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Fisheries Subsidies in Tunisia: A Comprehensive Analysis

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Introduction:

Fisheries subsidies are considered as a key issue for trade and sustainable development, given the complex relationship between trade and profit on one hand, and ecological and socio-economic sustainability on the other (e.g. [1]). In 2022, the World Trade Organization (WTO) Agreement prohibited subsidies for Illegal, Unreported, and Unregulated (IUU) fishing, overfished stocks, and unregulated high-seas fleets (e.g. [2]). In Tunisia, the situation in the fisheries and aquaculture sector has become increasingly worrying due to declining fisheries resources and the depletion of fish stocks. Several studies denounce the impact of overfishing and Illegal, Unreported and Unregulated (IUU) fishing on biodiversity (e.g. [3]). It is important to note that other factors may be contributing to this imbalance, including subsidies applied to the fisheries sector. This is why it is interesting to understand the extent to which subsidies encourage the excessive exploitation of these resources. It is true that subsidies have long contributed to economic development and played a valuable social role, but what are the benefits? Therefore, through our article, we will try to provide a comprehensive response to the aforementioned questions. This paper sets out to evaluate the impact of subsidies, focusing specifically on those allocated to the bluefish sector.

Results:

It is easier to understand that the basic issue of fisheries subsidies and overcapacity can be facilitated by framing the arguments in terms of a fisheries model. In this article, we will use a bioeconomic model (e.g. [4]). Arnason's model will be used to study the variation in subsidies in the case of bluefish, and more specifically sardines, as well as fuel subsidies. The data collected are both biological data relating to sardine biomass and fishing effort, and economic data relating to the income and expenses of bluefish fishing boats, which will enable us to study the trend in profits for bluefish fishing boats. Let's assume that the instantaneous profits of individual fishing enterprises are defined by the function π as follows:

$$\pi = \mathbf{p\ Y\ (e,\ x) - C\ (e) - \sigma.Y(e,\ x) + S(e,Y(e,x))}$$

where: **Y (e, x)** represents the exploitation function with e designating the fishing effort and x the biomass of the fish stocks, **p** represents the price of a unit of production, **p Y (e, x)** represents the revenues, the function **C (e)** represents the catch costs, σ**. Y (e, x)** is intended to reflect the opportunity cost of the enterprise. In an Individual Transferable Quota (ITQ) fishery σ is the market price of a unit of quota.
According to Arnason, fisheries subsidies depend on catch and fishing effort. The subsidy function is as follows: $\mathbf{S(e,Y(e,x)) = s_0 + s_1.e + s_2.Y(e,x)}$

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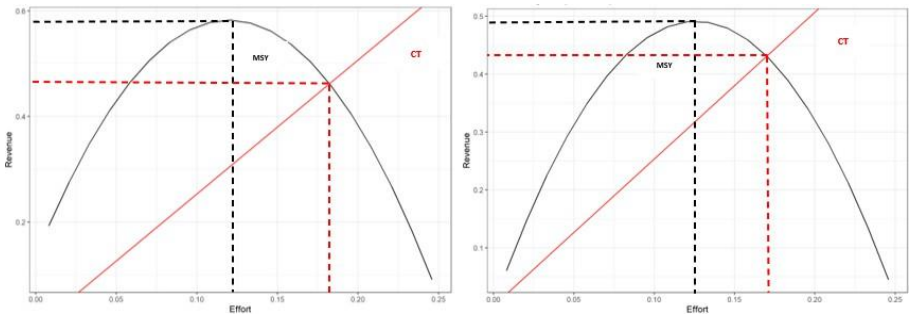
where s_0 represents the lump-sum subsidy, s_1 and s_2 represent the catch and effort subsidies respectively. To understand the impact of subsidies, a comparative analysis was conducted, examining the situation in the presence and absence of subsidies. Comparison between the two situations indicates a divergence in the cost curve, with an increase in total costs. A second variation is seen in income, which has fallen from (0.58) to (0.48) Fig.1.



(a) with subsidies (b) without subsidies

Fig.1 Comparison between the situation with subsidies (a) and without subsidies (b)

We can see that for the situation where the state does not provide subsidies to bluefish fishermen, the bioeconomic equilibrium point under free access to the resource has been shifted. This is an equilibrium beyond which costs will exceed revenues. A comparison of the two situations shows that it has moved from an effort of (0.18) to an effort of (0.17). We note in particular that the bioeconomic equilibrium and MSY reference point has been affected by the situation of absence of subsidies. The figure fell from (0.123) to (0.126). Fishing subsidies represent a fundamental aspect of the economic landscape for bluefish fishermen. The impact on income is a relevant factor. The following article will provide a comprehensive overview of the relevant literature on the subject.

Conclusion :

Fisheries subsidies remain a multifaceted policy, capable of driving both ecological collapse and socio-economic progress. The WTO Agreement represents a critical step toward sustainability. In Tunisia, targeted subsidy programs like the bluefish development initiative aim to enhance socio-economic outcomes but face challenges in balancing economic growth with ecological sustainability. Results showed that Tunisia’s experience highlights the need for context-specific reforms that align subsidy allocations with poverty reduction and ecosystem resilience. Future research must quantify the trade-offs between subsidy retention and the economic value of restored fisheries.

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