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The discard ban policy, economic trends and opportunities for the Portuguese fisheries sector

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ABSTRACT

In this paper the discard ban policy within the Portuguese fisheries sector is discussed and the opportunities and impact in the fisheries economy that arise from sales of unwanted fish under the new landing obligation are evaluated. The decadal mean price of fish (€/kg, adjusted for inflation) rose from the 1940s until the 1970s, dropping thereafter. The yearly averaged economic income estimated for discards sales between 1969 and 2009 ranged from 419345€ to 2164379€. Discard ban sales could contribute from 10% to 53% of the total landed value and 9–34% of the total catches (landings + discards). Under a discard ban policy, the fishing sector with the largest economic contribution for total discards sales would be multispecies (54%), followed by trawl (26%) and seine (20%). On average, fishing sales contributed with 0.63% to gross domestic production (GDP) between 1938 and 2009. Discard sales can increase 1.07–1.46 times more than the fish landing contribution to GDP. After 1983 the average landings/imports economic ratio was 0.28:1, which means that fish imports surpassed landings economic value 3.57 fold. The discard ban policy can create economic opportunities in the national context thus helping to revitalize some specific fisheries sectors.

1. Introduction

Many fisheries around the world have reached unsustainable levels and therefore deliver poor income to fishers. Effective fisheries management is urgently needed to improve the economic situation of fishing communities. Part of the solution is to reduce discards by finding market-based approaches that will increase the value for all by-catch fish. The necessity of each country to manage all fisheries within their Exclusive Economic Zones (EEZ), a consequence of the United Nations Convention on the Law of the Sea (UNCLOS), led to attempts to find sustainable indicators for marine fisheries and ecosystems at the national level [1] but information about the economic effect of a discard ban in the fisheries sector is still scarce.

Coastal and maritime activities have been traditionally important both for the national economy as well as for the historical, social and cultural identity of Portugal. The country has long relied on fishing as a major means of subsistence and many coastal communities depend almost exclusively on local fisheries and related activities. The exploitation of fisheries resources in Portuguese waters has traditionally been dominated by small-scale coastal and estuarine fisheries. Local artisanal fisheries remain socially and economically important for the coastal populations that have increased in recent decades [2–4].

In mainland Portugal, a variety of gears/metiers are used in coastal fisheries, ranging from trawls to static gears such as gill nets, long lines and traps. Therefore, a wide variety of unwanted species (by-catch) are captured along with the target species [2]. The quantification and composition of the unreported catches (e.g. discards) is a key issue in fisheries to understand the fate and impact of these unreported actions [2,5,6]. In Portugal it was estimated that between 1938 and 2009, 35.5% of the total catch corresponded to illegal, unreported and unregulated fisheries (IUU), mostly due to discards that accounted for 98.5% of IUU [2]. Between 1938 and 2009, fish accounted for 93.5% of overall averaged unreported catches per year, followed by cephalopods (1.9%), crustaceans (1.4%) and sharks (1.3%). However, 89% of unreported fish and shark species had commercial value [2,7]. Moreover, between 1938 and 2009, eight frequently landed commercial species, mostly small pelagics, accounted for approximately 70% on average of total unreported catches in weight for all Portuguese gears/fisheries: *Scomber japonicus*, *Boops boops*, *Trachurus picturatus*, *Merluccius. merluccius*, *Sardina pilchardus*, *Liza aurata*, *Micromesistius poutassou* and *T. trachurus* [2,7].

In this paper the discard ban policy will be briefly discussed, namely within the Common Fisheries Policy (CFP), before" and "after" the ban implementation and discards incentives (Section 2). The Portuguese fisheries status and political situation (Section 3) will be described in order to better discuss the EU demand within the Portuguese context.

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Prohibited for the first time in some EU fisheries in 2009, economic-led 'highgrading' is today illegal for all quota species, under amendments to fisheries technical measures enacted by the European Parliament and Council in March 2013 (Regulation (EU) No 227/2013). This means that fish that were discarded before should now have an economic value independently of their final use. Furthermore, sales of this fish will have to be accounted for and included in the country's economy. Therefore, the overall socio-economic opportunities for implementation of the discard ban policy in Portuguese fisheries sector between 1938 and 2009 is herein evaluated based on available information on landings and their economic value in Portugal. The specific aims were: (1) to estimate yearly fishing income values based on overall auction fishing sales 1938–2009); (2) to contextualize yearly fishing revenue trends with Gross Domestic Product (GDP), import and export trends, and (3) to estimate the potential economic value generated by discards (which represent 98.5% of IUU [2]), assuming that discards can be normally commercialized for different uses.

2. The discard ban policy

Discards are among the best examples of the shortcomings of the CFP as they are difficult to justify to fishermen or to the general public. People in different circumstances have different perceptions of incidental catches. This is often based on emotional and heightened public awareness rather than on hard evidence that conservation, ecological or economic problems exist. This can be particularly so in the difference between protein rich developed nations and less developed nations where fishermen are dependent on fishing for their very existence and the national economy may rely on exports to developed nations of high value marine products such as shrimp. It is unclear if the debate around the EU Landing Obligation has actually started. Nevertheless, since the following of two major communications made in 2002 (EU law: COM/2002/0656) and 2007 (SEC(2007) 380; SEC(2007) 381) more attention has been given to discards. Since 2011 there has been a U-turn in the EU's discard policy with the aim to effectively reduce discards in EU fisheries sector with the Commission proposing since 2011 a U-turn on the EU's discard policy.

Until recently, the EU prohibited discards of fish with established quotas which could be legally landed (high-grading). However, it was legal to discard non-commercial fish and other organisms or even to compulsory discard fish which could not be landed legally due to minimum landing size (MLS) or quota regulations. The 2012 revision of the EU CFP led to the implementation of the discard ban. Therefore, as cited in Ref. [8]: "In the "new world", the aim is that landings equal catch whereas in the "old world" landings equals catch minus discards". For instance, as part of local fisheries policy, in mixed fisheries, fishermen must join efforts with the local administration to develop actual measures thus avoiding unwanted catches in the first place. These measures may range from more selective fishing gears (e.g. increasing the mesh-size used, either by regulation or on a voluntary basis), in restrictions to access to juvenile aggregation areas at certain times of the year (e.g. in spawning periods), to real time fishing closures or even "closed" areas on a permanent basis (MPAs – Marine protected areas). Furthermore, vessels that are likely to have a mixture of species in their hauls should have quotas for all of these species. Small scale vessel owners would need to receive the right quota mix from national administrations. All other vessel owners should receive the right quota mix from the national administration transferable fishing concessions (TFCs). Vessel owners could pool their concessions, for example, in a producer organization (PO) and in addition they could buy TFCs from other vessel owners within the same Member State (MS), doing a single fishing trip, for a whole year or even longer. Over time hauls will become more selective, allowing saving time, fuel and on-board handling which ultimately will reduce pressure on fishing stocks. Under these premises, stocks will be able to recover faster and to produce larger fish which will fetch better market prices, thus increasing the financial revenue for the fishermen [1].

For instance, national scale "right mix" can be achieved by individual transferable quota (ITQ) that comprises an allocated privilege of landing a specified portion of the total annual fish catch in the form of quota shares. The ITQs divide the total annual catch quota into smaller individual portions and are generally transferable, which means that fishing vessel owners can sell or buy their ITQ certificates or even, lease their quota shares depending on how much (or whether) they want to participate in the fishery.

The potential effects and the future incentives included in the discard ban policy are not however clear. For instance, what is the role given when unintentional catches occur despite the improved selectivity? Under these circumstances catches would be handled as follows (see [1]): *i*) undersized fish or minimum conservation reference sizes will be set on biological grounds. These measures will allow development of' better gears thus minimizing juvenile catches. Fish below minimum catchable size can only be sold for fish meal or pet food production. Fishermen can thus cover the landing costs, but without generating financial gain; *ii*) fish caught in excess of individual quota can be marketed normally. When vessel owners are about to run out of one or more of their quotas they need to buy or lease quotas from other vessel owners in the same MS. When this step is unattainable, quota overshoot rules will be applied and fishermen must take responsibility to ensure that they have all quotas necessary to land their catches; *iii*) overshoot of national quotas has to be dealt with by the MS through by-catch reserves, borrowing or banking of quotas between years, or swapping quotas with other MS. If this is not enough, the overshot amounts will be deducted from the following year's quota; *iv*) and within these effort management systems all commercial species which are above the minimum size can be marketed and sold normally as long as the effort to allocate them is not exhausted. From what the authors understand, there are no penalties to fishing below minimum size except for the fact that this fish must be sold for reduction (fish meal and fish oil). So it is difficult to know with certainty whether there will be any costs for fishermen if they land more fish than their quota for one or more species. In sum, fish caught in excess for individual quotas can be marketed normally and "by-catch quotas" are set as part of the fishing opportunities set by EU council each year. The European Commission proposes a gradual approach in three steps: pelagic species in 2014 (including in the Mediterranean), most valuable demersal species (cod, hake and sole) in 2015, and other species by 2016.

The European Fisheries Fund (EFF) may fund innovative real time technologies aiming to control/monitor fishing activity and to enforce the discard ban. These practices will imply, not only a full reporting of fisheries and processing activities [1], but also to gear up the fishing vessels with additional technical equipment (e.g.: electronic logbook, vessel Monitoring System Program, observers, radio frequency identifications, electronic chips). Moreover, the new CFP will offer incentives to increase gear selectivity and to land the full fishing yield. Under the EFF, vessel owners would receive financial support for innovation (new technical and organizational knowledge), to increased gear selectivity (both size and fish selectivity) and to reduce incidental/accidental by-catches. Vessel owners and fishermen working on board vessels would receive financial support to participate in trials, innovative pilot projects and to collaborate with scientists [1]. POs will also receive funding to help implement the discard ban, to improve product labelling and marketing of new products. Additionally, incentives may be given in the form of quota allocation within MS. Under the TFC system, MS are free to allocate their national quotas to different vessel segments, giving for example, more quotas to vessels that fish more sustainably and environmentally friendly [1].

Despite the introduction of new technical regulations to limit unwanted catches, there is little understanding at the fishermen level of the underlying socio-economic and institutional incentives causing discards. There is a thin line between the theoretical point that