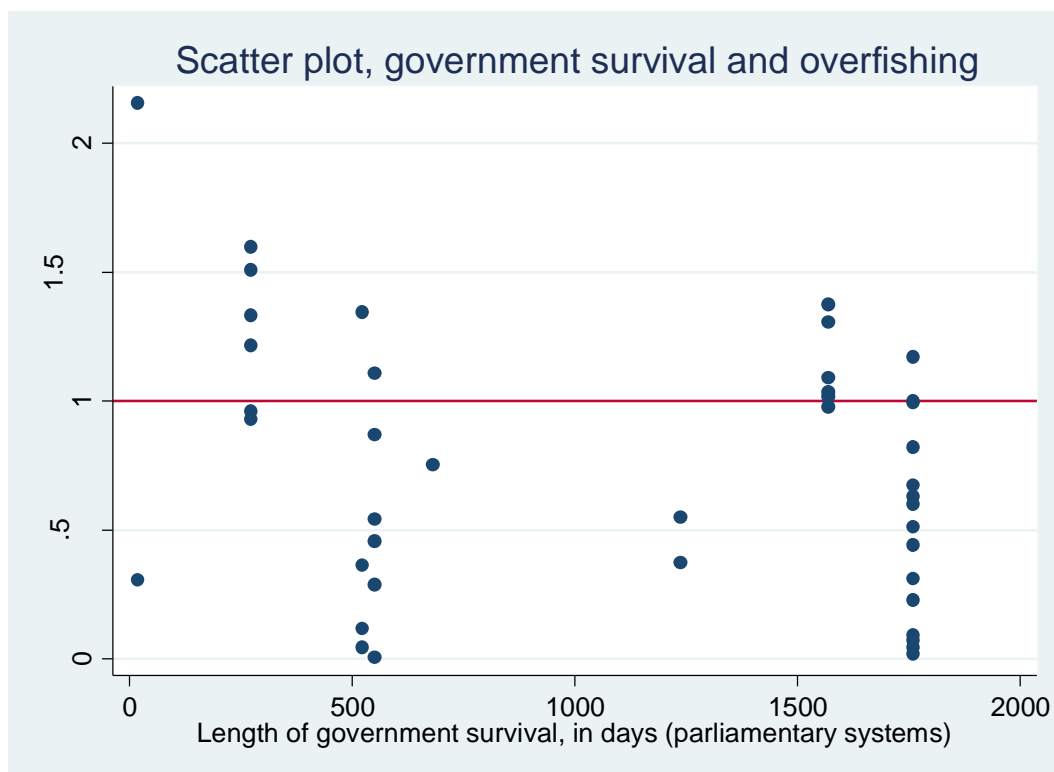


Figure 1. Scatterplot of government survival and overfishing

### Results and Predicted Values

The results are largely consistent with the hypotheses: as electoral competition increases in fishing-intensive districts, overfishing occurs to a greater degree. The results appear to show

<sup>45</sup> Length of coastline should not matter in the Northwest Atlantic case as it did in Europe, as distant-water fleets typically only have one or two home ports per state, given the size of the trawlers.

that, within democracies, electoral competition matters, but that dictatorships overfish more than democracies.

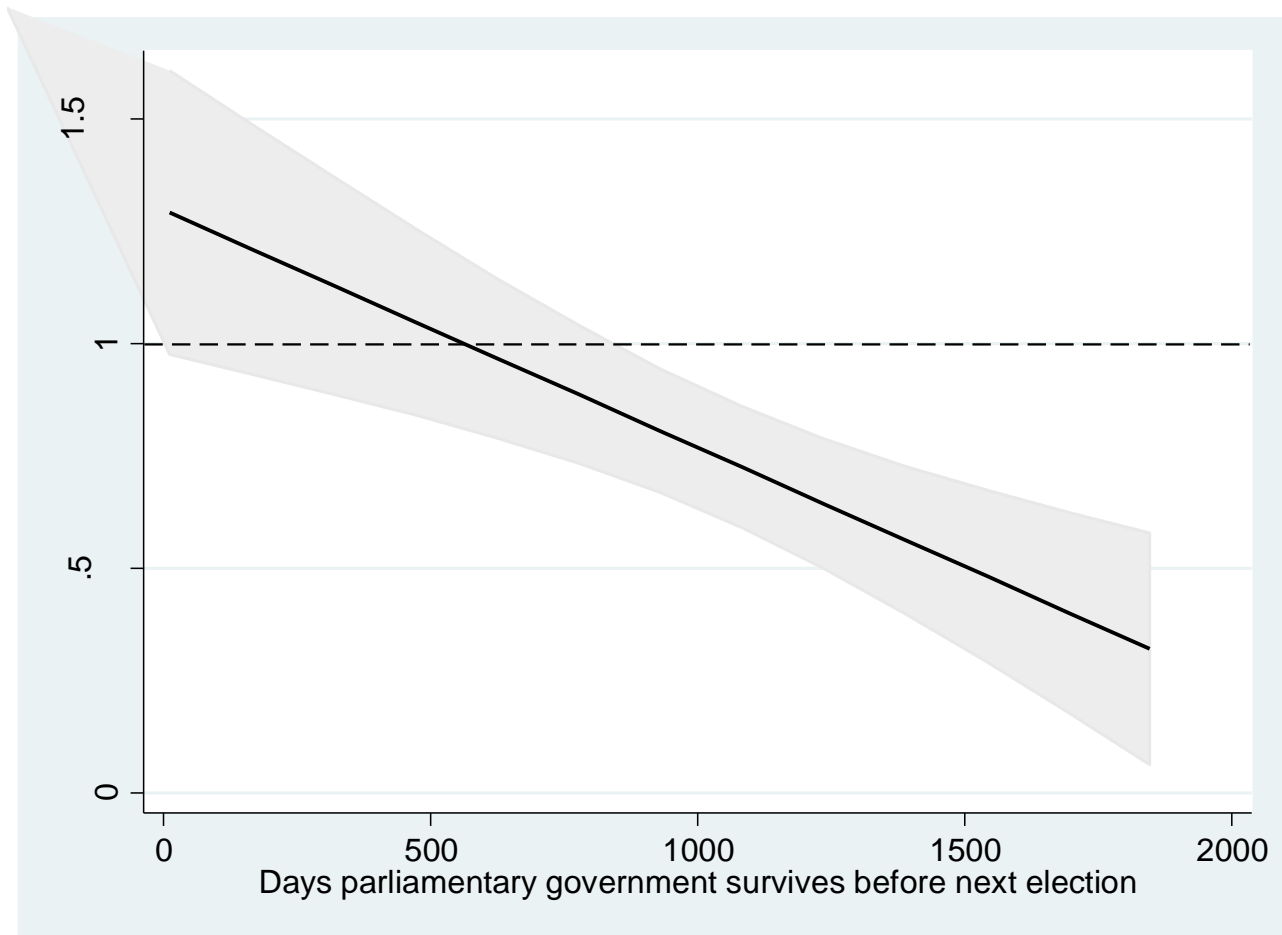
In the first model, utilizing government survival days as the independent variable, there is a negative, highly significant relationship: the longer a parliamentary government survives, the less overfishing occurs (see Table 3). States with more people employed in the fishing and fish processing industries overfish more than those with fewer people employed in those industries. The district magnitude variable is positive, but with a p-value of .156, we are unable to make any real inference. Obtaining data on the specific district magnitude of the fishing-intensive districts should make it more likely that results will attain significance, but such data for the 1973-83 period is in hard-copy format only in each state's archives. The federalism, food consumption, and coastal state variables are not statistically significant.

TABLE 1: Results (IV: Government Survival Days)

		DV Catch to allocation ratio
Government Survival Days		<b>-0.0005</b> <b>(.00014)</b>
District magnitude		0.061 (.042)
Federalism		-1.89 (1.73)
Employment in fishing or fish-processing		<b>0.239</b> <b>(0.0093)</b>
Fish consumption per capita		-0.009 (0.01)
Coastal state dummy		1.593 (1.635)
Constant		0.411 (0.31)
N		46
R <sup>2</sup>		0.33
Prob> F		0.012

Simulating predicted values from the regression model shows that a government that survived for three years would be predicted to have a catch to allocation ratio 31.7 percent lower than a government that survived for one year (see Figure 4 for a graphical representation of predicted values). Governments that survive roughly two years or longer are predicted to fish

under their allotted quotas, while those lasting less than two years are predicted to overfish. A government surviving the minimum in the sample (12 days) would be predicted to allow a catch to allocation ratio almost four times higher than a government surviving the maximum in the sample (1847 days, or a little more than 5 years).



**Figure 2.** Predicted values (with 95 percent confidence interval) of government survival's effect on catch-to-quota ratio in ICNWAF / NAFO.

### **Dictatorship vs. democracy**

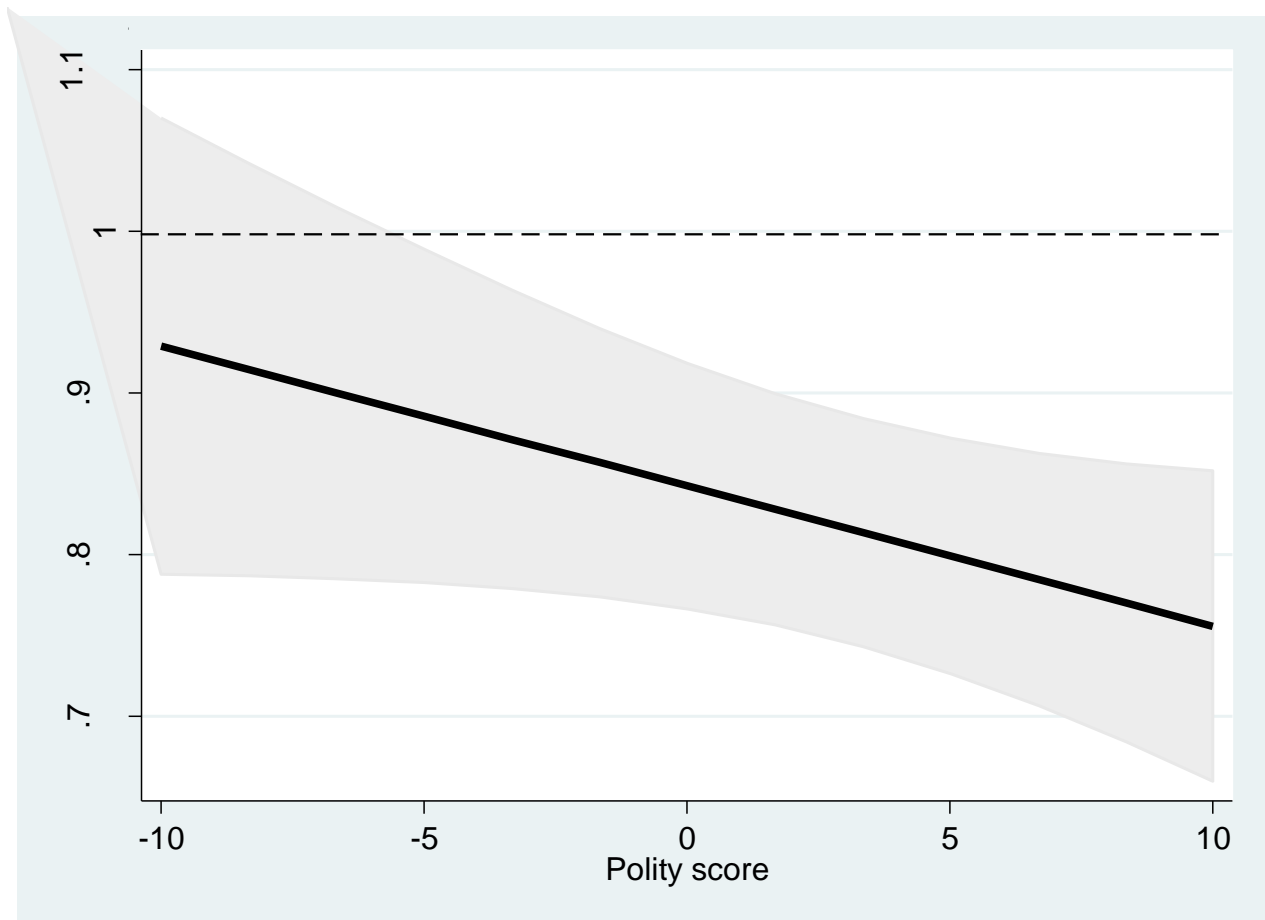
Hypothesis 3 states that dictatorships should overfish more than democracies, and the model presented in Table 4 provides support for the hypothesis. As a state's Polity score increases (moving from an authoritarian to a democratic regime), the amount of overfishing

decreases. The variable is statistically significant at the .07 level. The control variables are statistically insignificant.

Again simulating predicted values, a state that were to change its system of government from a strong dictatorship to a strong democracy, moving from a Polity score of -7 to a score of 9 (as Spain did in the 1970s), would be predicted to see a catch to allocation ratio in the Northwest Atlantic that was 13.9 percent lower than previously (see Figure 5 for a graphical representation).

**TABLE 2: Results (IV: Polity score)**

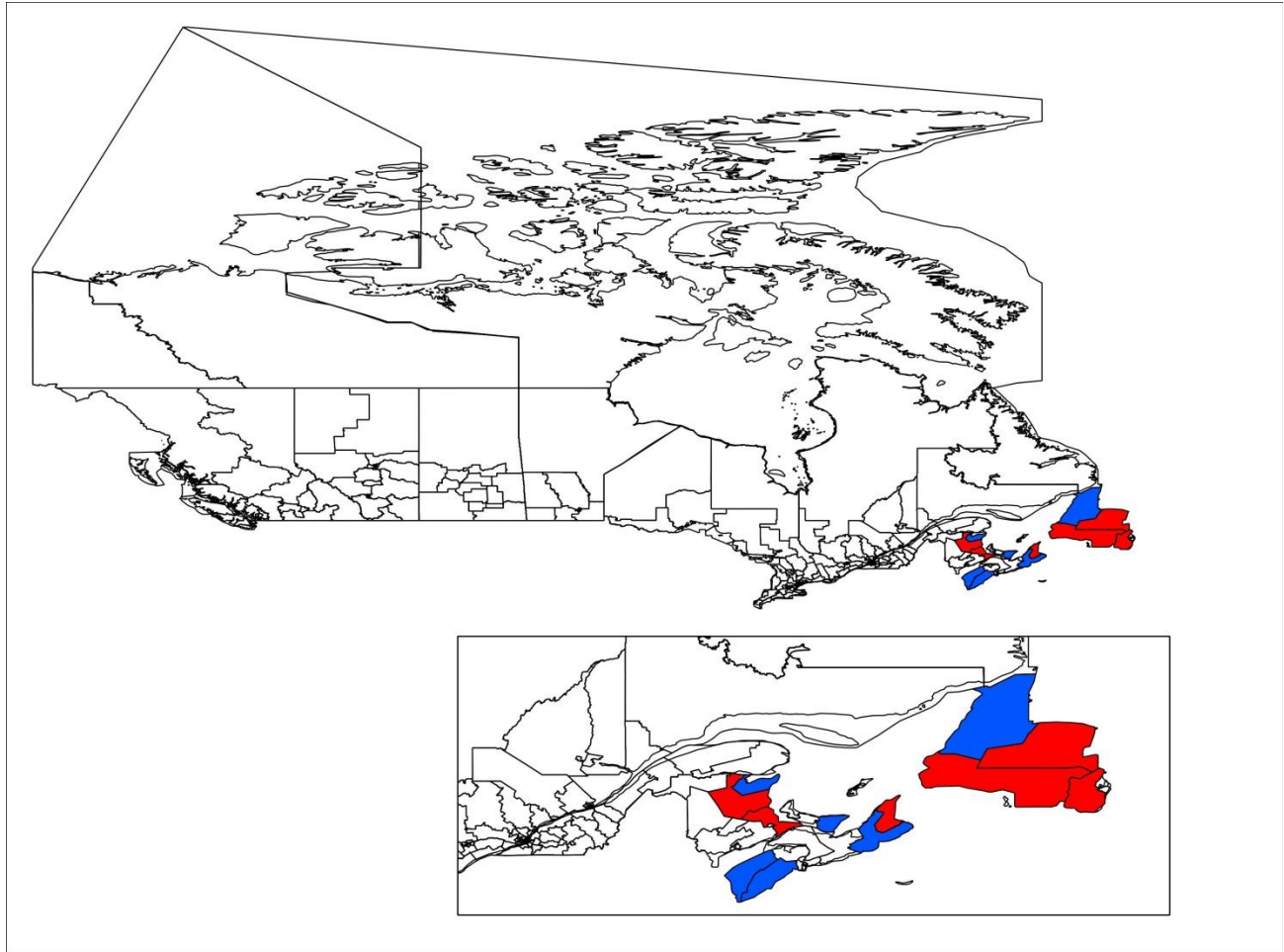
DV	
Catch to allocation ratio	
IV: Polity score	-0.009 (.0048)
Employment in fishing or fish-processing	0.522 (0.397)
Fish consumption per capita	0.0005 (0.001)
Constant	0.765 (0.083)
N	254
R <sup>2</sup>	0.04
Prob> F	0.0143



**Figure 3. Predicted values of Polity score's effect on catch-to-quota ratio**

### **Case study: Canada**

To take a closer glimpse at the mechanisms of electoral competition, and how they may affect overfishing, I turn now to the example of Canada, which has the largest stake in the Northwest Atlantic today; the majority of the fishing grounds are within its 200-mile exclusive economic zone. Canadian fishing interests have traditionally been geared towards processing, with the intent to export; many of the trawlers in the water were owned by one or another processing company. Certain coastal areas on the Atlantic coast, as a result, have been heavily dependent on fishing and fish processing for more than a century.



**Map 2:** Canadian electoral districts, with fishing-dependent ridings in the Maritime Provinces highlighted.<sup>46</sup>

Canada is unique among democracies in that the act governing its fisheries is more than a century old and gives the Fisheries Minister wide leeway (interview, July 2010). MPs also have some ability to influence who gets what: there is anecdotal evidence that Liberal MP Gerry Byrne of Newfoundland was able to redirect extra shrimp quotas to his district in the waning days of a close campaign in 1997. Byrne won by only 232 votes that year. (Hill 2002) Canadian federal law does not provide for fines for overfishing; if a quota is exceeded by a certain amount, that amount is then deducted from that fishermen's quota for the next year. (Schare 2006) In a

<sup>46</sup> Blue districts are those whose borders have remained relatively static since the 1970s; red districts are those whose borders have changed since the 1970s.

Tragedy of the Commons situation, where no user of the resource is convinced the resource will be there in the same amounts the next year, this encourages short-term strategies by fishermen.

As stated previously, domestic fishing interests in Canada lobbied strongly for a reaction to distant water fishing in the Northwest Atlantic by Eastern Bloc trawlers, and in 1970, with many fishing districts in the Maritimes considered toss-up seats, the Liberal government unilaterally imposed a 12-mile exclusive fishing limit (Hollick 1974). Canadian fish-processing plants expanded rapidly after the extension to a 200-mile EEZ, and overcapacity in the processing sector drew demand for more and more fish.

Historically, deep-sea fishing was seen as a major economic engine for Newfoundland and the Maritimes (Nova Scotia, Prince Edward Island, and New Brunswick) (Winson 1982), and one worthy of support, particularly when the fishing-intensive seats were marginal. For instance, in 1983, with a Liberal government holding several seats in rural Newfoundland that it could not afford to lose, and several deep-sea fishing companies in economic trouble, the federal and provincial governments created a bailout in the form of a new company, Fishery Products International, which was 85 percent owned by the government (Sinclair 1985).<sup>47</sup> A smaller company, National Sea Products, was 20 percent government-owned. No processing plants were closed as part of the restructuring. (Gough 2007).

In Privileging Industry (2004), McGillivray looks at the setting of tariffs in Canada. Examining 1970 tariffs, she expects that industries concentrated in marginal districts should have

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<sup>47</sup> The Canadian federal government gave up its stake in Fishery Products International in 1987, taking a \$63.2 million loss on its investment. In the 1990s, FPI and NSP both closed hundreds of plants and laid off thousands of workers, due to the cod moratorium. (Gough 2007)



received more protection than those in strongholds or those that were electorally dispersed.<sup>48</sup>

Using a statistical model, she finds evidence that, indeed, this was the case. Tariff protection is a high-marginal-cost issue; even in Canada, non-compliance with the ICNWF / NAFO is low-marginal-cost. The fishing industry in Canada is electorally concentrated, but the level of electoral competition varied from 1973 to 1983.

District-level electoral data is readily available for 1970s-era elections in Canada (Feigert 1989), meaning we can gauge the impact of electoral competition on overfishing. Thirteen ridings can be identified that have large numbers of fishermen or fish processing employees.<sup>49</sup> Many people in these districts were seasonally employed, and relied on fishing or work in the processing plants as their sole source of income. I measure electoral competition from 1973 to 1983 (encompassing four different governments and three elections) for the fishing-intensive ridings, and run a simple bivariate regression model examining the relationship between electoral competition and overfishing.

As predicted, the greater the electoral competition for fishing-intensive seats, the more overfishing takes place. When fishing-dependent ridings are relatively safe, fishing effort actually comes in under the quota. See Table 5 for results and Figure 6 for simulated values. Simulating predicted values shows that overfishing is predicted to take place at the point where the winning party's share of the vote dips below 49.2 percent. In Canada's "two-plus" party system of the 1970s, ridings with no candidate receiving a majority either were extremely close

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<sup>48</sup> It is interesting to note that McGillivray looks at Canada in 1970 instead of a later date because she believes the multi-party character of post-1970 Canadian elections made most if not all districts "marginal," thereby negating the concept of "stronghold." I would argue marginality is a continuous concept, not a binary concept.

<sup>49</sup> These are Acadie-Bathurst, Miramichi, and New Brunswick Southwest in New Brunswick, Bonavista-Trinity-Conception, Burin-St. George's, and Humber-St. Barbe-BaieVerte in Newfoundland and Labrador, Halifax West, Sackville-Musquodoboit Valley – Eastern Shore, South Shore, Sydney-Victoria, and West Nova in Nova Scotia, and Cardigan and Egmont in Prince Edward Island. Canadian fishing-dependent ridings were determined using information in Hill (2002).

between the Progressive Conservatives and Liberals, or were ridings where the Progressive Conservatives, Liberals, and New Democratic Party all had some strength. Such electoral situations are exactly where the theory predicts overfishing would be allowed in order to gain votes.

**TABLE 3: Results (Canadian case, 1973-1983)**

		DV Catch to allocation ratio
IV: Electoral competition (degree of "safeness")		<b>0.0482</b> <b>(0.0135)</b>
	Constant	<b>-1.485</b> <b>(0.644)</b>
	N	72
	R <sup>2</sup>	0.154
	Prob> F	0.0007

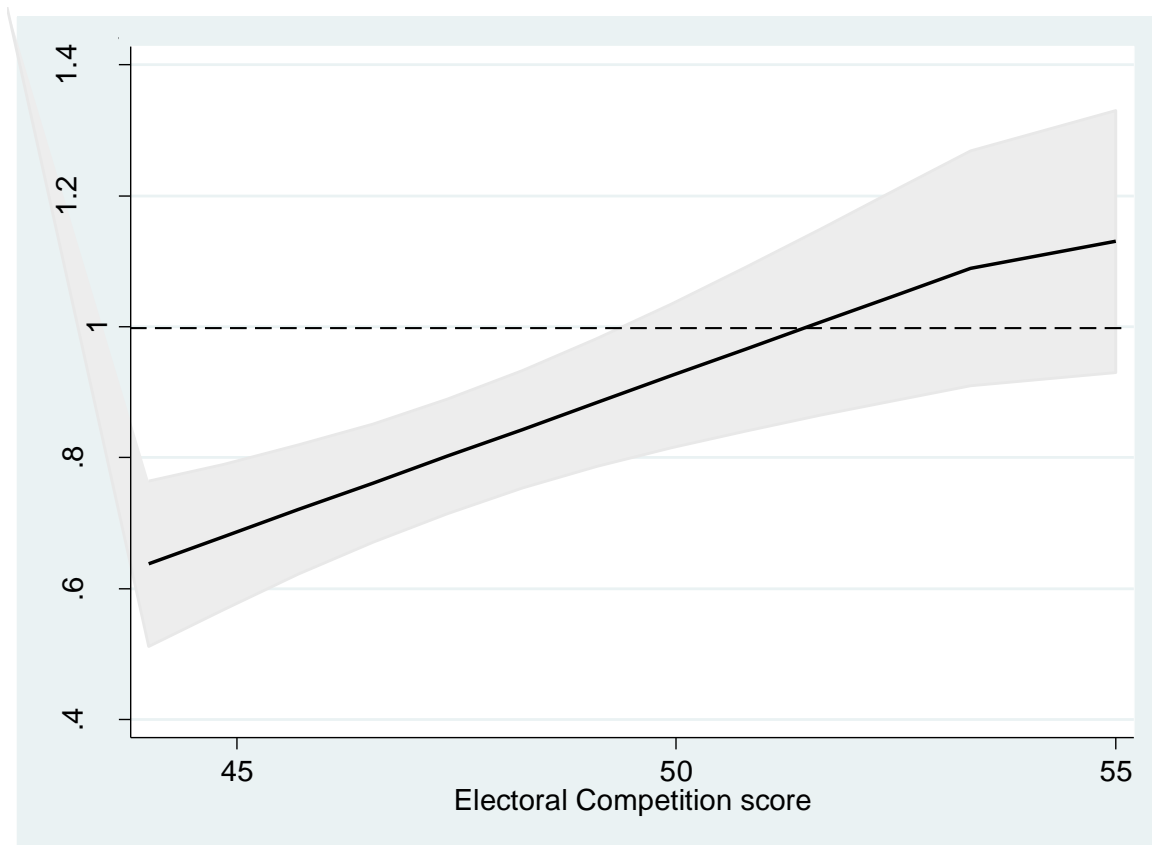


Figure 4. Predicted effect of electoral competition on overfishing in Canada, 1973-83

## Conclusion

In this chapter, I sought to demonstrate that non-compliance varies according to the incentives created by electoral competition. NAFO member states with governments in danger of losing elections appear to do a poorer job of enforcing fishing quotas, and as a result, fishing fleets in these states are likely to overfish to a greater degree than do fleets in states where the government has a larger majority or does not rely on a shaky coalition to stay in office. The evidence on the effect of electoral rules on non-compliance is more mixed, and further work is necessary. What is still needed is to look at the theory in a setting where marginal costs may vary. If issues concerning an international common-pool resource have different levels of salience in different states, will we see variation in the level of compliance with regimes

designed to control those resources? The next chapter will examine this question, through the domain of air pollution in Europe.

## Chapter 6

### Air Pollution in Europe

*“All my life I’ve seen the lads leaving Ireland for the big smoke in London, Pittsburgh, Birmingham, and Chicago. It’d be better for Ireland if they stayed here and we imported the smoke,”*  
– unnamed Irish politician, 1988.<sup>50</sup>

In the previous two chapters, I sought to show how a low-marginal-cost issue area such as international fishing differed from McGillivray’s predictions on a high-marginal-cost issue area such as industrial protection. This chapter seeks to determine the scope conditions under which previous theories apply through the concept of marginal costs. Some favors for special interests are costly, whether in terms of future support from voters, or in terms of direct budgetary cost; others are cheap: perhaps they cost a government nothing, or voters do not notice.

In this chapter, I examine a domain which varies by marginal cost: the international regime to control pollutants that cause acid rain, officially known as the Convention on Long-Range Transboundary Air Pollution (CLRTAP). Because air pollution achieves different levels of salience across states due to wind currents, we should expect the marginal costs to differ by state, and different levels of non-compliance based on electoral rules, electoral competition, and public awareness of pollution. In pollution-suffering states, giving benefits to polluters may be too costly, while in others, more non-compliance may be allowed. The theory is tested on a new dataset of compliance, electoral competition, district magnitude, and public tolerance for pollution utilizing emissions data from the United Nations for two distinct pollutants to construct new dependent variables.

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<sup>50</sup> As quoted in Taylor 1998.

## **Nature of the problem**

The Convention on Long-Range Transboundary Air Pollution seeks to regulate a variety of airborne pollutants which have been found to be harmful to human health, wildlife, and plantlife. The two most notable substances regulated are sulfur dioxide and nitrogen oxide. Both are precursors to smog and acid rain.

Man-made sulfur dioxide is created when fuels containing sulfur are burned. Certain types of coal and fuel oil contain between 1 and 3 percent sulfur (Control Techniques 1981). Sulfur dioxide is irritating to the skin, eyes, nose, throat, and upper respiratory tract. When mixed with oxygen and water, it forms sulfuric acid, which falls to the ground as acid rain (Christianson 2010). Acid rain can damage crops, cause eutrophication of soils, change the chemical composition of lakes and rivers – killing fish and other aquatic life – and corrode building materials, resulting in erosion to cathedrals and other historic buildings (Mellanby 1988). It is also the main contributor to winter smog. The main method of controlling sulfur dioxide emissions is through burning cleaner fuels or installing expensive “scrubbers;” the technology is known as flue gas desulphurization, and can be quite expensive; adding FGD technology to a new coal-fired power plant can add about 15 percent to the plant’s total cost (Boehmer-Christensen and Skea 1991).

Nitrogen oxide is produced by burning coal, natural gas, distillate oil, and high-nitrogen residual oils. Power plants and industrial boilers are the prime stationary sources, and emissions can be controlled through modifying the type of fuel or the combustion process. Nitrogen oxide

is also a precursor to tropospheric ozone (O<sub>3</sub>), or summer smog, which can damage plants (Wurzel 2002).

The sources of both sulfur dioxide and nitrogen oxide can be divided into two types. Stationary sources include power and industrial plants; mobile sources are primarily motor vehicles. The majority of sources of sulfur dioxide are stationary; the majority of sources of nitrogen oxide are mobile, making nitrogen oxide emissions somewhat harder to control. Chimney height plays a large role in the geographical spread of stationary-source acid deposition; depending on the height of the chimney and the wind, the beginning of the area of acid deposition may be up to 25 km away, with the outer limits of deposition thousands of km away.<sup>51</sup> Wind currents can cause sulfur and nitrogen oxide to be dispersed quite a long distance. About 50 percent of sulfur emissions fall back on the emitter nation's soil; nitrogen oxide emissions are much more variable (Sandler 1998).

### *Efforts to halt pollution*

Acidification was first noticed in the 1960s in Scandinavian rivers and lakes, where a number of aquatic species suddenly died en masse (ECE 2001); a Swedish soil scientist, Svante Oden, did the first work on acidification in precipitation in 1967 and offered the first hypotheses on long-distance transport of sulfur dioxide from British industrial plants to Scandinavian lakes (Lidskog and Sundqvist 2002).

Spurred by this early scientific evidence, Sweden and Norway organized the 1972 UN Conference on the Environment, held in Stockholm, where Swedish scientists presented evidence on the damage being done to soils and lakes. The two governments lobbied other

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<sup>51</sup> For a time, UK authorities fought pollution by erecting higher chimneys; this had the ultimate effect of foisting the acid deposition problem off on Scandinavia.

European states on the issue in both the Organization for Economic Cooperation and Development (OECD) and the United Nations Economic Commission for Europe (UNECE).<sup>52</sup> An OECD program was set up to monitor pollutants in 11 European states, but no further action was taken (Boehmer-Christiansen and Skea 1991).

Regional efforts to halt acidification in Europe came out of the Helsinki Conference on Security and Cooperation in Europe in 1975. Soviet Premier Leonid Brezhnev announced at the conference an initiative to create an international convention on the environment. The resulting Convention on Long-Range Transboundary Air Pollution was negotiated between 1977 and 1979. Sweden and Norway pushed other states for standstill and rollback clauses on sulfur dioxide emissions, but the United States, United Kingdom, and West Germany, notably, were opposed. Ultimately, the effort was unsuccessful.

As a framework convention, CLRTAP establishes a basis for the sharing of information and research. 32 states and the European Community ratified the convention, which went into force in 1983.<sup>53</sup> CLRTAP bears much more resemblance to NAFO than the European Union;<sup>54</sup> its secretariat is small, and its main job is to organize meetings and collect information from states. An executive meets once a year to review implementation. All decisions are reached by consensus (Selin and Vandever 2003).

Four protocols related to nitrogen oxide and sulfur dioxide have been signed since 1983: Helsinki, Sofia, Oslo, and Gothenburg. In the next sections, I will examine each in turn.

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<sup>52</sup> Neither Sweden nor Norway were members of the European Community at the time.

<sup>53</sup> CLRTAP had been ratified by 48 parties as of 2001.

<sup>54</sup> It should be noted that most members of CLRTAP are also now members of the EU, and there have been efforts by the European Commission to strengthen air pollution cooperation even further by EU member states (see the Large Combustion Plant directive of 1988).



### *The Helsinki Protocol*

The first protocol signed, Helsinki, called for fixed reductions of 30 percent by all signatories. This was agreed upon after years of negotiations; when CLRTAP was first signed, a majority of states rejected the notion of state-level emissions targets. A second conference in Stockholm took place in 1982 on the topic “Acidification of the Environment,” where Swedish negotiators again broached a 30 percent rollback in emissions by 1993. This time, with acidification a much more salient issue in the German press (see below), West Germany was in favor. Further negotiations eventually produced the Helsinki Protocol of 1985, which called for 30 percent reductions in SO<sub>2</sub> from 1980 levels by 1993. As of 2006, 22 of the 43 states to ratify CLRTAP had ratified the Helsinki Protocol.<sup>55</sup> The UK, Poland, and Spain were the most notable non-signatories. All parties were in compliance by 1998.

The Helsinki benchmarks were not particularly difficult to implement; with the notable exception of West Germany, the majority of states that ratified were already in compliance by the time of ratification. France achieved a 30 percent reduction in emissions by 1983, two years before the Helsinki Protocol was negotiated and without any apparent government effort; Connolly (1999) notes that the French government only agreed to ratify once it was pointed out that its conversion to nuclear power meant it could reduce emissions costlessly. Other reductions can be attributed to the early-1980s drop in the price of oil, which allowed power plants to shift from coal to oil for electricity needs (oil does not produce sulfur dioxide). In the Netherlands, a switch to recently-discovered natural gas reduced emissions; in the UK, an industrial recession

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<sup>55</sup> Austria, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Russia, Slovakia, Sweden, Switzerland, and Ukraine.

reduced emissions. (Wettestad 2002) Several states signed on to CLRTAP but did not ratify the Helsinki Protocol; nevertheless, many of them had met the 30 percent reduction threshold by 1993, including industrial states Poland and Spain.

### *The Sofia Protocol*

The Sofia Protocol of 1988 called for freezing nitrogen oxide emissions at 1987 levels by 1994. The Protocol entered into force in 1991. As of 2006, 21 states had ratified Sofia; 18 of the 21 who signed complied with the terms of Sofia. The EU-12 went farther, calling for a reduction of NO emissions by 30 percent by 1998.

Unlike Helsinki, Sofia called for direct actions to reduce nitrogen oxide emissions; in particular, all signatories agreed to make unleaded fuel sufficiently available along “international transit routes” within two years.<sup>56</sup> Monitoring was to be accomplished through information exchange and voluntary annual reports.

### *The Oslo Protocol*

The Oslo Protocol of 1994 was the second on sulfur dioxide and the first to be based on integrated assessment models developed by atmospheric scientists. For the first time, national targets, differentiated across states, were introduced (Sorrell and Skea 1999). Among the concrete measures introduced was a clause setting mandatory limits on the sulfur content of fuel oil.

The Oslo Protocol retained 1980 sulfur dioxide levels as a baseline, then called for emissions reductions to be met by 2000, 2005, and 2010, with a total reduction of 60 percent

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<sup>56</sup> Most states had already begun phasing out unleaded fuel by this point, but Bulgaria and Russia continued to use leaded petroleum until 2003 and 2005, respectively.

from 1980 levels continent-wide. Within that total reduction, however, each state could set its own target. Austria, for example, agreed to an 80 percent reduction from 1980 levels, while Bulgaria agreed to a 45 percent reduction. Ireland's agreed-upon reduction was only 30 percent. Twenty-seven states had ratified the Oslo Protocol by 2006; 19 of the 27 parties achieved their target levels.

### *The Gothenburg Protocol*

The Gothenburg Protocol, officially known as the Protocol to Abate Acidification, Eutrophication, and Ground-Level Ozone was negotiated in 1999. Essentially a renegotiation of the Oslo Protocol, it called for 63 percent reductions in sulfur and 41 percent in nitrogen oxide (continent-wide), and also regulated emissions of ammonia and volatile organic compounds (VOCs). Again, emission ceilings were negotiated for 2010, with national targets differentiated across states. The Protocol entered into force in 2005; twenty states had ratified as of 2006.

Biannual negotiations began in 2007 at the United Nations Economic Commission for Europe in Geneva to extend the Gothenburg Protocol, with new targets for 2020, but as of March 2012, those negotiations had not yet produced a new protocol. See table 1 for a chart explaining all four protocols.

Punishment and enforcement are non-existent in all four protocols; CLRTAP does not have the power to compel any state to comply. Monitoring is conducted through the EMEP program of the UNECE (see below), as well as voluntary annual reports submitted by each signatory.

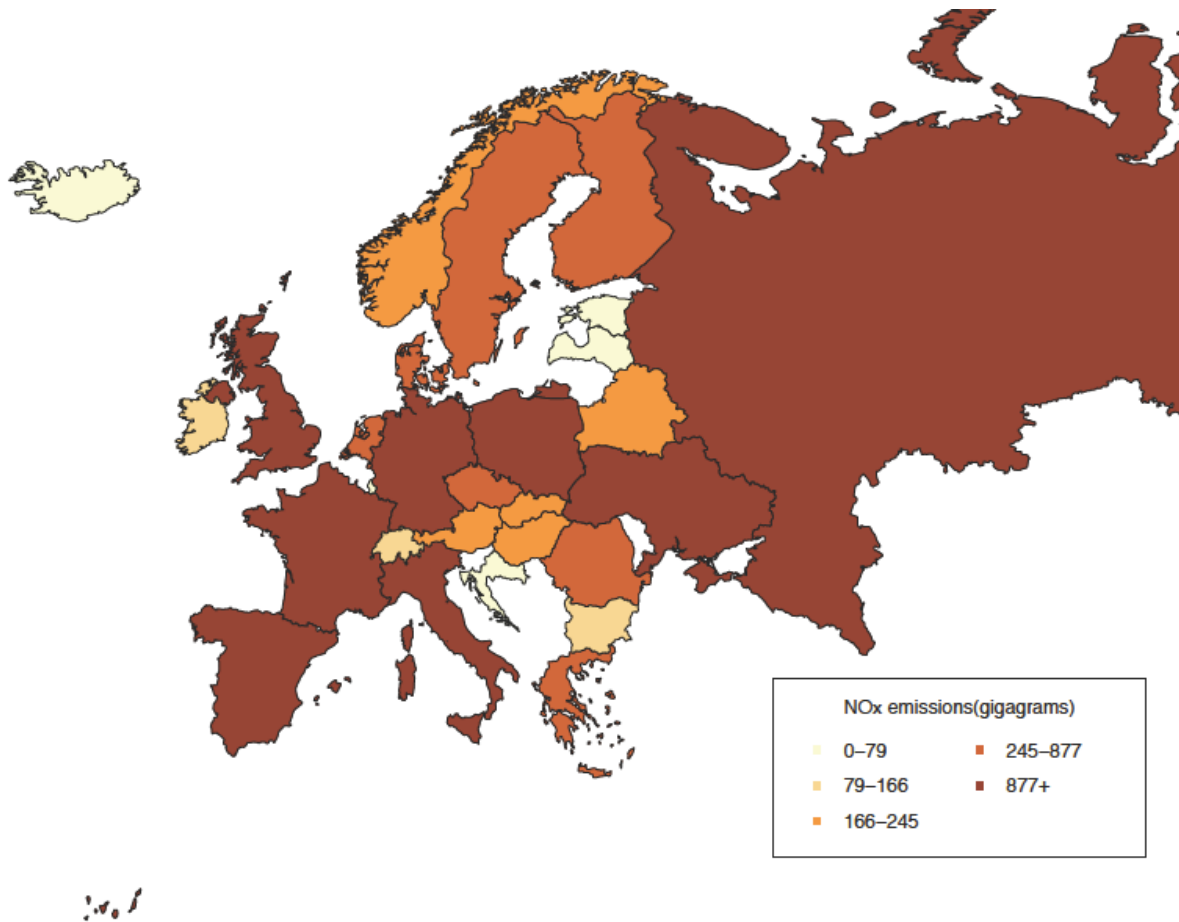
<u>Protocol</u>	<u>Substance covered</u>	<u>Year signed</u>	<u># of states ratified</u>	<u>Differentiated targets?</u>	<u>Target date</u>
Helsinki	SO <sub>2</sub>	1985	22	No	1993
Sofia	NO <sub>x</sub>	1988	21	No	1994
Oslo	SO <sub>2</sub>	1994	27	Yes	2000, 2005, 2010
Gothenburg	SO <sub>2</sub> , NO <sub>x</sub>	1999	20	Yes	2010

**Table 1: Protocols signed under the Convention on Long-Range Transboundary Air Pollution.**<sup>57</sup>

Reducing the amount of atmospheric sulfur dioxide has largely been an international success; for the most part, sulfur emissions have been curbed (Sandler 1998). Within this overall level of success, however, there has been significant variation in both overall compliance and speed of compliance.

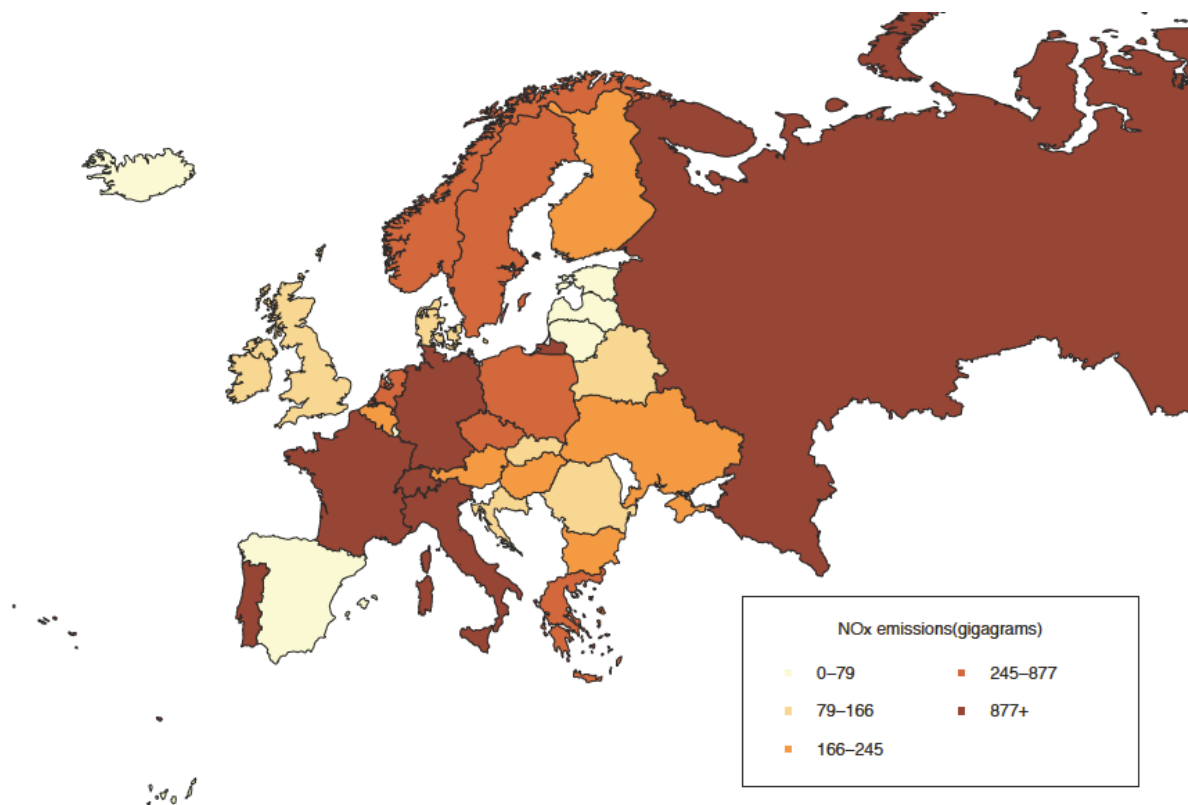
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<sup>57</sup> Four additional protocols have been signed, but none deal with sulfur dioxide or nitrogen oxide.



**Map 1. Map of nitrogen oxide emissions in Europe, 1994 (divided into 2008 quintiles)**

This map of nitrogen oxide emissions in 1994 shows that the majority of states in Europe, especially western Europe and the non-Scandinavian parts of northern Europe, were major polluters.



**Figure 2. Map of nitrogen oxide emissions in Europe, 2008 (divided into 2008 quintiles)**

The picture by 2008 is more nuanced. Some states have indeed brought down their nitrogen oxide emissions – particularly Britain, Spain, and the central and East European (CEE) states – though France, Germany, Italy, and Russia are still major emitters of nitrogen oxide. Nonetheless, it is instructive to note that emissions have not been reduced uniformly.

What explains variation in compliance with the protocols of CLRTAP? One study found that the most effective countries at curbing emissions – Austria, Finland, Norway, Sweden, and Switzerland – had the highest emission imports (Helm and Sprinz 2000). Another found that ecological vulnerability toward pollution and the economic costs of pollution abatement were the leading drivers of support for international environmental regulation (Sprinz and Vaahtoranta 1994). Rindquist and Kostadinova (2005) examine 19 of the states that signed the Helsinki

Protocol in an effort to determine if the agreement actually helped reduce pollution. They find that it did not. They do not examine variation in the levels of compliance. Tjøtta and his co-authors (Bratberg, Tjøtta and Oines 2005, Aakvik and Tjøtta 2011) have found that signing the Helsinki and Oslo Protocols had no independent effect, but that signing the Sofia Protocol did have an independent effect. Previous work on the political determinants of air pollution has focused on corporatism (Crepaz 1995, but see Neumayer 2003), left-party strength (King and Borchardt 1994), Green party strength (Neumayer 2003), and the degree of democracy (Bernauer and Koubi 2009).

### **Variation in salience of the acid rain issue in Europe**

The salience of sulfur dioxide and nitrogen oxide emissions has varied over time in Europe. In the 1980s, acidification had very low political salience in the UK, but high political salience in West Germany, due to a well-publicized incident in which a region of forest died, and a Green Party that worked to bring the issue to the forefront of election campaigns (Zito 2000). A 1982 Eurobarometer question asked what respondents were most concerned about over the next 10 to 15 years; 77 percent of West German respondents replied “despoiling of natural life,” while only 39 percent of British respondents answered similarly. In 1986, 94.2 percent of those in Portugal and 84.5 percent of those in Ireland surveyed said they were unaware of the acid rain problem, compared to 58.4 percent of Dutch and 56.5 percent of Danes.

Reflecting the low salience of the issue in their country, British negotiators worked in earnest to lower emissions until 1993, when government officials’ interest in the matter waned noticeably (Zito 2000). This corresponds to the period when the ruling Conservative Party’s poll numbers began to sag precipitously; a low-salience issue is not worth alienating voters over.

Moreover, what acidification damage that did exist in Britain was in Scotland and Wales, areas that were virtual lost causes for the Conservative Party by the 1990s.

What is the best way to determine the salience of the acid rain issue in the various states of Europe? Utilizing cluster analysis to determine state-level patterns in responses to public opinion questions on the environment and air pollution was inconclusive.<sup>58</sup> One alternate approach would involve forest cover. We know from anecdotal evidence (Boehmer-Christiansen and Skea 1991, Scharer 1999) that the amount of forest cover in a given state is indicative of the salience of the air pollution issue in that state, because of the connection between these emissions and acid rain. Therefore, in the subsequent analysis, forest cover will be used as a proxy for salience.

Another alternate approach would use weather data. Winds in far western Europe (the UK, Ireland, France, Spain, and Portugal) tend to be westerly / southwesterly; winds in the former Soviet Union tend to be southeasterly (Barry and Chorley 1992). The net effect for the states in between is that pollution from both east and west is deposited on them. In order to do this, accurate state-by-state climatological data would be needed (for example, what are the wind patterns in the Benelux states?), and I have not yet been able to obtain this data.

### **Evidence of lobbying on pollution issues**

For the theory to be valid, one must see evidence that industrial firms are actually lobbying to maintain or increase their emissions. The pan-EU business association, UNICE, with membership including the heavy industry, energy, and automobile sectors, has lobbied heavily on clean air issues across Europe. And in Britain, where the local coal is sulfur-rich, the Central

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<sup>58</sup> Complete-linkage cluster analysis on several Eurobarometer questions related to acid rain and air pollution did not produce consistent results.



Electricity Generating Board lobbied hard against joining CLRTAP at all, but was rebuffed. As stated above, Britain did refuse to sign the Helsinki Protocol, but signed the Oslo Protocol over industry objections. It was estimated at the time of the Oslo Protocol's ratification that it would cost roughly one billion pounds in flue equipment to remove SO<sub>2</sub> from the chimneys of British power plants. (Schleicher 1992)

## Hypotheses

Recall the hypotheses from Chapter 3:

*H1: States with higher district magnitudes are likely to be more non-compliant with international common-pool resource regimes than states with low district magnitudes.*

*H2: States with higher levels of electoral competition are likely to be more non-compliant with international common-pool resource regimes than states with lower levels of electoral competition, when the industry relevant to the resource is concentrated in marginal districts.*

In this section, I state two additional hypotheses. This chapter will demonstrate that when marginal costs change, the provision of private goods also changes. The marginal cost here is the salience of air pollution; when it is high,

*H6. When the salience of air pollution is high, increasing district magnitude will have a negative effect on over-pollution in contested districts and a positive effect on over-pollution in safe districts.*

*H7. When the salience of air pollution is low, increasing district magnitude will have a positive effect on over-pollution regardless of the competitiveness of the district. PR systems should see greater over-pollution than SMDP systems in low-salience states.*

By salience, I refer to the importance of the issue in voters' minds. A high-salience issue is frequently discussed in the press or by government officials, and will more than likely be on the minds of most voters when they decide whom to cast a ballot for. A low-salience issue will be scarcely discussed. The salience of the issue should have a direct bearing on one aspect of marginal costs, which will affect whether parties choose to target resources toward their strongholds, marginal districts, or both.

### **Research design**

While the CLRTAP regime focuses on other emissions such as particulate matter, volatile organic chemicals, and methane, I choose to focus on nitrogen oxide and sulfur dioxide emissions in this chapter because they have the lowest margin of error in terms of evidence-gathering; de Leeuw (2002) finds that SO<sub>2</sub> emissions have a margin of error of 10 percent, and NO<sub>x</sub> emissions have a margin of error of roughly 30 percent. Other pollutants covered under the CLRTAP regime can have a margin of error of 50 percent or more.

Broadly speaking, the dependent variable in all analyses is the degree of compliance with CLRTAP. Data on emissions comes from the Cooperative Program for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe, known by its German acronym EMEP. Emissions are calculated through a model called RAINS, which divides Europe into grid cells of 150 square kilometers each. Data on each state's specific targets under the four protocols come from the Handbook for the 1979 Convention on Long-Range Transboundary Air Pollution and its Protocols. Because there have been four protocols, there can be five distinct dependent variables:

- Sulfur dioxide emissions above (or below) the target set forth in the Helsinki Protocol

- Nitrogen oxide emissions above (or below) the target set forth in the Sofia Protocol
- Sulfur dioxide emissions above (or below) the targets set forth in the Oslo Protocol
- Sulfur dioxide emissions above (or below) the targets set forth in the Gothenburg Protocol
- Nitrogen oxide emissions above (or below) the targets set forth in the Gothenburg Protocol

See table 2 for summary statistics of the five emissions variables.

**TABLE 2: Descriptive Statistics**

	Mean	Standard Deviation	Minimum	Max
<b><i>Emissions variables</i></b>				
Helsinki target	-136.9	1201.5	-4709	4681
Sofia target	-68.9	710.4	-3769	5763
Oslo target	-353.03	737.1	-4022	423.9
Gothenburg sulfur target	-29.8	179.2	-465.6	761.7
Gothenburg nitrogen target	60.6	225	-500.9	688.9

As can be seen, the mean of four of the five variables is negative, indicating that the majority of states not only met their obligations under these protocols, but exceeded them.

### *Independent Variables*

Electoral competition is defined as the degree of safeness of a given seat. Higher values are less safe; lower values, more safe. There is not enough district-level data for many states from 1980 to 1995 to make any real cross-national inference. However, Carey and Hix (2011)

have a measure of government survival days for the time period in question.<sup>59</sup> This variable simply measures how long a government survived, from investiture to a vote of no confidence or the next election. Governments that survive for a shorter amount of time would be presumed to have smaller majorities and be engaged in tighter electoral competition than those that survive for a longer period of time.

### *Control Variables*

The following control variables, all previously shown to have an impact on emissions, are used:

- Left-wing party strength, previously shown to be associated with lower levels of pollution (King and Borchardt 1994, Neumayer 2003). Taken from the Comparative Parties dataset.
- Gross domestic product per capita, previously shown to have an inverted-U effect on emissions (the so-called environmental Kuznets curve) (Selden and Song 1994; Bernauer and Koubi 2009). The idea behind the environmental Kuznets curve is that pollution increases as GDP per capita increases until a tipping point. Beyond this point, citizens' benefit from an additional unit of economic growth, if that growth comes with pollution, is negative, and citizens demand greater environmental protection. From then on, pollution decreases as GDP per capita increases. Data on GDP per capita is taken from the World Bank's World Development Indicators.
- Energy intensity, calculated as units of energy per unit of GDP and a measure of the energy efficiency of a state's economy. Previously shown to be associated with lower levels of pollution (Neumayer 2003). The causal mechanism here is fairly intuitive; states

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<sup>59</sup>Data available and obtained from [http://www.dartmouth.edu/~jcarey/Data\\_Archive.html](http://www.dartmouth.edu/~jcarey/Data_Archive.html). Data on district magnitude also comes from this dataset.

with greater energy efficiency would be naturally assumed to pollute less. Taken from the World Bank's World Development Indicators

- Number of vehicles per capita. Previously shown to be associated with higher levels of pollution (Neumayer 2003). Taken from the International Road Federation's World Road Statistics.
- Forestry cover, operationalized as the number of acres of forest in a given state. Taken from the United Nations Economic Commission for Europe's forestry dataset.

## Results

See table 3 for the statistical models. As a first cut, I will estimate an ordinary-least-squares regression model to replicate the findings of the previous work on the political determinants of emissions, including additional political variables – district magnitude and government days in office, a proxy for political competition – and forest cover, a proxy for salience of the pollution issue.

Little achieves significance here. Richer countries appear to produce fewer emissions. More long-lived governments produce more sulfur dioxide emissions, and perhaps more nitrogen oxide emissions, though we cannot say this with any confidence. This could indicate “safe” governments rewarding their strongholds by allowing greater pollution. The more vehicles in a given state, the more nitrogen oxide emissions, which is completely intuitive, given the mobile sources of nitrogen oxide.

DV DV DV DV  
 Sulfur dioxide emissions Nitrogen oxide emissions Sulfur dioxide emissions Nitrogen oxide emissions

Model	OLS	OLS	OLS	OLS
IV: District Magnitude	-1.68 (1.97)	-0.65 (1.47)	-1.64 (1.98)	-0.53 (1.47)
IV: Electoral Competition (government survival days)	<b>0.327</b> <b>(0.152)</b>	0.1 (0.15)	0.369 (0.21)	0.232 (0.16)
# of seats held by leftists	3.619 (6.514)	3.98 (4.85)	3.54 (6.53)	3.74 (4.85)
GDP per capita	<b>-0.59</b> <b>(0.01)</b>	<b>-0.043</b> <b>(0.008)</b>	<b>-0.056</b> <b>(0.11)</b>	<b>-0.042</b> <b>(0.008)</b>
Forestry cover	0.001 (0.01)	-0.002 (0.008)	0.008 (0.02)	0.016 (0.018)
Energy Intensity	-18.91 (47.08)	-7.34 (35.8)	-17.66 (47.36)	-1.73 (36.13)
Vehicles per capita	1.14 (0.86)	<b>3.76</b> <b>(0.64)</b>	1.11 (0.87)	<b>3.68</b> <b>(0.64)</b>
Interaction term			-0.0000005 (0.000018)	-0.000016 (0.000013)
Constant	<b>936.26</b> <b>(478.2)</b>	-239.7 (377)	887.2 (507)	-413.9 (405.4)
N	229	224	229	224
R <sup>2</sup>	0.12	0.18	0.12	0.18
F	4.46	6.88	3.9	6.2

	DV	DV	DV	DV	DV
	Progress toward Helsinki Protocol (SO <sub>2</sub> )	Progress toward Sofia Protocol (NO <sub>x</sub> )	Progress toward Oslo Protocol (SO <sub>2</sub> )	Progress toward Gothenburg (SO <sub>2</sub> )	Progress toward Gothenburg (NO <sub>x</sub> )

Model	Treatment-effects	Treatment-effects	Treatment-effects	Treatment-effects	Treatment-effects
IV: District Magnitude	1.28 (1.35)	<b>-1.24</b> (0.58)	0.43 (0.67)	-2.02 (3.17)	-1.6 (5.41)
IV: Electoral Competition (government survival days)	<b>-0.29</b> (0.1)	-0.04 (0.07)	-0.03 (0.08)	-0.31 (0.34)	-0.39 (0.58)
# of seats held by leftists	8.96 (4.96)	-0.27 (2.17)	-3.05 (1.67)	1.92 (3.56)	8.2 (6.06)
GDP per capita	0.02 (0.01)	-0.004 (0.005)	<b>0.012</b> (0.004)	0.02 (0.02)	0.05 (0.03)
Forestry cover	-0.005 (0.007)	0.002 (0.007)	0.005 (0.008)	-0.02 (0.04)	0.02 (0.07)
Energy Intensity	-33.6 (39.95)	11.98 (18.49)	<b>-32.4</b> (14.4)	46.95 (30.9)	42.03 (52.64)
Vehicles per capita	<b>-3.9</b> (0.96)	-0.34 (0.31)	-0.64 (0.34)	-0.67 (0.81)	-0.025 (1.38)
Treaty ratifier	-296.2 (229.5)	-84.1 (78.8)	-220.2 (133.9)	<b>-825.61</b> (403.3)	<b>-1440.23</b> (686.9)
Constant	<b>1351.6</b> (436.4)	234.3 (219.9)	484.2 (267.6)	-73.4 (675.03)	-853.41 (1149.8)
N	129	132	133	63	63
Chi <sup>2</sup>	80.88	42.95	87.93	27.54	31.51

Next I estimate a model interacting the forestry cover term with government survival days. When electoral competition is high and an issue is high-salience, the two effects should offset, unless the relevant industry is located in a marginal district. Given the multiplicity of sources of nitrogen oxide, it is likely we will see no effect there. Sulfur dioxide comes primarily from very large, coal-fired power plants, so it is possible we will see an effect.

The interaction term does not achieve significance in either analysis, indicating perhaps that the effect is zero. This is not surprising. The same variables are significant in these models and in the same direction as the models without the interaction term.

There is additional data we can bring to bear on this question. A treatment-effects model allows us to assume that a continuous variable (in this case, emissions) is endogenous to a binary “treatment” (in this case, whether or not a state ratified the relevant protocol).<sup>60</sup> However, because we lack a reasonable instrumental variable, this model may be fatally flawed.

Looking only at the Helsinki Protocol, there are some interesting results. Looking first at odds of ratifying the Protocol, richer countries and those with more vehicles were more likely to ratify; states with stronger Left parties were less likely. As regards meeting the Helsinki targets, which were uniform reductions of 30 percent, longer-lived governments were more likely, as were states with a lot of vehicles. States with stronger leftist parties tended to do a worse job of meeting the Helsinki targets. District magnitude never meets statistical significance.

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<sup>60</sup> Some states, such as Poland, negotiated differentiated emission reductions and then never ratified the Oslo or Gothenburg Protocols.



The model utilizing data on the Sofia Protocol is the only one where both key independent variables achieve significance, albeit in two different equations. Higher district magnitude states tended to have lower emissions, reflecting perhaps the salience of the issue. Longer-lived, safer governments were more likely to ratify Sofia in the first place. One could interpret this as a safer government's ability to overcome any special interest pressure. As in all analyses presented, the interaction term is insignificant.

We can say little about the model utilizing data on the Oslo Protocol. Richer countries were more likely to ratify, but also more likely to overstep the target. Interestingly, states with strong leftist parties were more likely to ratify and more likely to meet the targets. This is more than likely because the targets themselves were differentiated by states. In the case of Oslo, it is probable that states negotiated targets they knew they could meet. Again, longer-lived governments were more likely to ratify.

Examining sulfur dioxide emissions under the Gothenburg Protocol, we run into the same problems as the Oslo Protocol model; very little achieves significance. The only interesting finding is that states that ratified Gothenburg were very much more likely to meet or exceed their emissions targets than those that did not. This is fairly intuitive.

Again, little can be said. States that ratify are much more likely to reduce emissions. Richer countries are more likely to ratify Gothenburg, but also more likely to miss the target. Again, the lack of significant variables makes some sense; there appears to be no effect of political variables because states chose the targets they knew they could meet. When looking at the Helsinki and Sofia Protocols, which had uniform targets across states, political variables mattered.

With statistical results that are muddled at best, more evidence should be brought to bear if the theory is to be believed. Some of this evidence is presented in the next section.

### **Case studies**

In this section, I examine archetypical high-salience and low-salience states – the Federal Republic of Germany and Ireland – and their responses to international air pollution efforts in the 1980s. As will be seen, the outcomes in both states correspond to the theory.

#### *A high-salience state: Germany*

Germany has a proportional representation system with a relatively high district magnitude (average district magnitude ranged between 37.7 and 45.3 from 1980 to the present, with a median district magnitude of between 11 and 19). However, as will be discussed further below, electoral competition in the industrial districts that produced sulfur dioxide was weak, and the districts could be considered strongholds for the socialist party. The salience of the issue increased sharply in 1982. Based on high salience, low electoral competition, and high district magnitude, I expect that German government officials would reward their strongholds, and provide benefits to polluters in less-competitive districts.

Prior to 1982, the Federal Republic of Germany had led the fight against specific emission requirements in LRTAP. Then the West German government began to conduct forest damage surveys, and found that 15 percent of Germany forests could be classified as moderately or severely damaged (at least 25 percent foliage loss). Soil scientist Bernard Ulrich hypothesized that soil acidification was the cause of this, and the “Ulrich hypothesis” was widely publicized. At the time, West Germany was one of the two largest polluters in Western Europe (Boehmer-Christiansen and Skea 1991). By October 1982, following nearly a year of massive press

coverage on acidification, 80.6 percent of West Germans said they were worried about pollution in a Eurobarometer poll. The next highest group was Greeks, with 68.7 percent.

An SPD / FDP coalition was elected in West Germany in 1981. Once the acidification issue became high-salience, we would expect political parties to behave in the same way as McGillivray's examples; in a proportional-representation system like West Germany, parties should reward their base. This is precisely what happened. The German coal industry was based in the Ruhr, the traditional power base of the SPD, as well as the Saarland and North Rhine-Westphalia, both SPD strongholds. Eventually, the FDP, which held the foreign and interior ministries and was not well-represented in those areas, committed West Germany to 30 percent sulfur reductions at the second Stockholm Conference and switched its allegiance from the SPD to the CDU/CSU. This prompted an election, where the CSU and FDP both campaigned heavily on the sulfur-emission issue, and the SPD did not.

The Waldsterben (literally "forest death") controversy was a major issue in the 1983 federal election, and brought the Green Party into the Bundestag for the first time. The SPD lost 4.7 percent of its vote share from 1981, and 25 seats. A CDU / CSU / FDP coalition was narrowly elected, and most support for the Greens came directly from the SPD. In attempting to reward its base through inaction on sulfur emissions, the SPD lost the election.

The environmental movement grew rapidly in Germany in the early 1980s. Greenpeace opened its first office in Hamburg in 1981, and by 1984 was organizing anti-*Waldsterben* protests that drew more than 20,000 people. Environmentalists were joined in opposing acid rain by private foresters; the forest-owners association estimated in December 1984 that total losses from acid rain were 1 billion marks. (Schreurs 2002) Foresters were concentrated in Bavaria, the

heartland of the CSU. We would expect when the new coalition took power that it would reward its strongholds, which would mean anti-acid rain policy to protect forests and foresters.

The new CDU / CSU / FDP coalition passed major legislation in 1983 and 1986 requiring new emission limits on all industrial plants, and transition periods of up to eight years for the clean-up of existing plants. The total cost to reduce emissions was roughly 21.3 billion deutschmarks (Scharer 1999). This strong concern towards reducing emissions extended to the international arena: Germany was the leading state pushing for increased automobile emissions standards in Brussels in the late 1980s. Lobbying efforts by the German automobile industry against increased nitrogen oxide emissions restrictions were unsuccessful (Wurzel 2002).

*A low-salience state: Ireland*

Ireland has a single-transferable-vote system, with low district magnitude (the median district magnitude is 4, with a mean district magnitude of between 3.93 and 4.05). Electoral competition, as will be seen below, was high. Salience was low. I expect in such a scenario that special interests in competitive districts will be rewarded.

In the Republic of Ireland, by contrast to Germany, acid rain and domestic air pollution in general was a low-salience issue, even among environmental activists. Attitude surveys since 1980 have consistently shown environmental concerns ranking below economic growth, security, and employment in Ireland (Leonard 2008). In polls of Irish citizens on environmental problems, toxic waste disposal and water pollution ranked far above air pollution in terms of salience (Coyle 1994). The environmental movement at the time was centered around An Taisce (the Irish National Trust) and the Irish Wildbird Conservancy, groups that were focused on

maintaining urban and rural heritage and campaigns against water pollution. Neither organization made air pollution a priority (Tovey 1993).

Acid rain and sulfur dioxide emissions were simply not on the radar for the Irish public in the 1980s. Because it was located on the east coast of the country with all power plants to its west, Dublin got some sulfur dioxide deposition, but households in Ireland, particularly on Dublin's western suburbs and northern fringe, still burned coal to heat their homes, and the powerful coal industry spent time and money on efforts to dispel reports that smoke from coal could be causing health problems in metropolitan Dublin. (Brady 1986)

As a low-salience issue, the theory would predict that special interests would be rewarded in competitive districts. And as predicted, emissions in Ireland were not cut. Indeed, government grants were available for any home that wanted to add a chimney so it could burn coal, and Irish officials fought both at the European Community and in CLRTAP to be granted a more ambient air quality standard, given the Irish "climate" and the fact that Irish emissions were being transferred east). (Flynn 2004) From 1979 to 1987, the government spent 700 million punts to build the Moneypoint power station, a coal-burning plant in County Clare, on the western side of the island, with chimneys more than 200 meters high (the better to disperse the pollution away from Ireland, though there is no proof this was a conscious choice by planners). (Mullally and Murphey 2008)

Five national elections were contested in Ireland in the 1980s, with power changing hands at four of the five elections. Three electoral districts saw significant emissions from the burning of coal: Clare, Dublin North, and Dublin West. Of the 15 electoral contests in the 1980s

in these three districts, only four were non-competitive.<sup>61</sup> None of the districts could be considered strongholds, either; all three elected candidates from both Fianna Fail and Fine Gael, the two leading parties in Ireland. Given the fact that the environment was not a salient issue in any of the five elections (Penniman and Farrell 1987, Busted 1990) and that both parties were competing for seats in these three districts, I would expect Ireland to be non-compliant with the international environmental regime on sulfur dioxide emissions. This is precisely the case; after joining CLRTAP, Ireland refused to sign the Helsinki Protocol in 1985 and was one of a handful of states where sulfur dioxide emissions actually increased over the course of the 1980s (Aakvik and Tjøtta 2011).

Nor did policies change over the succeeding two decades. When the Irish government set up an Environmental Protection Agency in 1994, responsibility for domestic air pollution was left with local authorities, who were not trained for the task (Taylor 1998). As late as 2000, Irish emissions per capita of air pollutants were among the highest in the EU, Irish pollution abatement expenditure was still only 0.6 percent of GDP, far below other European states, and Ireland had the worst record for environmental complaints in the EU, with more complaints per capita than any other member state. (Flynn 2004; Connaughton 2005)

## **Conclusion**

The findings in this chapter were mixed, and I believe endogeneity is certainly playing a role. When states can set their own emission targets, it appears that many simply set targets they know they can meet (or perhaps already have met, in the case of France in 1983). Quantitatively,

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<sup>61</sup> In the Irish system, with multi-member districts and a single transferable vote, it is difficult to determine levels of competition. I here define a competitive election as one in which a candidate who did not receive a seat was within 1,000 votes of the last candidate from the district to be seated. The non-competitive districts are Clare, 1989; Dublin North, November 1982 and 1989; Dublin West, 1981.

I am unable to definitively say that salience clearly plays a role in the provision of private goods to special interests. The case studies provided strong evidence that, at least when looking at Germany and Ireland, salience was a key factor. The next chapter will offer qualifications, implications, and conclusions.

## Chapter 7

### Conclusion

In this dissertation, I have sought to build bridges between previous work on a key question in political science: when are governments more or less likely to grant favors to special interests? In order to do this, I introduced the concept of marginal costs in terms of special interest provision. Non-compliance with an international fishing agreement provides an obvious benefit to a state's fishing industry; it allows that industry to take in more fish and make more money.<sup>62</sup> And non-compliance is very cheap to a government; it requires no financial outlay or legislative act; fines may have to be paid years down the road, but the chance that they are assessed is low. On the other hand, providing an industrial subsidy or trade protection may also provide benefits to a special interest and lead to more votes for the government offering the subsidy, but will also cost the government a great deal more. Marginal costs may be either actual financial costs, or political costs, as the German government faced when dealing with a high-salience issue such as acid rain caused by sulfur pollution.

One of the key assumptions in this dissertation has been that deviations from ideal governance of a common-pool resource benefit some minority of people in a state in the near-term. Deviation from a fisheries management regime results in short-term gains for fishing boat owners and the fish processing industry. Deviation from a clean-air regime results in short-term gains for polluting industries, which do not have to undertake expensive retrofits to their factories. Therefore, we can think of such deviations as private goods, provided to special interests.

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<sup>62</sup> In the short-term. In the long-term, it causes possibly irreparable harm to the fishing stock, though interviews indicated that fishermen do not take this into consideration generally.



I examined the relationship between special interests and the government in regards to international common-pool resource preservation in three separate domains: the European Union's Common Fisheries Policy, the Northwest Atlantic Fisheries Organization, and the Convention on Long-Range Transboundary Air Pollution (CLRTAP). The first is a regional agreement covering shared territorial seas, those located between 3 miles and 200 miles. The second is a regional agreement covering use of international waters, those beyond 200 miles. CLRTAP encompasses a series of protocols seeking to reduce emissions across the continent of Europe.

### *Qualifications*

Support for my hypotheses was mixed. In examining the Common Fisheries Policy, there was clear evidence that a relationship exists between the size of the electoral district and levels of non-compliance, but electoral competition seemed to only affect overfishing; increased electoral competition actually had a positive effect on the likelihood of turning in correct reports and a negative effect on subsidies for the fishing industry, a prediction opposite that of this dissertation. Data limitations (particularly only sporadically-available district-level electoral data prior to 1990) may have played a role in the mixed findings.

The study of fishing in the Northwest Atlantic was complicated by two factors: the presence of authoritarian regimes, which were not covered by my initial hypotheses, and the presence of Canada as a hegemon for the area, given that it controlled most nearby ports needed for refueling. However, results were solid in the Northwest Atlantic case. Using multiple measures, it was demonstrated that as electoral competition increases, overfishing increases as well. However, interestingly, no inference could be made about the size of the electoral district

(perhaps due to missing data for the 1973-83 time period). Authoritarian states were sharply more likely to overfish than democracies.

In the CLRTAP case, results were mixed at best. I believe this is because of the endogenous nature of the protocols themselves, given that each state could set its own emission reductions. In such a situation, political variables would have little effect because states chose the targets they knew they could meet. Longer-lived governments, those that are assumed to face less electoral competition, do seem to allow more emissions of sulfur dioxide, which we would expect given that such emissions are high-marginal-cost. In some of the models, states with higher district magnitudes tended to do a better job complying with emissions targets, perhaps reflecting the salience of the issue and therefore the higher marginal cost. Longer-lived governments were more likely to ratify the individual protocols on emissions. Examining archetypical high-marginal-cost and low-marginal-cost states in case studies did show that outcomes corresponded to the theory.

### *Implications*

Do state actors learn from the electoral consequences and economic results of policies in other states? How can patterns of diffusion be affected by upcoming elections, expectations of incumbent survival, or the distributive impact of proposed policies? Does the presence of strong epistemic communities, such as occur in and around most international common-pool resource regimes, inhibit the impact of domestic politics? In Chapter 2, I examined seven distinct literatures, on common-pool resources, compliance, electoral rules, diffusion, regulation, international regimes, and special interests.

The theory put forth in this dissertation has implications for both international relations and comparative politics, specifically on the literatures on compliance, electoral rules, and special interests. The evidence presented in favor of the theory suggests more attention should be paid to the costs of deviation when designing international agreements. From the perspective of constructing domestic electoral rules, evidence in favor of the theory adds to the body of literature on the pitfalls of proportional representation (Rogowski and Kayser 2002, Milesi-Ferretti, Peretti, and Rostagno 2002, Kerner and Kucik 2010, among others).

*Possible notes of caution*

Why should we be cautious about the findings, and what can we make of them? Several possible qualifications should be noted. First, is it possible that the non-compliance we observe falls short of outright cheating; in other words, that it is not a *conscious* choice by governments? For some states, it is possible. However, anecdotal evidence of conscious cheating in the Netherlands, Denmark, and other states provides evidence that most states are at least aware they are breaking their commitments to these agreements.

Second, it may be that a process of learning diffusion is taking place (Elkins and Simmons 2005), wherein states are noticing other states' non-compliance without consequence and refusing to comply themselves. I would argue that if this is taking place, it is just one more factor into the decision to comply or not, along with the level of electoral competition, the overall electoral calculus caused by electoral rules, and the level of marginal costs.

Third, it may be that rewarding special interests is a short-term strategy with few long-term benefits, and the diminishing returns from exhausted common-pool resources will eventually end the practice. In a study of an extremely salient, large-scale disaster relief effort in

Germany, Bechtel and Hainsmueller (2011) find that roughly 25 percent of short-term electoral returns carry over to the subsequent election. It seems fair to assume that a less salient issue would result in even fewer carryover votes for a party.

“Fighting for you in Brussels (or Halifax, or Geneva)” can get votes in a single election, but those votes may not carry over. Given that policies which allow overuse of a common-pool resource produce diminishing returns, governments eventually have to either allow greater and greater misuse, slowly manage the downward spiral of the special interest in question, or give up on obtaining votes from the special interest. In Europe, the choice has been to manage the downward spiral of the fishing industry. NAFO chose to give up, banning cod fishing entirely in the Northwest Atlantic in 1992. Canada supported the ban, which resulted in a collapse in support for the ruling Liberal Party in the Maritime Provinces and the rise of the New Democratic Party in Atlantic Canada.

Fourth, would this theory work for non-geographically concentrated industries, or is it a requirement that the industry be compact enough that its members can affect an election in only one or two districts? I would argue that there are scope conditions to this theory. What would the incentives be for a political party to reward a small, geographically-dispersed industry? The members of this special interest group are unlikely to be a pivotal bloc of voters in any district, and are therefore likely to be ignored by the majority of political parties.

Fifth, might endogeneity be an issue? On one level, I do not believe so. There is no reason to surmise that the level of cheating on an international common-pool resource regime would influence long-standing electoral rules or the level of electoral competition in a given polity. Moreover, there is no evidence that compliance with international common-pool resource

regimes has been an issue in the recent cases where states changed their electoral system (see in particular Italy and New Zealand).

However, in terms of international negotiation and the setting of targets for each state, endogeneity definitely is an issue, and is almost surely biasing the results of this dissertation downwards. In the two fishing examples, the quotas are set based on “historical rights,” essentially freezing the share of catch at its late-1970s level. This at least keeps states from setting their own quotas, which is the case for the two most recent protocols negotiated under CLRTAP. As stated in Chapter 6, France, for example, agreed to the 30 percent reduction in sulfur dioxide mandated by the Helsinki Protocol once the French government realized a switch to nuclear power meant they already complied before ever signing.

Sixth, how generalizable is this dissertation? Does the theory exhibit external validity? This dissertation has focused on the developed world, but I do not believe the theory is only valid for the developed world. Any state with a well-organized special interest that is geographically concentrated and a democratic electoral system will face the same incentives and constraints. However, few states in the developing world meet this criteria. In the realm of fishing, one could name the anchovy fleets of Peru and Chile, but most other fishing sectors are dis-organized and/or artisanal. Numerous states have power plants that emit sulfur dioxide, but outside of North America and Europe, there are no international emissions agreements to comply with.

### *Solutions*

If the problem is that the low electoral cost of cheating keeps compliance low, then what are possible solutions? Five can be identified: increasing costs, transforming the common-pool

resource into a club good, changing the rules of international organizations, socialization, and changing the electoral rules themselves. None, unfortunately, are easily implementable.

The first proposed solution is to increase the marginal costs, either externally or internally. Externally increasing costs would have to involve sanctions by the international organization; for example, the European Court of Justice could dramatically increase the fines levied when a state is found to have violated the Common Fisheries Policy. However, externally increasing costs impinges directly on the sovereignty of the state concerned, which some states would not tolerate. Internally increasing costs could occur through a hands-tying mechanism, such as increased fines for rule-breakers, or by making an issue more salient through publicizing. Either tack reduces the incentives to policymakers as well as the special interest to continue to cheat.

Second, DeSombre (2010) has argued that one solution to widespread overfishing may be to change the point of regulation for harvesters from a common-pool resource (in this case, the allowable harvest of fish) to a club good such as access to ports. Club goods, unlike common-pool resources, are excludable; those who do not cooperate can be kept from the benefits of the good. In the case of high-seas fishing, this would require that only ships with the proper paperwork and the correct amount of fish be allowed into member-state ports. To eliminate bycatch, one would perhaps need cameras onboard to prove ships haven't taken up juvenile fish and then dumped them overboard. Ships without the proper paperwork could either be turned away or be searched by international, rather than home-state, inspectors. One problem here is that "black landings" would still occur, and ships could turn to ports outside the member-states of the RFMO. These "wildcat ports" would take illegal fish at a hefty profit, and the overall stock of fish would continue to decline.

Third, international environmental organizations could change their rules. Rather than operating under convoy rules, which allow for unconditional participation by interested members, the organizations could utilize club rules, with explicit admission and participation criteria (Kelley 2010). Under club rules, international organizations can suspend or expel members.<sup>63</sup> As with the first solution, this involves granting greater power to the international organization itself, which may be controversial.

Fourth, the international organizations could simply seek to function more smoothly and harmoniously. Checkel (2005) has noted the process of socialization that has taken place in the European Union. With socialization, the members of the EU are more likely to work together toward common goals. Unfortunately, the short annual meetings of many international environmental organizations preclude regularized contact, and prevent significant socialization from taking place. Moreover, it is quite unlikely that national governments would foot the bill for permanent representations at many of these organizations in order to further socialization.

Fifth, and probably least likely, states could change the electoral rules themselves. Carey and Hix (2011) have found that proportional representation systems with low district magnitude can produce representation of a multiplicity of interests while limiting party system fragmentation. The fewer the parties, the less incentive those parties have to appeal to smaller and smaller groups of voters. Carey and Hix suggest four to eight seats per district is the “sweet spot.” Given the influence of electoral competition as well, simply reducing district magnitude may not end the problem of non-compliance, however; Ireland, Portugal, and Spain are low-district-magnitude proportional-representation systems, and they still overfish.

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<sup>63</sup> This of course leads to dangers of IUU (illegal, unregulated, unreported) fishing. Club goods would have to be instituted along with club rules.

Ultimately, the system currently in place, broken though it is, may be the best the international community can expect. Unfortunately, the end result of such a system is commercial extinction for many of the world's ocean-dwelling aquatic species and a reduction in the amount of protein available for global nutritive needs. Unless the public becomes deeply concerned about overfishing in the same way as many states' publics raised acid rain to a high-salience issue, the tragedy of the commons on the high seas will lead to exhaustion of the common-pool resource.



## **Appendix**

Field research for this dissertation took place in 2010, and consisted of the following:

### **Archives Accessed**

1. The European Commission archives, Brussels, Belgium, May-June 2010
2. The European Commission library, Brussels, Belgium, May-June 2010
3. The archives of the International Commission for the Northwest Atlantic Fisheries (ICNWAF) and the Northwest Atlantic Fisheries Organization (NAFO), housed at Dalhousie University, Halifax, Nova Scotia, Canada, July 2010

### **Interviews Conducted**

*June 2010*

Officer, European Transport Workers' Federation, Brussels, Belgium

Staff, European Parliament (UK delegation), Brussels, Belgium

Staff, European NGO, Brussels, Belgium

Staff, European Fish Processors Association, Brussels, Belgium

Staff, Europeche, Brussels, Belgium

Staff, Canadian mission to the European Union, Brussels, Belgium

Member of the European Parliament, Finland delegation, Brussels, Belgium

Member of the European Parliament, UK delegation, Brussels, Belgium

Member of the European Parliament, Portugal delegation, Brussels, Belgium

Staff, Dutch Ministry of Agriculture, The Hague, Netherlands

Staff, European Fish Processors Association, The Hague, Netherlands

Staff, Pelagic Regional Advisory Council, The Hague, Netherlands

Member of the Dutch Parliament (*Tweede Kamer*), The Hague, Netherlands (via e-mail)

Staff, European Commission (DG-FISH), Brussels, Belgium

Staff, European Commission (DG-FISH), Brussels, Belgium

Staff, International NGO, Brussels, Belgium

*July 2010*

Staff, Canadian NGO, Halifax, Nova Scotia, Canada

Officer, National Seafood Sector Council, Lunenburg, Nova Scotia, Canada

Officer, Canadian Auto Workers Union, Lunenburg, Nova Scotia, Canada

Staff, Northwest Atlantic Fisheries Organization, Halifax, Nova Scotia, Canada

Member of the Canadian Parliament, Fall River, Nova Scotia, Canada

Staff, Northwest Atlantic Fisheries Organization, Winnipeg, Manitoba, Canada (via phone)

Staff, Department of Fisheries and Aquaculture, Nova Scotia provincial government, Halifax, Nova Scotia, Canada

Fisheries Minister, Nova Scotia provincial government, Halifax, Nova Scotia, Canada

Member of the Canadian Parliament, Bedford, Nova Scotia, Canada

Staff, Russian delegation to NAFO, Halifax, Nova Scotia, Canada

Staff, Fisheries Resource Conservation Council, Ottawa, Ontario, Canada

Staff, Fisheries Council of Canada, Ottawa, Ontario, Canada

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