

UNCLOS and the Management of Maritime Conflicts

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Abstract: Events such as the UK-Iceland "Cod Wars" and the Peruvian and Chilean seizure of American tuna boats brought fishery and maritime issues to international prominence in the 1960s and 1970s. More recently, armed conflicts have erupted over maritime issues between such advanced industrialized democracies as Canada and Spain. Several solutions have been proposed to manage the increasingly contentious world of maritime claims. Stemming from the literature on common property resources, solutions focus on authority, privatization, and institutions. Two primary mechanisms for resolving competing maritime claims are evaluated in this paper: 1) the creation of private ownership of maritime zones in the form of Economic Exclusive Zones (EEZs), and 2) the creation of an institution, the United Nations Convention on the Law of the Sea (UNCLOS), to establish standards for maritime claims and resolve disputes. Privatization may promote long-term cooperation and more efficient extraction of maritime resources, but may be suboptimal if the creation of private property rights for maritime areas generates distributional conflict. Similarly, the institutional approach to managing resources of the seas offers many advantages for resolving competing maritime claims and providing explicit mechanisms for dispute resolution, but may be problematic if distributional conflicts arise and/or institutional design is suboptimal. We evaluate the effects of UNCLOS and EEZs on the peaceful and militarized management of maritime claims in the Western Hemisphere and Europe (1900-2001). Our analyses suggest that declared EEZs work more efficiently for helping parties reach equitable agreements in bilateral negotiations, although membership in UNCLOS promotes more frequent third party conflict management efforts.

Battle on the high seas has often been the subject of dramatic chronicles of pirates and naval history. These conflicts raged over the security of the state, the lure of treasure, or the love of battle. Today these conflicts still occur, but they are not the high drama of galleons or dreadnaughts, but instead of fishing trawlers and coastal patrol vessels. The issue under conflict is no longer power or treasure or bloodlust, but rather more mundane issues such as fishing and maritime boundaries. Yet these fishing disputes are not trivial, occurring quite frequently and often between states that normally avoid militarized conflict, such as joint democracies (Mitchell and Prins, 1999). The over-fishing and exploitation of the ocean's resources, combined with the difficulties in establishing clear ownership over such resources (e.g. migratory fish stocks), generates multiple flash points for militarized confrontation.

While the sea has set the stage for dramatic events that have affected the power of states, its role in providing a state with power and resources is now more important than ever. Millions are employed in the harvesting of the sea's resources, and millions more benefit from the consumption of these resources (UN FAO, 2004). As populations expand, these needs become ever more pressing and insistent. Garrett Hardin's (1968) "Tragedy of the Commons" provides a dramatic account of the effects of unhindered resource use and a chilling portent of the consequences of our continued degradation of the global commons – the sea. As a result, institutions such as the United Nations Convention on the Law of the Sea (UNCLOS) and the creation of Economic Exclusive Zones (EEZs) have implemented a unique, and Hardin-inspired, solution to the tragedy of the commons – privatization.

Yet there are multiple solutions to problems associated with joint management of common property resources, such as the ocean's fishing stocks. A leviathan or coercive authority can be established to prevent exploitation of resources through monitoring, sanctioning,

and exclusion. The lack of efficacy by the International Seabed Authority (ISA), a leviathan type solution, demonstrates the difficulties of authority solutions for global water resources in an international system characterized by anarchy.¹ Another favored solution emphasizes the benefits of privatization. If resources are over-exploited, then privatization creates greater incentives for owners to manage their resources more efficiently and makes bilateral bargaining over remaining externalities more feasible (Conybeare, 1980). On the other hand, privatization may fuel conflict if distributional inequities arise in the division of private property. Ostrom's (1990) influential study proposes a third solution, namely the creation of effective institutions for managing common property resources (CPRs).

This analysis compares two of these broad solutions for the management of maritime CPRs: privatization in the form of Exclusive Economic Zones (EEZs) and institutionalization via the United Nations Law of the Sea Convention (UNCLOS). By referring to Ostrom's (1990) design principles as well as critiques of privatization (c.f. Wijkman, 1982), we conceptualize UNCLOS, an agreement once described as the "strongest comprehensive global environmental treaty negotiated to date" (Oxman, 1994: 169), as a double edged sword – its distributional shortcomings may hinder cooperation, but its conflict resolution mechanisms help to prevent conflict. We compare the effects of UNCLOS and EEZs on peaceful and militarized attempts to manage contentious maritime issues (e.g. disagreement over the ownership or usage of maritime resources) in the Western Hemisphere, Western Europe, and Eastern Europe (1900-2001). We also examine the success of peaceful attempts to settle maritime issues, focusing on whether

¹ Although the ISA was created in conjunction with UNCLOS, it established a distinct institutional apparatus and deals with maritime areas owned by no states. This attempt to manage the ocean commons has not been very effective. While we do not focus on the ISA in our analyses, we have examined the effects of membership in the ISA on the management of maritime claims. We find that membership in ISA has no significant effect on peaceful or militarized settlement and does not influence the chances for successful resolution of maritime conflicts. We hope to evaluate the effects of ISA more explicitly in future research.

agreements are reached in given negotiation attempts and whether the resulting agreements are equitable with respect to concessions made by each side.

Our empirical findings suggest that privatization in the form of EEZs tends to work best for managing maritime conflicts by promoting more frequent and successful bilateral negotiations. UNCLOS, representing the institutional solution, promotes more frequent third party settlement of maritime conflicts, although it has no bearing on the success of those efforts. Neither UNCLOS nor the establishment of EEZs has much of an effect on militarized conflict over maritime resources, although we do find that UNCLOS members challenging the maritime status quo are more likely to employ militarized force to pursue their issue related goals. Our analyses demonstrate the feasibility of different solutions to the tragedy of the commons, moving beyond approaches that focus on one solution to the exclusion of others.

DISTRIBUTING RESOURCE WEALTH

Hardin's (1968) "Tragedy of the Commons" presents a stark vision of the problems inherent with "common property resources" (CPRs) – resources characterized by low excludability yet high rivalry. In other words, the use of the resource cannot be excluded, but the benefits obtained from the resource detract from others' abilities to obtain benefits. The resources of the sea represent a global commons of enormous wealth and bounty as well as potential ruin. Overall, approximately 103 million tons of fish are caught each year for human consumption and fish provide more than 2.6 billion people with at least twenty percent of their average per capita animal protein intake (UN FAO, 2004). The resources of the sea are also a tremendous source of wealth and energy for states; the global fishing industry has an annual impact of \$183 billion (Borgese, 1998: 61). Energy resources of the sea contribute another \$138 billion (Borgese, 1998: 61), and offshore oil provides nearly 30 percent of global oil production (Odell, 1997). It

is also estimated that nearly 1.5 trillion tons of mineable manganese nodules exist on the ocean floor, representing a nearly limitless supply of metal for global consumption (Payne, 1978).

While states experience conflict over the resources of the sea (e.g. Cod War between Iceland and Great Britain in the 1970s), resolving the underlying exploitation of the resource remains paramount. Aristotle once lamented, “what is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest (Ostrom, 1990: 2).” The exploitation of common property goods, if unresolved, leads to situations of ruin. Such a fear is not unfounded in the fishing industry, as data has indicated that the catch of fish has declined globally since the late 1980s (Alverson and Dunlop, 1998) while historic fisheries, such as one off the coast of Newfoundland, have collapsed (Bailey, 1996).

Theorists have devised two primary solutions for allocation of common property resources. The first view advocates ceding control of resources to the state or other authority figure, which uses coercive force to prevent the abuse that is done through individual over-usage of the resource. This option hints at a Hobbesian approach to allocation issues and has dramatically been called “recourse to the Leviathan” (Ostrom, 1990: 9). These approaches advocate the intervention of government agencies to manage the good, while others have discussed the need for military governments to prevent resource abuse (Ostrom, 1990). With respect to global maritime resources, the creation of the International Seabed Authority (ISA) can be thought of as one example of this authority-based solution. The creation of the ISA was discussed first in 1970 and established through the United Nations Law of the Sea Convention in 1982, coming into force in 1994. The ISA’s authority covers fishing, shipping, mineral resources outside of EEZs, and environmental protection (Barkenbus, 1977). In other words, the ISA is designed to manage ocean resources owned by no individual states. The organization

includes a general assembly, executive council, and a secretariat. In addition to monitoring resource extraction, the ISA also provides for a dispute settlement mechanism in the form of arbitration through the International Tribunal for the Law of the Sea.² It is not clear that the ISA's resources and institutions are capable of managing the totality of global sea resources.

Advocates of a second position suggest that “the only way to avoid the tragedy of the commons in natural resources...is to end the common property system by creating a system of private property rights (Ostrom, 1990: 12).” At a domestic level, this has led to the creation of property and title rights, or enclosure of the commons (Wijkman, 1982). Allocating the resource through ownership principles focuses the harm of “negative externalities” from the diffuse users of a common property resource to the single owner of a resource. As a result, owners devote greater resources and interest to the preservation and maintenance of their individual allocation. In terms of fisheries, this can be seen by the partial enclosure of the commons through the creation of EEZs.

However, privatization may create and/or exacerbate distributional inequities. It has been admitted that UNCLOS “has increased, rather than decreased, inequality among states, giving more to the already well-endowed richer states” (Borgese, 1995: 15). One of the most significant problems is that the subdivision of the commons is not homogenous. Merely allocating equivalent portions of the commons does not mean that all users will get an equal share. Similarly, a lack of information about the resource will also complicate negotiations regarding the distribution of a resource since a state risks getting a worthless share (Wijkman, 1982). In addition, the migratory nature of fish stocks and the interconnectedness of the ocean's ecosystem mean that resources cannot be managed solely within the EEZ (Borgese, 1995). This leads either to states' protecting their “newest citizens” by following migratory species outside of

² <http://www.isa.org.jm/en/seabedarea/TechBrochures/ENG2.pdf>

their EEZ (Bailey, 1996), or to states positioning fishing fleets outside of others' EEZs.³ Since some resources can move among EEZs, each state has incentives to exploit the resource before another does the same.

According to Ostrom (1990), the coercion and privatization solutions are problematic. She argues that solutions to CPR problems vary and that their successes are conditional on a variety of internal and external factors. By evaluating a number of institutions charged with governing and managing common property resources (CPRs), Ostrom identifies eight design principles associated with successful CPR institutions: clearly defined boundaries, congruence between appropriation rules and local conditions, collective choice arrangements, monitoring, graduated sanctions, conflict resolution mechanisms, minimal recognition of rights to organize, and collective choice arrangements. In the next section, we evaluate these criteria in terms of the most significant solution to the maritime CPR problem, UNCLOS. We compare this institutional solution to the privatization solution of establishing economic exclusive zones and we describe how these solutions are interrelated.

THE PRIVATIZATION OF THE SEA

For a resource that covers nearly three quarters of the earth's surface and has been at the center of human culture, frameworks for the governance of the sea have been slow to develop. One of the key, and most enduring, debates regarding sea resources arose as states began to have the

³ Spain and Canada's "Turbot War" provides a demonstration of the conflict that can arise in such a situation. In 1994, after a study that indicated that turbot numbers had declined by two thirds since 1992, Canada implemented sharp cuts in its 1994 quota for turbot and asked the EU to do the same for 1995 (Song, 1997). The Northwest Atlantic Fisheries Organization (NAFO) agreed to set a total allowable catch of 27,000 tons for 1995, 60 percent of which would be allocated to Canada, while 12 percent was to be given to the EU (Song, 1997). Displeased at the result, the EU unilaterally set its quota at 69% of the total allowable catch set by NAFO. In response, Canada made it a crime for Spanish and Portuguese trawlers to fish for turbot off the Newfoundland coast outside of the EEZ. After this law, a series of confrontations resulted between Canadian fisheries vessels and EU trawlers which culminated in the capture of the Spanish trawler, the *Estai*. This action was roundly criticized by Spain, which later sent a naval patrol vessel to protect Spanish ships in the region. In the subsequent weeks, Canadian authorities cut the nets of several Spanish trawlers. The conflict ended in April 1995 when the EU and Canada signed an agreement.

capacity to protect waters close to their territory, navigate and use the seas for trade, and to use these resources to further their imperial ambitions. This debate pitted the sovereignty demands of coastal states against the wish for unhindered navigation by the maritime powers. Eventually, the debate led to a compromise in which states gained sovereignty over a limited expanse of water – the “cannon shot” rule, while maritime powers gained freedom of the seas outside of those limited areas (Pratt and Schofield, 2000). This rule, along with other attempts to create territorial sea limits, provided the first attempt at privatization of the ocean’s CPRs.

This debate continued through the twentieth century, as the “cannon shot” rule was considered ambiguous. Many states began to instead unilaterally adopt a 3 nautical mile territorial sea limit. Maritime powers sought to enshrine the 3 nautical mile limit as a universal rule, but were unsuccessful in reaching an agreement during the Hague Codification Conference of 1930. This failure resulted in a period referred to as “creeping coastal state jurisdiction”, as coastal states and maritime powers once again conflicted over sovereignty versus navigation rights (Pratt and Schofield, 2000).

After the failure of the conference, states began to expand their sovereignty beyond the 3 nautical mile limit. The wave of decolonization after World War II, the burden of increasing populations and resource demands, and the improvement of technology to better exploit the sea’s resources only increased the expansion of territorial waters. The Truman Declaration of 1945 was one of the farthest ranging declarations of sovereignty stating that “the United States regards the natural resources...of the continental shelf beneath the high seas but contiguous to the coasts...as appertaining to the United States, subject to its jurisdiction and control” (Pratt and Schofield, 2000:3). While no precise limit was established, this declaration encouraged states to claim jurisdiction over areas beyond their territorial sea. In 1952, Chile, Ecuador, and Peru

declared jurisdiction to an area “not less than 200 nautical miles” from their coasts (Pratt and Schofield, 2000), claims that resulted in a series of disputes over fishing rights with other countries such as the United States and Canada.

The amalgamation of rules, territorial limits, and sovereignty claims that began with the Truman Declaration negatively affected the ability of states to transit waters and exploit the resources of the sea, and led to situations in which the sea was recklessly used. This situation led to two unsuccessful conferences in 1958 and 1960 during which representatives tried to create a uniform standard for territorial seas.⁴ A third conference was more successful, as it resulted in the United Nations Convention on the Law of the Sea (UNCLOS). This agreement updated and expanded those conventions created in 1958. In addition, it established a consistent set of limits for territorial and contiguous seas, navigation rights, seabed usage, and dispute adjudication. The adoption of UNCLOS in 1982 represents a significant example of international cooperation regarding one of the most important global resources.⁵

Perhaps the most significant portion of the UNCLOS agreement is the creation of a set of definable limits for maritime boundaries. Article 3 of the agreement limited the breadth of the territorial sea to 12 nautical miles. To compensate for this relatively short expanse, Part V of the Convention established the exclusive economic zone (EEZ), an area beyond the territorial sea with a breadth of 200 nautical miles. States have sole rights over the exploitation of all the

⁴ While no agreement was reached on territorial seas, the 1958 conference (UNCLOS I) led to the creation of four Conventions: Territorial Sea and Contiguous Zone, Continental Shelf, High Seas, and Fishing and Conservation of the Living Resources of the High Seas. The second conference in 1960 (UNCLOS II) came close to an agreement on territorial seas but failed by a single vote (Pratt and Schofield, 2000)

⁵ The United States supported most of the provisions in the 1982 UNCLOS agreement, however, the United States and many developed states objected to the provisions regarding deep seabed mining. One point of contention was the designation that mineral resources outside of national jurisdiction were a “common heritage of mankind” and subject to the control of a supranational regulatory agency, the ISA. Other opposition stemmed from the US’s lack of authority in the decision making process of the ISA and the allocation of mining rights on principles inconsistent with free market principles (Bandow, 2005; Browne, 2005). Because of this, the US has not been a signatory on either the original UNCLOS agreement or the 1994 amendments to the original convention.

resources in their EEZ, whether natural or mineral. Likewise, states are given the exclusive right to extract resources from their continental shelf with a boundary at 200 nautical miles or to the edge of the continental margin, as provided for in Article 76 of the Convention. This idea gained widespread support amongst both developed and developing states and was met with widespread approval during the UNCLOS negotiations. In fact, during the first substantive conference of UNCLOS in 1974, 100 out of 143 participating states supported the idea (Pratt and Schofield, 2000). By the time a preliminary text was made ready in 1977, 29 states had made a formal EEZ claim and by the signing of UNCLOS in 1982, 59 states had done so (Pratt and Schofield, 2000).

Within their EEZ, states have jurisdiction and are free to manage, develop, and exploit all resources within the sea, the floor, and subsoil.⁶ For many states, particularly resource poor island states, the expansion of their territory and resource base was a “virtual revolution” (Borgese, 1995: 14). This provision effectively rendered over 38 million square nautical miles of ocean under some sort of national jurisdiction. All told, nearly 87 percent of all known and estimated reserves of hydrocarbons, and nearly 99 percent of all fisheries, are under national jurisdiction (Borgese, 1995). These include estimates of nearly 240-300 billion tons of oil in known reserves and vast mineral wealth found in deep sea nodules (United Nations, 1998). The convention also imposed a comprehensive dispute settlement system on signatory states (Borgese, 1995).

UNCLOS established conventions for private property rights with respect to resources of the sea, and yet its breadth and scope was much more significant, creating mechanisms for dispute resolution. As noted above, the creation of territorial sea and EEZ limits is advantageous from a private property perspective on CPR problems. However, the distributional features of

⁶Available at:
http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm#Historical%20Perspective

these enclosures must be examined more carefully, as some states have clearly been losers in this privatization process. On the other hand, UNCLOS may be capable of resolving these distributional inequities if its institutions are designed optimally. In the next section, we apply Ostrom's institutional design principles for optimal management of common property resources to determine if UNCLOS is up to the task for managing the global ocean commons.

THE CONDITIONAL EFFECT OF UNCLOS

The interconnectedness of the marine ecosystem and the consequences of abuses of the sea for all states necessitated the design of UNCLOS as an inclusive agreement meant to address and resolve all maritime issues. As a result, the final integrated design of UNCLOS represents an "interdisciplinary approach" (Borgese, 1998: 6). As such, it does not merely advocate privatization or Leviathan, but suggests an integrated framework similar to the institutions detailed in Ostrom (1990). Thus, by referring to Ostrom's design principles for successful CPR institutions, we can evaluate UNCLOS' effectiveness in "sustaining the CPR and gaining compliance" of appropriators (Ostrom 1990: 90).⁷ Specifically, UNCLOS is deficient in the five characteristics Ostrom (1990: 185-187) notes as critical in this regard; clearly defined boundaries, congruence between rules and conditions, collective choice arrangements, monitoring, and graduated sanctions.⁸ The presence of these characteristics enhance the ability of appropriators to make credible commitments to follow the rules and to realize that the long-term expected benefits of using the institution are greater than the long-term expected benefits of

⁷ Appropriators refer to the individuals or groups who have the ability to extract resource units (fish, oil) from the resource system (the sea) (Ostrom, 1990).

⁸ In particular, "clearly defined boundaries" refer to the need for well-established rules that define who appropriators are and where the resources can be extracted from. "Congruence between rules and conditions" mean that the rules that govern the extraction of resource units are related to the conditions in specific areas and that appropriative rules are related to the provision of "labor, materials, and/or money" (Ostrom, 1990: 92). "Collective choice arrangements" allow those that are affected by the rules to modify them. "Monitoring" in this regard means that appropriators are accountable to the monitors, or are themselves the monitors. "Graduated sanctions" are a design feature in which sanctions are scaled to "the seriousness and the context of the offense" (Ostrom, 1990: 94).

using short-term defection strategies (Ostrom, 1990: 186). Table 1 applies Ostrom's institutional design principles to the UNCLOS institution.

While UNCLOS provided the first wide-ranging agreement on the distribution of the resources of the sea, its design characteristics do not adequately address distributional problems nor do they allow for the creation of credible commitments among the allocating parties. The creation of clear boundaries is an important design feature of successful institutions because it determines who can and cannot use the resources and allows only those tasked with maintaining the resource to allocate them (Ostrom, 1990: 91). While UNCLOS popularized the concept of EEZs, the boundaries themselves are not clear, nor are the boundaries adequate for the resource unit. Particular boundary problems result from the creation of straight baselines for states with uneven coasts, the definition of continental shelf, the EEZ implications of islands, and the issue of straddling fish stocks (Pratt and Schofield, 2000).⁹ This uncertainty merely exaggerates the distributional problem by encouraging exploitative behaviors (Wijkman, 1982), thus undermining an allocator's ability to make a credible commitment to responsible resource use. The uncertainty of these borders can also become a point of conflict between states (c.f. Hodgson and Smith, 1979). For example, one of the most significant disagreements over maritime boundaries involve the potentially oil rich Spratly Islands in the South China Sea. China, Vietnam, Malaysia, the Philippines and Brunei all claim part of the disputed, and mostly

⁹ Specifically, baselines refer to the "low water line along the coast as marked on large-scale charts officially recognized by the coastal state" (Pratt and Schofield, 2000:5). Straight baselines allow for a state with jagged coastlines or "fringes of islands" to draw straight lines connecting two points of its coast to prevent situations where pockets of non-territorial seas are surrounded by expanses of territorial sea. This, however, leads to a variety of definitional questions regarding what constitutes a jagged coastline or "fringes of islands" (Pratt and Schofield, 2000:5). Debates over the continental shelf have occurred because, in some areas, the shelf extends beyond the EEZ. In addition, states' rights over the continental shelf need not be expressed publicly (Pratt and Schofield, 2000: 7). Islands have been an issue in UNCLOS because islands incapable of supporting "human habitation or economic life" cannot be used for the creation of EEZs (Pratt and Schofield, 8). This has led to controversy among states and has been exacerbated by the lack of guidance as to what constitutes an ability to support human habitation or economic life. While straddling stocks have been addressed in subsequent agreements, the inability of EEZs to reflect their movements have led to defensive measures on the part of states whose EEZs the fish migrate from and exploitative behaviors from consuming states (Bailey 1996).

uninhabited, islands. China and Vietnam appear to have the greatest claim over the islands, based on their historical actions, yet the latter states have the advantages of proximity and international law (Charney, 1995: 728-729). The Spratly Islands disputes illustrate clearly the difficulties of establishing clear maritime boundaries.

Ostrom (1990) includes the minimal recognition of rights to organize as an important design element. She claims that institutions are more effective if the members can make informal arrangements between themselves without resorting to the overarching authority. The ability to which appropriators are allowed to set their own rules is unclear within UNCLOS. States are given a wide range of autonomy under UNCLOS (Huppert and Knapp, 1999), but the ability of those who extract resources to make their own rules is under the authority of the state. UNCLOS is effective in this regard only as far as state laws allow appropriators to make their own arrangements.

Similarly, the inability of the convention to adapt to local conditions or to be modified to suit these conditions further undermines the ability of states to make credible commitments and perpetuates distributional problems. Given that some states are the beneficiaries of plentiful EEZs while others are not, this variability, and the inability to address it, further exacerbates tensions between states (Mandel, 1980). While UNCLOS does allow for some collective choice arrangements, the process is very difficult.¹⁰ As a result, states are not allowed to make modifications to the treaty if problems arise without first expending significant effort. While states can make declarations when accepting the jurisdiction of UNCLOS, any expressed

¹⁰ There are two ways this can be done. First, states can amend the convention, but this may be done only after ten years of the Convention entering into force. At that point, the Secretary General distributes the proposed amendment, and, if a year passes without favorable replies from half of the signatories, a conference is called. At the conference, every effort should be made to have a decision on the amendment made by consensus. In the second way, a state submits a proposed amendment to the Secretary General who distributes it. If a state objects within a year, the amendment is rejected. Similarly, if no objections are heard in the same time period, the amendment is passed.

reservations do not have the force of law.¹¹ These two components hinder the creation of rules that keep monitoring costs low. As a result, appropriators are unaware of others' compliance and are less likely to make a contingent commitment to also comply (Ostrom, 1990: 187).

The convention does conform to the monitoring design principle because its monitoring system maintains that any monitors should be held accountable by the appropriators – in this case, states (Ostrom, 1990). Sections 4-6 of Part XII of the Convention lay out the guidelines for how states monitor activity in their designated areas. States are to concern themselves both with the activity of their own nationals as well as with the activity of foreigners in their area. While the monitoring system is consistent with good design principles, the sanctioning system is not. In particular, the convention does not allow for graduated sanctions. Ostrom (1990) cites this type of system as effective, providing first-time transgressors with light punishments but harsh punishments to repeat offenders. This system understands that, at times, compliance may be difficult but that repeated non-cooperation is not allowed. Section 9, Part XII of UNCLOS covers state responsibility and liability in cases of non-cooperation. This section merely says that states are held liable for any damages caused by their nationals when they are in noncompliance with the agreement. This liability, though, is under a state's own domestic law. There are no fines or other punishments for breaking the Convention. Far from having graduated sanctions, UNCLOS has none at all.

Because UNCLOS lacks many of the characteristics Ostrom cites as necessary for an enduring CPR institution, the ability of appropriators to make contingent commitments is limited. In addition, UNCLOS does not adequately address distributional shortcomings inherent in privatization through EEZs. In short, appropriators operate without knowing if fellow

¹¹ In contrast, compulsory jurisdiction declarations with respect to the International Court of Justice are viewed as legally binding on the court.

appropriators follow the Convention, and, are led to believe that the long-term benefits of exploitative practices exceed the benefits of committing to a long term strategy, such as those contained within the Convention.

However, UNCLOS is a strong institution when evaluated as a means of resolving conflicts regarding maritime resources. The design of UNCLOS allows a conflict management system, minimal rights to organize, and has elements of nested enterprises. One of the most significant features of the UNCLOS agreement was its commitment to be a comprehensive and universally accepted delineation of maritime law (Boyle, 1997) as well as an institution with a strong and wide-ranging conflict resolution system. As such, UNCLOS follows Ostrom's (1990) design element that CPR institutions have well developed conflict resolution mechanisms. Signatories to the convention are mandated to peacefully resolve their maritime claims. In the case of disputes, states have the ability to initially choose one of two dispute settlement procedures – conciliation or negotiation, in either a bilateral or regional setting (Borgese, 1995). If these methods are not acceptable to the parties, then states must choose from one of four additional options – arbitration, the International Tribunal on the Law of the Sea, the International Court of Justice, or “special arbitration” involving a qualified international organization (Borgese, 1995: 32). If a decision still cannot be reached, arbitration is selected. Regardless of the method chosen, all decisions are binding upon the signatories.

Lastly, a feature of many successful institutions is that the layers of regulation and enforcement are nested within each other. This is certainly the case in UNCLOS. Individual citizens and companies are first regulated by their own state, and then states themselves are regulated by the Convention. This allows problems to be addressed at the appropriate level.

UNCLOS, EEZS, AND THE MANAGEMENT OF MARITIME CLAIMS

Our comparison of privatization and institutional solutions for managing the global ocean commons provides a great deal of insight into understanding how countries will manage conflicts over maritime zones. If privatization is an optimal solution (Conybeare 1980), then the establishment of EEZs should reduce the chances for new competing claims to maritime zones, diminish the prospects for maritime conflicts over existing maritime issues, and increase the frequency and success rates of peaceful attempts to manage conflicts that arise. Privatization works by establishing better resource use practices within EEZ boundaries, which creates greater stocks of maritime resources available for all states to harvest in the remaining ocean commons areas. On the other hand, privatization may be problematic if EEZs create severe distributional inequalities between maritime states and if resource extraction outside EEZ areas compromises the amount of resources available inside the privatized zone. Canada, for example, has monitored fishing outside its 200 mile EEZ boundary in order to prevent over-fishing in the commons space, a practice that negatively affects the amount of fish available for Canadian fishermen to extract.

The institutional solution arose in part to handle these thorny issues of privatization. However, the design of UNCLOS is a mixed bag. Some features of the institution, such as its dispute resolution and monitoring systems, are capable of effectively managing resource conflicts, while other institutional features necessary for effective resource management (e.g. clear boundaries, ability to change/adapt rules) are lacking in UNCLOS. The strength of the dispute mechanism provisions should promote more frequent peaceful attempts to manage maritime claims, especially with third party assistance. Third party solutions should be employed more frequently because the majority of mechanisms outlined by UNCLOS for dispute

resolution focus on the involvement of binding and neutral third parties via arbitration or adjudication. Dispute settlement is more likely to succeed and produce durable agreements in the case of binding settlement, especially with the assistance of an international organization, because the reputation costs for renegeing are enhanced, uncertainty about states' resolve and preferences is diminished, and the institution has resources at hand for securing more credible commitments (Mitchell and Hensel 2006).

We evaluate the theoretical positions outlined above by focusing on the effects of UNCLOS membership and declared EEZs on the frequency and success of efforts to manage competing claims to maritime areas in the past century. These hypotheses are not exhaustive with respect to what we could examine, but represent a first effort for comparing the empirical effects of UNCLOS and EEZs.¹² After presenting the hypotheses, we turn to a discussion of the research design employed for empirical tests.

Hypothesis 1: The establishment of economic exclusive zones (EEZs) should reduce the likelihood of militarized conflict over maritime resources and promote peaceful negotiations to manage contentious maritime issues.

Hypothesis 2: Joint membership in UNCLOS should reduce the likelihood of militarized conflict over maritime resources and promote peaceful negotiations to manage contentious maritime issues, especially third party settlement attempts.

Hypothesis 3: In a given negotiation over a contentious maritime issue, states are more likely to reach agreements if they have established EEZs and jointly belong to UNCLOS.

Hypothesis 4: Agreements reached to resolve contentious maritime issues are more likely to be characterized by roughly even concessions if the disputing parties have established EEZs and jointly belong to UNCLOS.

¹² We do not analyze the relationship between UNCLOS, declared EEZs, and the onset of new maritime conflicts in this paper, leaving that question aside for future research. We also do not fully capture distributional conflicts and their relationship to UNCLOS and EEZ.

RESEARCH DESIGN

We test our hypotheses using data on contentious maritime issues from the Issue Correlates of War (ICOW) project.¹³ The ICOW project defines maritime claims as follows:

A maritime claim involves explicit contention between two or more states over the access to or usage of a maritime area. Official representatives of the government of at least one state must lay explicit claim to a maritime area being administered or claimed by at least one other state. “Official representatives” include such individuals as a country's head of state, foreign minister, and other legitimate political or military officials speaking on behalf of the state's government. (ICOW Maritime Codebook, page 1).

Our analyses include all available maritime claims data coded by ICOW from 1900-2001 in the Western Hemisphere (North, Central, South, and Caribbean), Western Europe, and Eastern Europe.¹⁴ Our analyses employ two ICOW datasets, the claim dyad-year data and the settlement attempt data. The claim dyad-year data includes a case for each year of every dyadic claim. For example, the maritime conflicts over the Gulf of Fonseca involve three dyads: El Salvador-Honduras (1900-1992), Honduras-Nicaragua (1912-present), and El Salvador-Nicaragua (1913-present). Thus there are a total of 272 claim dyad years for the Gulf of Fonseca maritime claim (through 2001). In the Western Hemisphere, Western Europe, and Eastern Europe, there are a total of 3,231 claim dyad-years from 1900-2001. The settlement attempt data records all attempts to manage or settle the issues involved in a claim peacefully. This includes negotiations meant to settle part or all of the issues under contention, procedural negotiations over measures for future settlement of the claim, and functional negotiations over the use of the claimed area

¹³ For descriptions of the ICOW data, see Hensel (2001) and Hensel, Mitchell, Sowers, and Thyne (2006).

¹⁴ The ICOW Project identifies a set of potential maritime claims through shared or potentially overlapping maritime zones (Pratt and Schofield, 2000). Extensive news searches are conducted using a variety of sources including the *New York Times*, the *London Times*, Lexis-Nexis, Facts on File, Keesings Contemporary Archives, JSTOR, and relevant books. ICOW coders assemble these stories into chronological order by dyad and claimed area and then determine whether an issue claim exists according to the coding rules. For cases that qualify, an extensive chronological is typed using the collected news stories. Attempts by the parties themselves to resolve the issue or attempts by third parties to help settle the issue peacefully are identified in the chronologies and then each attempt is coded separately. See www.icow.org for the codebooks, coding sheets, and publicly available data sets.

without attempting to settle the question of ownership. Coded peaceful settlement attempts may involve bilateral negotiations, negotiations with non-binding third party assistance (inquiry, conciliation, good offices, or mediation), or submission of a claim to binding arbitration or adjudication. There have been 496 peaceful attempts to settle maritime issues (63% bilateral, 33% non-binding third party, 4% binding third party) in the Americas and Europe.

Dependent Variables

The theoretical hypotheses focus on the peaceful and/or militarized management of maritime claims, as well as the success of those efforts. In analyses employing the claim dyad-year data, we utilize three dependent variables: 1) the number of militarized dispute onsets over the maritime issue in a given year¹⁵, 2) the number of bilateral negotiations per year, and 3) the number of third party settlement attempts per year (binding and non-binding). Militarized disputes occurred in 90 maritime claim dyad-years (2.8%). There were a total of 237 dyad-years (7.3%) with one or more bilateral negotiations (range is 0-5) and a total of 142 dyad-years (4.4%) with one or more third party settlement attempts (range is 0-5). In analyses employing the settlement attempt data, we utilize two dependent variables: 1) whether a given settlement attempt produced an agreement, and 2) whether the concessions made in an agreements reached were roughly even or equitable. In the 496 peaceful settlement attempts, agreements were reached in 275 cases (55%). The resulting agreements produced roughly even concessions between the challenger and target state in 66% of the agreement cases.

¹⁵ Militarized attempts to settle maritime issues are identified using version 3 of the Correlates of War Projects' Militarized Interstate Dispute data set (Ghosn, Palmer, and Bremer, 2004). Each militarized dispute that occurred between two adversaries was examined to determine whether the dispute involved an attempt to change the maritime status quo with respect to that specific claim. Militarized disputes over non-maritime issues were excluded. We did estimate models using all militarized disputes and found the results identical to those reported herein.

Independent Variables

Our primary theoretical variables focus on the effects of membership in the United Nations Law of the Sea Convention (UNCLOS) and declared economic exclusive zones (EEZs). Membership in UNCLOS was collected from the United Nations' Law of the Sea website.¹⁶ We use two dummy variables to indicate UNCLOS membership status for a given pair of states: 1) *One UNCLOS Member*, which equals one if only one state in a dyad is an UNCLOS member and zero otherwise; and 2) *Two UNCLOS members*, which equals one if both states have signed and ratified the UNCLOS agreement. The omitted category includes pairs of states where neither belongs to UNCLOS. We create similar measures for EEZs, based on information reported in (Pratt and Schofield, 2000): 1) *One Declared EEZ* is coded one if only one state in a dyad has a declared economic exclusive zone and zero otherwise, while 2) *Both Declared EEZs* is coded one if both states in a dyad have declared EEZs and zero otherwise. The omitted category includes pairs of states where neither has a declared EEZ.¹⁷ Table 2 reports basic descriptive statistics for the UNCLOS and EEZ variables for all state years (1900-2001). The vast majority of countries did not belong to UNCLOS nor have declared EEZ boundaries (82.7%).¹⁸ Of those states belonging to UNCLOS, 70% have declared EEZs. Of those states with declared EEZs, 40% are UNCLOS members. EEZs have been used more frequently by states to clarify maritime boundaries (4:1 ratio), although the two institutions are clearly interdependent.

Beyond the impact of maritime institutions, we also include several control variables that are likely to affect the way that maritime issues are managed. The first control variable captures the effects of recent militarized disputes, which have been shown to increase the likelihood of

¹⁶ <http://www.un.org/Depts/los/index.htm>

¹⁷ The EEZ measures are treated as dummy variables for this first cut. In the future, we plan to record the miles for the EEZ limits, which will help to capture dynamic changes over time in states' EEZ declarations.

¹⁸ This would be expected based on the analyzed time period because UNCLOS did not come into effect until the early 1980s while EEZs were not actively utilized until after World War II.

future militarized confrontation in the rivalry literature (e.g. Diehl and Goertz, 2000). Our measure includes any militarized conflict over maritime issues in the ten years prior to the current observation. These events are weighted to have declining effects over time, with events in the most recent year before the observation contributing a value of 1.0 to the weighted score. Earlier events' weights decline by 10% each year (e.g. an event from five years ago has a weight of 0.5). Consistent with our research (Hensel et al, 2006), we anticipate that recent militarized history will be positively related to militarized attempts to settle maritime claims, although we also anticipate that peaceful negotiations will occur more frequently in such cases as well.

The salience or importance of the claimed maritime area should also affect the means that are chosen to attempt to resolve the claims, with highly salient claims being more likely to be managed through military conflict or bilateral negotiations and less likely to be submitted to a binding third party decision (Hensel 2001). The ICOW maritime data set measures issue salience through six indicators: (1) maritime borders extending from homeland rather than colonial or dependent territory, (2) a strategic location of the claimed maritime zone, (3) fishing resources within the maritime zone, (4) migratory fishing stocks crossing into and out of the maritime zone, (5) the known or suspected presence of oil resources within the maritime zone, and (6) relation of the maritime claim to an ongoing territorial claim. Several of these indicators reflect the difficulties inherent in privatizing the sea, especially the presence of migratory fish stocks that move between states' claimed maritime zones. Each of the six indicators above may contribute one point to the salience index for each claimant state to which it applies, producing a total range from zero to twelve. In the claim dyad year data, the mean for maritime issue salience is 7.04. Maritime issues with high salience should exhibit more frequent militarized and peaceful attempts and have a lower chance of successful and equitable agreements.

How states bargain over contentious issues is strongly influenced by their relative capabilities, with more powerful states having stronger bargaining power. As the asymmetry in relative capabilities in a dyad increases, militarized settlement attempts may become less likely if the more powerful state can get what it wants through peaceful bargaining. Capability imbalances should also promote bilateral negotiations and diminish the prospects for third party settlement. Power asymmetries should enhance the prospects for agreements, especially in bilateral negotiations, due to the stronger side's bargaining leverage. Our capabilities measure comes from the Correlates of War Project (Singer, Bremer, and Stuckey 1972) and captures each country's global share of demographic (total & urban population), military (spending & personnel), and economic capabilities (iron & steel production, energy consumption). We create a relative capability measure by dividing the stronger side's CINC score by the weaker state's CINC score. This produces a measure ranging from 0.5 (asymmetry) to 1.0 (symmetry), with increasing scores moving towards parity (mean = 0.84).

In the analyses employing the ICOW settlement attempt data, we also control for the extent of the settlement attempt. As noted above, the ICOW project codes four specific topics covered by peaceful attempted settlements. Two comprise efforts aimed at general settlement – negotiations meant to settle the entire claim and negotiations over a smaller part of the claim. The other two constitute procedural and functional efforts – negotiations over procedures for future settlement of the claim,¹⁹ and over the use of the claimed maritime area without attempting to settle the question of ownership.²⁰ We utilize a dummy variable,

¹⁹ We refer to these as procedural settlement attempts. For example, the parties may agree to submit the claim to third party arbitration as Chile and Argentina did in 1979 when accepting Papal mediation of the Beagle Channel dispute.

²⁰ We refer to these as functional settlement attempts. For example, Britain and Argentina have signed a number of functional agreements related to fishing and oil off the coast of the Falkland Islands, but these agreements do not resolve the sovereignty issue.

Functional/Procedural Attempt, to record whether the settlement attempt was procedural or functional. 40% of the total peaceful settlement attempts (198 of 496) were functional or procedural. Our expectation is that functional and procedural settlement attempts will be more likely to produce agreements and that any agreements reached are likely to involve roughly even concessions. We turn now to a discussion of our empirical analyses.

EMPIRICAL ANALYSES

We start by evaluating the bivariate relationships between our key variables in the ICOW claim dyad-year data set (N=3,231). These analyses select on pairs of states that have one or more ongoing competing claims to a maritime area. Table 3A presents the institutional effects of UNCLOS on the occurrence of bilateral negotiations, third party settlement attempts, and militarized disputes. Consistent with hypothesis 2, membership in UNCLOS has a significant effect on third party settlement attempts ($p=.013$). Third party settlement is more than twice as likely if both states in a dyad share membership in UNCLOS (7.7% vs. 3.2%). Bilateral negotiations are also more frequent between dyads with shared UNCLOS membership (5.5% vs. 3.2%), although the difference is not statistically significant ($p=.153$). Table 3B presents the effects for privatization of the seas through declared economic exclusive zones on the occurrence of bilateral negotiations, third party settlement attempts, and militarized disputes. We find support for hypothesis 1; the establishment of joint EEZ boundaries more than doubles the likelihood of bilateral negotiations to resolve maritime claims (27.0% vs. 12.5%); this difference is statistically significant ($p<.0001$). Interestingly, there seems to be a monadic effect of EEZ boundaries as well, with higher chances for bilateral negotiations even if only one state in the dyad has declared an EEZ. On the other hand, EEZ boundaries have no significant effect on third party attempts to manage maritime claims or militarization of maritime conflicts. In sum,

hypotheses 1 and 2 receive partial support with EEZs significantly affecting bilateral settlement and UNCLOS impacting third party attempts.

While it appears that neither privatization nor institutionalization predict state decisions to employ militarized force over maritime claims, we do find a stronger relationship if we control for the revisionist status of the states in the dyad. The challenger state is identified by the ICOW Project as the state challenging the status quo maritime boundary or resource extraction rights, while the target state is the state defending the status quo. If distributional issues are not resolved by the establishment of EEZs or through the institutional mechanisms created by UNCLOS, then challengers may be willing to employ militarized force as they are more likely to view the existing distribution of maritime resources as unacceptable. When controlling for revisionist types, we find a significant relationship between UNCLOS membership and militarization of maritime claims. Militarized disputes occur in 5% of claim dyad-years if the challenger belongs to UNCLOS, compared to 2.6% of claim dyad-years where the challenger state does not belong to UNCLOS ($\chi^2 = 4.63$, $p=0.031$). Thus we have some evidence that UNCLOS fails in its goal of promoting peaceful settlement of maritime claims if it fails to address potential distributional problems stemming from the agreement.

We turn now to multivariate analyses to evaluate the peaceful and militarized management hypotheses (1 & 2). The measures for our three dependent variables are event counts, reflecting the frequency of militarized, bilateral, and third party settlement attempts in a given dyad-year. Several event count models are available, with the choice typically hinging on the relationships between event counts over time and across units. The Poisson model assumes that events are independent, or that the choice of negotiations or militarized force in one instance has no effect on the choice of negotiations or force in another instance. Of course, this

assumption is most likely unreasonable in the data we analyze because prior attempts, both failed and successful, have significant effects on the probability of future settlement attempts (Hensel 2001).²¹ It is also possible that events are related across units, or dyads, as well. Negotiations between the United States and Ecuador over Ecuador's 200 mile territorial sea boundary are likely to be correlated with negotiations between the United States, Peru, and Chile over the exact same boundary question. Similarly, negotiations between the United States and Canada regarding the Gulf of Maine are not necessarily independent of negotiations over the Juan de Fuca Strait and Dixon Entrance because the countries often negotiate multiple maritime flashpoints in single negotiation sessions.

To deal with these potential non-independence and unit heterogeneity issues, we employ a negative binomial model that clusters standard errors by dyads. Unlike the Poisson model that assumes equality between the mean and variance of the event counts, the negative binomial allows for over-dispersion where the variance exceeds the mean. The negative binomial model employs the Poisson model as a baseline and then tests whether the over-dispersion parameter, α , is significantly different from zero (Long, 1997).²² The estimated negative binomial models are presented in Table 4.

Consistent with the bivariate findings, UNCLOS membership and declared EEZs have no effect on the militarization of maritime claims. As noted earlier, this does not capture distinctions between the challenger and target state. The effect of UNCLOS membership for the challenger state is positive and weakly significant in multivariate analyses. EEZs have a positive

²¹ If there are significant dynamics in the event count data, then we might need to employ a model that better captures autocorrelation, such as the Poisson Autoregressive (PAR) model developed by Brandt and Williams (2001).

²² We also estimated logit models, which recode the event count variables as dichotomous variables, and find identical results to those reported herein. We also find no evidence for over-dispersion in the data, as none of the estimated alpha parameters in the negative binomial models is significant.

and significant effect on bilateral negotiations if one or both states in a dyad have declared EEZs. However, the substantive size of the effect is larger for dyads where both states have EEZs.

Interestingly, UNCLOS membership for one state in a dyad makes bilateral negotiation significantly less likely in a given dyad-year, while joint UNCLOS membership has no effect. It appears that the threat of suing through an international court or turning to third party arbitration has no significant out of court effects in these regions to date. In fact, the results in the third model demonstrate that UNCLOS members prefer third party solutions for managing contentious maritime issues. It is quite interesting that privatization encourages parties' own efforts to resolve their disagreements over resources of the sea, while institutionalization increases third party involvement in the dispute settlement process. Once again we find mixed support for hypotheses 1 and 2. UNCLOS and EEZs have significant but varying effects on peaceful negotiations and little to no effect on decisions to employ militarized force. Among the control variables employed in Table 4, recent militarized history has the strongest effect increasing the chances for all forms of peaceful and militarized settlement attempts. Maritime areas that are more salient to both sides are more likely to experience militarized settlement.

While EEZs encourage bilateral negotiations and UNCLOS membership encourages third party settlement, this does not imply that such efforts will be successful in resolving the contentious issues at stake. Furthermore, agreements that are struck may be inequitable with respect to who gets what in the agreement, which may increase the duration of the ongoing claim or lead to new maritime claims. Both the privatization and institutional mechanisms should promote greater success of negotiation efforts and create greater equity in agreements reached. UNCLOS and EEZs are designed to create accepted standards for ownership of maritime spaces and in theory seek to mitigate distributional inequities. Table 5 reports logit analyses for two

measures of success: whether the claimants reach an agreement in a given set of negotiations and whether the agreements struck are characterized by roughly even concessions.

Enhanced success in reaching agreements is strongest for the privatization solution of joint declared EEZs. Once two states have declared maritime boundaries, this makes it easier to agree upon further delimitation or resource use issues that arise. UNCLOS membership, on the other hand, has no significant effect on the success of negotiations. This weaker effect could be attributed to the dominance of bilateral negotiations in the dataset (63%), which tips the scales in favor of the EEZ variables given the strong relationships between bilateral settlement and EEZ boundaries. UNCLOS membership does have a weak effect on equitable agreements, but only a monadic effect. If two states in a maritime claim have established EEZs, they are significantly more likely to reach an agreement that involves roughly even concessions. Once again, privatization seems to have the edge for producing successful and equitable agreements, although these effects only seem to matter once both sides have established clear EEZ limits. With respect to the control variables, agreements are less likely to be reached if two states are relatively similar in military, economic, and demographic capabilities. This reflects pessimism in the IR literature about the likelihood of successful cooperation in situations of parity. More salient issues are associated with more equitable agreements, which may reflect a selection effect whereby parties reach agreements on contentious maritime areas once the distributional questions are adequately resolved.

CONCLUSION

The resources of the sea have been a source of competition between states for many centuries, although the pressing nature of these common property resource (CPR) problems has become more acute over time. States' ability to extract oceanic resources has increased substantially

through technological advance, and rapidly growing human populations have increased the demand for fishing, mineral, oil, and other maritime resources. This creates a tragedy of the commons where everyone has incentives to over-exploit maritime resources for their own advantage, leading to diminishing resource supplies for all.

Social scientists have devised several solutions to CPR problems, including coercion, privatization, and institutionalization. In this paper, we compare two prominent solutions for managing maritime resources, privatization in the form of economic exclusive zones (EEZs) and institutionalization via the United Nations Law of the Sea Convention (UNCLOS). We examine the effects of EEZs and UNCLOS on conflict management efforts to resolve competing interstate claims to maritime zones in the Western Hemisphere, Western Europe, and Eastern Europe (1900-2001). We find that privatization through EEZs seems to be more effective, as it promotes much more frequent negotiations between disputing parties and enhances the chances that negotiations will produce equitable agreements. On the other hand, UNCLOS is successful for bringing third parties to the conflict management table, which may facilitate the long run stability of agreements reached to resolve maritime claims. The results demonstrate the differential effects of solutions to CPR problems and highlight the potential distributional problems that may arise through privatization or institutionalization.

While our theory and empirical analyses help us understand various solutions to the tragedy of the oceans commons, future research will refine and expand these analyses further. First, we would like to examine distributional problems more carefully. One of the indicators for issue salience in the ICOW data set codes the presence of migratory fish stocks, which would be ideal for capturing potential problems with the creation of fixed maritime boundaries. We would also like to collect additional information on the winners and losers in the UNCLOS agreement

and determine whether the losing states have initiated more maritime claims and have been willing to employ militarized force more frequently. Second, we examine the effects of EEZs, but our indicator is rather simple, capturing a dichotomous effect of having a declared zone or not. In the future, we plan to code the number of miles for states' EEZ claims, which will allow us to track changes in EEZ boundaries more carefully over time. The 200 mile EEZ limit should have stronger effects on the frequency and success of peaceful negotiations because the UNCLOS agreement institutionalized the 200 mile EEZ boundary level.

Third, our theory tells us something about the management of existing maritime claims, but it also makes predictions about the onset of new maritime claims as well. We have conducted some preliminary analyses using the Western Hemisphere regional data, focusing on all pairs of states in the region as well as major powers paired with every regional state from 1900-2001. We find that joint EEZs and joint UNCLOS membership make the onset of new maritime claims significantly less likely, which suggests that both privatization and institutionalization are effective mechanisms for minimizing future maritime conflicts. We plan to extend these analyses to the European data. Finally, we would like to compare various institutions that help to manage maritime conflicts. We mentioned the International Seabed Authority briefly, but did not present empirical analyses of this treaty in the paper. Our preliminary estimates of these effects suggest that ISA has no significant effect on peaceful and militarized attempts to manage maritime claims. We hope to utilize Ostrom's CPR institutional typology to understand more clearly the differences between ISA, UNCLOS, and other maritime institutions.

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Table 1: UNCLOS and Institutional Design Elements

<u>Design Feature:</u>	<u>Present in UNCLOS?</u>	<u>Where in UNCLOS?</u>	<u>Description</u>
Clearly Defined Boundaries & Memberships	Unclear & Contingent on State	Articles 56, 63, & 64 of Part V	UNCLOS allows for the creation of EEZs but there exists definitional debates. Also resources such as fisheries migrate, making borders relatively meaningless. Allocation rules are not based on provisions. Allocators determined by states.
Congruence between Rules and Conditions	No	Articles 69, 70, & 71 of Part V	UNCLOS as a global agreement does not make allowances for local conditions (i.e. scarcity within EEZs)
Collective Choice Arrangements	Yes, but difficult	Article 309, 312, and 313 of Part XVII	There are two main ways to amend UNCLOS, but these two are time-consuming and difficult.
Monitoring	Contingent on State	Sections 4-6 of Part XII	The Convention lays out guidelines for how states monitor activity in their designated areas.
Graduated Sanctions	No	Section 9 of Part XII	States are held liable for damages caused by their nationals in violation of the agreement. No fines or punishments for breaking the Convention.
Conflict Resolution Mechanisms	Yes	Part XV	Signatories are mandated to peacefully resolve maritime claims. If conflicts over claim arise states can choose conciliation or negotiation. If these are not acceptable, they must choose among 4 fora. If not, arbitration is selected. Decisions are binding.
Minimal Recognition of Rights to Organize	Contingent on State	Article 61 & 62 of Part V	States are given autonomy under UNCLOS, but the ability of appropriators to make their own rules is under state authority.
Nested Units	Contingent on State	Article 56, 73 of Part V; Article 123 of Part IX; Section 2 & 5 of Part XII;	Individual citizens and companies are first regulated by their own state, and then states themselves are regulated by the Convention.

Table 2: UNCLOS Membership and Declared Economic Exclusive Zones for All States, 1900-2001

Frequency Row % Column %	NO DECLARED EEZ	DECLARED EEZ
NOT AN UNCLOS MEMBER	4,475 90.4% 97.0%	475 9.6% 59.6%
UNCLOS MEMBER	138 30.0% 3.0%	322 70.0% 40.4%

$\chi^2 = 1200, (p = 0.000)$

Table 3: UNCLOS Membership, EEZs, and the Management of Maritime Claims,
ICOW Maritime Claim Dyad-Years 1900-2001²³

A. UNCLOS Membership (N = 3231)

	Bilateral Negotiation(s)		Third Party Settlement(s)		Militarized Dispute(s)	
	No	Yes	No	Yes	No	Yes
No UNCLOS Members	2618 (87.4%)	200 (84.4%)	2699 (87.4%)	119 (83.8%)	2744 (87.4%)	74 (82.2%)
One UNCLOS Member	280 (9.4%)	24 (10.1%)	292 (9.5%)	12 (8.5%)	292 (9.3%)	12 (13.3%)
Both UNCLOS Members	96 (3.2%)	13 (5.5%)	98 (3.2%)	11 (7.7%)	105 (3.4%)	4 (3.7%)
	$\chi^2 = 3.76, (p = 0.153)$		$\chi^2 = 8.76, (p = \mathbf{0.013})$		$\chi^2 = 2.10, (p = 0.351)$	

B. Declared EEZs (N = 3231)

	Bilateral Negotiation(s)		Third Party Settlement(s)		Militarized Dispute(s)	
	No	Yes	No	Yes	No	Yes
No Declared EEZs	2076 (69.3%)	109 (46.0%)	2083 (67.4%)	102 (71.8%)	2124 (67.6%)	61 (67.8%)
One Declared EEZ	545 (18.2%)	64 (27.0%)	586 (19.0%)	23 (16.2%)	592 (18.9%)	17 (18.9%)
Both Declared EEZs	373 (12.5%)	64 (27.0%)	420 (13.6%)	17 (12.0%)	425 (13.5%)	12 (13.3%)
	$\chi^2 = 61.08, (p = \mathbf{0.000})$		$\chi^2 = 1.207, (p=0.547)$		$\chi^2 = 0.003, (p = 0.999)$	

²³ The management variables (bilateral negotiations, third party settlements, and militarized disputes) are coded dichotomously in this table, with one or more attempts of each type counting under the “yes” category.

Table 4: Negative Binomial Analyses of the Effects of UNCLOS and Declared EEZs on the Management of Maritime Claims

<u>Variables</u>	<u>Model 1: Militarized Attempts</u>	<u>Model 2: Bilateral Attempts</u>	<u>Model 3: Third Party Attempts</u>
<i>Theoretical Variables</i>			
One UNCLOS Member	0.187 (0.309)	-0.629 (0.270)**	0.423 (0.502)
Both UNCLOS Members	0.235 (0.566)	0.252 (0.503)	1.352 (0.433)**
One Declared EEZ	0.014 (0.353)	1.025 (0.311)**	0.010 (0.361)
Both Declared EEZs	-0.021 (0.393)	1.205 (0.321)**	-0.439 (0.385)
<i>Control Variables</i>			
Recent Militarized Disputes	0.987 (0.155)**	0.538 (0.149)**	0.989 (0.197)**
Issue Saliency	0.109 (0.060)*	0.065 (0.049)	0.052 (0.055)
Relative Capabilities for Stronger Side	-0.862 (0.801)	-1.192 (0.882)	-0.209 (0.985)
Constant	-3.982 (0.587)**	-2.365 (0.835)**	-3.441 (0.973)**
Alpha	0.203 (0.822)	3.621 (1.001)	6.339 (1.869)
N	3161	3161	3161
Log-likelihood	-381.02	-957.64	-618.50
Chi-square	216.77 (p=0.000)**	69.34 (p=0.000)**	33.23 (p=0.000)**

* p < .10, ** p < .05

Standard errors are clustered by dyad.

Table 5: Logit Analyses of the Effects of UNCLOS and Declared EEZs on the Success of Peaceful Settlement Attempts

<u>Variables</u>	<u>Model 1: Reach Agreement?</u>	<u>Model 2: Roughly Even Concessions?</u>
<i>Theoretical Variables</i>		
One UNCLOS Member	0.053 (0.421)	1.637 (0.856)*
Both UNCLOS Members	0.336 (0.278)	0.750 (0.593)
One Declared EEZ	-0.374 (0.279)	-0.350 (0.535)
Both Declared EEZs	0.452 (0.257)*	0.607 (0.373)*
<i>Control Variables</i>		
Issue Salience	0.000 (0.049)	0.247 (0.066)**
Functional/Procedural Attempt	1.044 (0.256)**	1.701 (0.334)**
Relative Capabilities for Stronger Side	-1.703 (0.858)**	0.789 (1.378)
Constant	1.193 (0.787)	-2.723 (1.326)**
N	476	267
Log-likelihood	-303.26	-139.21
Chi-square	34.94 (p=0.000)**	39.74 (p=0.000)**

* p < .10, ** p < .05

Standard errors are clustered by dyad.