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# **Premium Price for MSC Octopus (*octopus vulgaris*): The Case of Small Producers from the Asturian Region in Spain**

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## Premium Price for MSC Octopus (*octopus vulgaris*): The Case of Small Producers from the Asturian Region in Spain

### INTRODUCTION

- The purpose of this study has been to determine if MSC certification of a Spanish fishery, in this case the fishery of common octopus (*Octopus vulgaris*) in the Spanish region of Asturias, provided any economic benefit to the fishermen and the local community.
- Specifically, we have tested whether there is a premium price for eco-labeled products at the production stage what it can be considered an economic incentive to be responsible with fisheries. Further, we will also analyze the importance of eco-labeling of seafood products for the socio-economic sustainability of small-scale fisheries.
- So far, only a few empirical studies have supplied a positive evidence of premium prices for eco-labelled seafood products, being most of these studies focused on retail prices (Roheim et al., 2011; Wakamatsu, 2014; Asche and Bronnmann, 2017).

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### THEORY FRAMEWORK



### Definition of eco-label and the MSC label

- Eco-labels of seafood products are certificates granted to products that have been obtained generating the least possible impact on marine ecosystems (Deere, 1999; Wessells et al., 2001; Gardiner and Viswanathan, 2004).
- This type of certification is related to the effects of management measures on the sustainability of fisheries by ensuring that buyers and consumers that a particular product comes from a fishery that meets the standard for sustainable fishing.
- Eco-labelling in fisheries gained increased impetus with the development of the non-government Marine Stewardship Council (MSC) in 1996 when it established principles, criteria and processes for the 'third party', independent certification of fisheries. The work of the MSC reflects the increasing importance of NGOs as stakeholders in fisheries management in the entire production cycle: engaging with fishers, processors, wholesalers, retailers and consumers (Potts and Havard, 2007).

## Premium Price for MSC Octopus (*octopus vulgaris*): The Case of Small Producers from the Asturian Region in Spain

### THEORY FRAMEWORK

#### MSC certification of common octopus from Asturias

- Since 2016 the artisanal fleet of Navia-Porcía, which is composed of 30 active vessels, is certified by the Marine Stewardship Council (MSC) to fish and sell common octopus, being the first octopus fishery certified by MSC in the world and assuring consumers that it comes from a certified sustainable source.
- The MSC-certified fishery is located in the waters of the western coast of Asturias (a region located in the north of Spain), within the FAO 27 zone.

**Figure 1.** Location of fishing ports to land and sell MSC-certified common octopus from Asturias



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### THEORY FRAMEWORK

#### MSC certification of common octopus from Asturias

- The fishing of common octopus in Asturias is regulated and controlled by the Asturian regional government through a management plan.
- The fleet authorized to fish common octopus in Asturias has to be dedicated to artisanal fishing.
- The pot, a trap type fishing gear that captures the octopus while it remains static at a point on the seabed with a bait inside it, is the only authorized gear to fish the product.
- There is a limit of 125 pots for each fisherman with a maximum of 350 pots per vessel. The catches are made from December to July with a maximum quota of 10 tons per vessel (the minimum weight per unit is one kilogram).
- Even though the superior quality and environmental standards of this product, it has not been recognized by consumers because traditionally wholesalers have sold it without any indication of their origin or sustainability.



**Figure 2.**  
Example of pots to fish  
common octopus

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### THEORY FRAMEWORK

#### MSC certification of common octopus from Asturias

- The fleet authorized to fish and sell MSC-certified octopus represents the 11.4% of the total Asturian fleet although the actual capacity is lower.
- The vessels of this fleet are entitled to use the certificate to enter fish from the fishery into the four auction points included in the MSC certificate: *Puerto de Vega*, *Ortiguera*, *Viavélez*, and *Tapia de Casariego*.
- The majority of this production (around 100 tons every year) is sold to a Spanish firm specialized in octopus transformation which sells the processed product in other foreign countries as the U.S., Canada and Japan.

**Table 1.** Fleet to fish and sell MSC-certified common octopus from Asturias (2017)

Port base name	Number of vessels	Length (meters)		GT (tons)		HP (kW)	
		Total	Average	Total	Average	Total	Average
Ortiguera	5	43.01	8.6	21.50	4.3	127.95	25.6
Puerto de Vega	8	83.01	10.4	56.52	7.1	400.00	50.0
Tapia de Casariego	6	54.59	9.1	28.32	4.7	133.83	22.3
Viavélez	8	69.55	8.7	28.48	3.6	307.35	38.4
Oviñana	2	15.3	7.7	5.95	3.0	80.89	40.4
Figueras	1	6.37	6.4	1.97	2.0	23.53	23.5
<b>Total MSC fleet</b>	30	271.83	9.1	142.74	4.8	1,073.55	35.8
<b>Total Asturian fleet</b>	264	2,853.94	10.8	4,897.68	18.6	16,168.35	61.2
<b>%</b>	11.4	9.5	-	2.9	-	6.6	-

Source: Data obtained from DG MARE's Fleet Register of EU fishing vessels and MSC.



## ***Sample***

- The data employed for this research has consisted in a panel of annual prices and quantities of common octopus (*Octopus vulgaris*) sold in port auctions in the Spanish region of Asturias from 2010 to 2017.
- This data is sourced by the fishing department of the regional government of Asturias and it is publicly available on its official website.

## ***Method of Analysis***

- To analyze the importance of eco-labeling in the economic sustainability of a small-scale fishery, as is the case of the artisanal octopus fishery of Asturias, we have used a comparative analysis of sales and revenues (univariate methodology) between Asturian ports with the MSC certification and ports without it before and after the certification date.
- On the other hand, the empirical analysis of how eco-labels can impact on seafood prices can be done in different ways. In the case of this research, we have employed two different methodologies to test the existence of premium prices for certified products. Firstly, we have carried out a bivariate analysis testing the mean differences of the common octopus' prices between Asturian ports with the MSC certification and ports without it. And, secondly, we have improved our analysis employing multivariate methodology. Thus, we have formulated a fixed-effects model (1) and a random-effects model (2) and we have regressed both models to test the effect of the MSC label on octopus auction prices in Asturias what allows to isolate the effect of other variables on the product prices (unobservable heterogeneity). The analytical formulation of each model is as follows:

$$PRICE_{it} = \alpha + \mu_i + \beta_1 \cdot YEAR_t + \beta_2 \cdot QUANTITY_{it} + \beta_3 \cdot LABEL_{it} + \varepsilon_{it}$$

$$PRICE_{it} = \alpha + \beta_1 \cdot YEAR_t + \beta_2 \cdot QUANTITY_{it} + \beta_3 \cdot LABEL_{it} + u_i + \varepsilon_{it}$$



## Premium Price for MSC Octopus (*octopus vulgaris*): The Case of Small Producers from the Asturian Region in Spain

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**Table 2.** Importance of common octopus fishing in ports of Asturias

Variable	Port type	Number of ports	Absolute value (total)		Relative value (%)		% Var.
			2015	2017	2015	2017	
Quantity (Kg)	Ports without MSC	14	140,410	65,635	10.9	7.7	-53.3
	Ports with MSC	4	52,767	62,350	52.7	46.2	18.2
Value (€)	Ports without MSC	14	655,790	472,310	6.3	5.3	-28.0
	Ports with MSC	4	234,818	479,621	41.4	47.2	104.3

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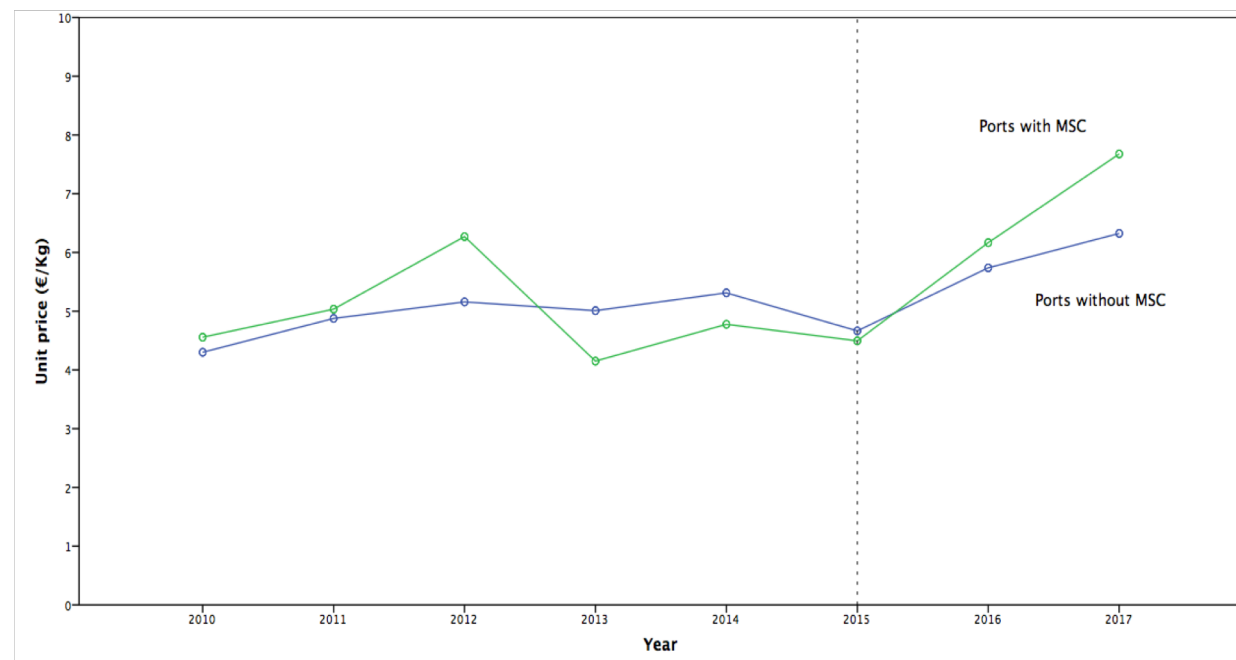
### RESULTS

**Table 3.** Mean differences of octopus prices in ports of Asturias

Port type	Number of ports	Before MSC certification (2010-2015)	After MSC certification (2016-2017)	Variation (%)
Ports without MSC	13	4.89 €/Kg	6.03 €/Kg	23.31
Ports with MSC	4	4.90 €/Kg	6.92 €/Kg	41.22
Mean differences		0.01 €/Kg	0.89 €/Kg	
Mann-Whitney test		0.17	1.74*	

\*Significant at the 10% level.

**Figure 3.** Price evolution of common octopus from Asturias (2010-2017)



Note: Yearly average of common octopus prices in Asturian port auctions.

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**Table 4.** Regression results (dependent variable:  $PRICE_{it}$ )

Independent variable	Fixed-effects model	Random-effects model
CONSTANT	4.52***	4.45***
YEAR <sub>t</sub>	0.17***	0.17***
QUANTITY <sub>it</sub>	-0.25***	-0.12**
LABEL <sub>it</sub>	1.39***	1.42***
Port effect	Yes	Yes
Number of observations	125	125
Number of ports	17	17
Goodness-of-Fit (F test/Wald test)	355.65***	814.50***
Overall R-square (%)	10.95	17.65
Shapiro-Wilk test of residuals	0.92	1.58*
Breusch-Pagan test all $\sigma_u^2 = \sigma_v^2$	-	41.31***
Heteroscedasticity test (chi2)	72.02***	-
F test all $\mu_i = 0$	5.08***	-
Hausman test	8.28**	-

*Note:* Robust standard errors (White estimators) have been used for hypothesis tests and confidence intervals.

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

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### CONCLUSIONS

- Regardless the methodology employed in this study, our analysis has shown a significant positive economic impact of the MSC certification of the common octopus fishery in the region of Asturias (Spain).
- Regarding the socio-economic impact of the MSC certification in the local community, our results show that the MSC certification of the Asturian fishery of common octopus has impacted positively on the economy of this coastal area of Asturias. After certification, fishermen have increased their sales of the MSC-certified product in quantity (18.2%), although they have increased more in revenues (104.3%) due to the increase of the auction prices.
- About the price premium of these products, there is a positive effect of the MSC eco-label on common octopus prices. The premium obtained for the MSC-certified product is around 0.90 and 1.40 €/Kg (a premium price between 14% and 30% depending on the way how this premium has been estimated).
- Further, this work also shows as the cooperation among different local agents as, for example, fishermen, guilds, and local authorities can provide economic profits to the community.



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# THANK YOU FOR YOUR ATTENTION

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