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Combining fairness and stability concerns for global commons: The case of East Atlantic and Mediterranean tuna

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ABSTRACT

The paper examines the issue of allocating fishing rights for the management of East Atlantic and Mediterranean tuna. Although it is well-known that fairness plays a crucial role for the acceptability of international environmental agreements, usually there is a trade-off between fairness and stability. Our results confirm such a trade-off between fairness and stability that prevails over international agreements and this paper examines a way to reconcile it. The proposed approach comprises three stages. First, various equitable sharing rules (originated from the "bankruptcy" literature) are used to allocate the fishing rights. Second, fairness and stability criteria are used to assess the eligibility of the examined allocation rules. The final choice is facilitated by using a social choice rule. The chosen rationing rule, namely the A-min, represents a specific weighted average of the two focal rationales in the sharing problems, namely the equal shares and the proportional ones. Setting aside the institutional inertia, the A-min rule dominates, in terms of stability and fairness, the existing rule used by the International Commission for the Conservation of Atlantic Tunas (ICCAT). Furthermore, it is a transparent and easy to justify allocation rule so, it may be proved to be a strong candidate for future policy changes concerning the allocation of fishing rights.

1. Introduction

Global commons are resource domains to which all nations have legal access (Buck, 1998). Several types of global commons are identified by International law, such as: the High Seas; the Atmosphere; Antarctica; plant genetic resources, and, Outer Space (Louka, 2006). Ocean fisheries have long been regarded as a common-property resource, primarily due to the fact that high seas fisheries enjoy an unrestricted (open) access regime (Scott, 2008). The legal basis for such an open access regime is based on Article 87 of the United Nations Convention on the Law of the Sea (UNCLOS) which defines the freedoms of the high seas (Anderson, 2008). In the absence of a prudent co-management regime, open access fisheries are likely to collapse due to overfishing, a situation which is often referred to as a "*tragedy of the commons*". While the latter term, which was coined by Hardin (1968), is accurate to describe the fragile domain of open-access resources, it is probably fallacious when it is used to predict an inevitable tragedy for other type commons, such as common property resources which are a joint property of a community (Ostrom, 2008). McCay (1996) argues that the combination of *laissez-faire* with open-access is to be blamed for such "tragedies of the commons" especially when the pressure on resources is high.

From the voluminous literature on common property resources it is clear that variations in the types of property rights make a significant difference in resource management outcomes by shaping the relevant incentives of the resource users (Agrawal, 2003). Thus, the design of international fisheries agreements should provide the involved countries with the necessary incentives to both join and abide by such agreements. In other words, these agreements should be cooperative and self-enforcing ones (Barrett, 2005; Susskind, 1994).

The 1995 UN Fish Stocks Agreement (henceforth UNFSA),[1] an important milestone in international fisheries law, obligates the States to co-operate for the conservation of stock in the adjacent high seas. The UNFSA calls for the adoption of "measures to ensure long-term sustainability of straddling fish stocks and highly migratory fish stocks and promote the objective of their optimum

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[1] It was entered into force on 11 December 2002 (Oral, 2006).

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utilization" (Article 5) in areas "beyond" national jurisdiction, but also includes provisions for the enforcement of these measures (Article 16) (Oral, 2006). A central mechanism for the implementation of UNSFA, is the Regional Fisheries Management Organizations and Arrangements (RFMO/As) (Balton and Koehler, 2006). Typically, RFMO/As are considered to have a crucial role in solving the international fisheries crisis by providing a forum where States can agree on effective conservation and management measures for high seas fish stocks (Gjerde et al., 2013). It is noteworthy that only Sates that have agreed to cooperate in terms of an RMFO/A or to comply with its provisions shall have the right to participate in fisheries in question (Henriksen et al., 2006). In other words, RFMO/As are essentially coalitions of some States, which design measures and rules to prevent unregulated fishing from other States without necessarily offering them any compensation for that. Louka (2006) describes such a function of an RFMO/A as a kind of enclosure in the global commons.

The relevant literature on the effectiveness of Multilateral Environmental Agreements (MEAs) displays substantial differences of opinion regarding the major determinants of their relative success (Breitmeier et al., 2006; Chayes and Chayes, 1995; Grossen, 2004; Ma et al., 2013; Mitchell, 2003; Wangler et al., 2013). However, there is a kind of consensus that two concepts emerge from the literature as being among the most important determinants of a successful MEA (Burgstaller, 2005; Wallington et al., 2007; Young, 2011). These are legitimacy and fairness. Among various possible definitions of legitimacy, we adopt the one proposed by Franck (1990) which refers to "the perception of those addressed by a rule or a rule-making institution that the rule or institution has come into being and operates in accordance with generally accepted principles of right process". Likewise, we refer to a fair MEA if the participants' expectations of justifiable distribution of duties (costs) and rights (benefits) are satisfied. In other words, the fairness definition adopted in this paper coincides with the concept of distributive justice (Koh, 1997). Distributive justice along with procedural justice are often collectively referred to it as social justice (Kazemi, 2007; Young, 1994). Suffice to say that distributive justice represents a general accepted definition of fairness in economic literature (Konow, 2003), the moral underpinning of which is egalitarianism (Roemer, 1996). Social justice while it represents a value for its own sake, it still retains a functional purpose. The lack of social justice undermines the legitimacy of a governance system (Hanna, 1999; Jentoft and Chuenpagdee, 2013). Fleischacker (2004) gives an excellent review of how such a concept has evolved through time.

The paper focuses on a specific RFMO/A, namely the International Commission for the Conservation of Atlantic Tunas (ICCAT). Despite the fact that is notoriously difficult to assess the concept of an effective international regime, Webster (2010) discusses how the setting of Total Allowable Catches (TAC) shapes the cornerstone of such effectiveness, which is the legitimacy. In particular, this paper examines whether the sharing rule based on historical catches which is adopted by ICCAT to allocate fishing rights for blue-fin tuna (BFT) satisfies the fairness criterion. Precisely, this paper emphasizes the distributional impacts of allocation and proposes an approach that combines fairness and stability considerations. According to Aranda et al. (2006) the choice of the appropriate fish sharing rule is the most difficult process when managing cooperative agreements in terms of an RFMO/A. The year 2010 is taken to be the baseline scenario, while the way that TAC was allocated in 2011 was the focus of this paper. To this end, we examine a number of well-established allocation rules from the "bankruptcy" literature (Hougaard, 2009). We emphasize the fairness criterion given that very often unfairness is mentioned as a typical problem in fisheries regulations (Gezelius, 2003). In addition, we examine the relative stability of alternative allocation rules.

2. On the ICCAT's TAC allocation rule

The management of BFT (*Thunnus thynnus*) stock is under the aegis of the International Commission for the Conservation of Atlantic Tunas (ICCAT), which entered into force in 1969 (ICCAT, 2009). Map 1 shows the two management units for bluefin tuna that ICCAT has; the western Atlantic stock (BFT-W) and the Eastern Atlantic and Mediterranean stock (BFT-E). The paper examines only the case of BFT-E because the fish stock has faced the highest fishing pressure of its long fisheries history (Fromentin and Ravier, 2005). Currently the BFT-E stock is at risk of being overfished to depletion (Sumaila and Huang, 2012).

In 1996 ICCAT responded to the peril of tuna's stock overexploitation by launching TAC (Fromentin, 2003). Despite the fact that alternative management perspectives, i.e., marine protected areas (Carter, 2003), or fishing day regulations (Branch et al., 2006), are often discussed in the literature, a TAC-based management still retains its ground as the dominant paradigm of the fisheries management discourse (Gezelius, 2008). The initial distribution of TAC is primarily based on the historical catches, a rationale commonly referred to as "relative stability" in terms of the EU Common Fisheries Policy (Khalilian et al., 2010). Apart from the historical catches, the principle of relative stability is determined by special allowances based on fisheries dependency and compensation for jurisdictional losses after the introduction of exclusive economic zones (Da Conceição-Heldt, 2004).

Despite the fact that the majority catch shares in world fisheries are allocated using historical catch records (Lynham, 2014), the UNCLOS discusses a number of additional allocation criteria and various countries' responsibilities that could be taken in account (Mensah et al., 2007). The most important of them are: the greater needs of the developing countries, the importance of geographical proximity and possible disputes over sovereignty of remote areas. In line with the UNCLOS rationale, ICCAT has incorporated a number of additional considerations in allocating the TAC among countries such as the spatial distribution of the stock, the proximity to coastal states and legitimate claims of countries with historically low catches (Sumaila and Huang, 2012).

While the importance of a legitimate allocation rule is adequately addressed in the relevant literature, see, for example, Matthíasson (1992), ICCAT (2001), Butterworth and Penney (2004), Garcia and Boncœur (2005), Van Dyke (2007), Henriksen and Hoel (2011), there are only few papers that examine alternative TAC allocation rules. Some examples are: Armstrong (1999), Gallastegui et al. (2002), Inarra and Skonhoft (2008), and Kampas (2015).

The main criticisms against the allocation rule which is based on historical catches can be categorized into the following arguments. First, historical catches punish previous cessation of fishing (Serdy, 2011). Such a cessation, either voluntary or not, may be a problem to a country's re-entry to fishing in the post-TAC era. Second, historical catches favour developed countries which have the resources to finance large fishing operations (Van Dyke, 2007). A variant of the previous argument is that historical catches reward past over-fishing (Butterworth and Penney, 2004). Finally, the allocation rule which is based on past catches ignores the distributional implication that such an allocation may induce. Jentoft and Chuenpagdee (2009) argue that distributional issues are always at the core of fisheries and coastal management regimes. Johansson-Stenman and Konow (2010) stress that cooperation is enhanced if the efficiency principle is reconciled with inequality aversion. Baland (2006) links the inequality level in the fish shares with the adoption of conservation measures.