



On consumption patterns in oyster markets: The role of attitudes



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ABSTRACT

Achieving a low-carbon and sustainable economy is a long-term goal that EU aims at achieving in the next few decades: the potential role of bioeconomy is likely to make the difference, and in particular, the EU aquaculture and the seafood processing industry has the potential to contribute substantially to the emergence of bioeconomies (for instance through new – niche - markets for bio-based products such as algae, etc). In this particular framework, understanding how to enhance cleaner and more sustainable consumption patterns is preliminary to the transition towards more equitable and sustainable markets. The present analysis investigates the role of consumers' attitudes with respect to sustainable attributes (namely food safety and respect of the environment) in order to suggest on their potential role to catalyze the transition toward bioeconomies. Up to date, empirical investigations on this issue are limited to few markets, and studies on aquaculture are particularly scant. The gap is reduced by the present analysis: it has been implemented a survey on fish consumers to investigate how their attitudes toward food safety and environmental issues tend to influence consumption choices, and it is shown that those attitudes are important determinants of consumers choices. Put differently, a cleaner and more sustainable supply chain (i.e through a safer, and environmental friendly product) is likely to enhance consumption of oysters. To the extent that policy makers, producers, and taxpayers are interested in enhancing sustainable bioeconomies, understanding the relevance of attitudes toward food safety and environmental sustainability is an important and pressing goal. The analysis, novel in its application to a high quality product, speaks in this direction and will help understanding how to accelerate the transition to sustainable bioeconomies.

1. Introduction

Achieving a low-carbon and sustainable economy is a long-term goal that EU aims at achieving in the next few decades: the potential role of bioeconomy is likely to make the difference, and, in particular, the EU aquaculture and the seafood processing industry has the potential to substantially contribute to the emergence of bioeconomies (for instance through new – niche - markets for bio-based products such as algae, etc). The aquacultural sector has key characteristics worth mention. In particular, the recent growth in global fish consumption lead consumption to raise from 30 million tonnes in 1960 to 130 million tonnes in 2012 [18]. Such an impressive increase in global fish consumption is due to several factors: first, a considerable population growth; second a raise in per-capita incomes and the change of food habits; third, a considerable expansion of fish production [11]. The increase in global fish production is pushed by aquaculture, accounting for half of global fish production [18]. In the EU, aquaculture provides 20% of total fish production [16]. However, from

2000 to 2012, while the world aquaculture production has more than doubled (from 32.4 to 66.6 million tonnes), the EU aquaculture production has fallen from 1.4 to 1.3 million tonnes [18]: a datum that is very remarkable considering that the EU market of fish and seafood products depends for 65% by imports [16]. These changes open to new challenges for policymakers, and stakeholders: the rapid growth may have an impact on quality, and on the environment, threatening the sustainability of the supply chain. Several scholar have analyzed the role and the impacts of production techniques on the environment, as well as consumers' attitudes toward sustainable foods [25,42], but studies on aquaculture are in limited number [13,14].

The EU Commission has recently published Strategic Guidelines for a more sustainable development of EU aquaculture [16]: starting from January 1st, 2014 (Reg. EU No 1380/2013), the Common Fishery Policy (CFP) has prioritized the competitiveness of EU aquaculture in compliance with high standards of consumer protection, animal welfare, and environmental sustainability. Put differently, EU policy-makers are aiming at favouring the development of a cleaner, and more

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sustainable aquaculture sector: understanding consumers' attitudes toward sustainable foods is preliminary to the transition towards more equitable and sustainable markets.

The growing consumers' expectation for food quality, food safety and respect of the environment is offering new business opportunities for EU aquaculture producers who are willing to differentiate their products and serve specific markets [16]. New labelling provisions are contained in the reformed Common Market Organization (Reg. EU No 1379/2013): fish products must bear mandatory information on the commercial and scientific names of the species, on the provenience (e.g. caught or farmed product), on the freshness and on the date of minimum durability; in addition, caught fish must display detailed information on the catch area, while farmed fish must bear indications on the country of origin. Additional voluntary information can also be provided. However, consumers' choices are not only driven by intrinsic and extrinsic attributes of the product, but also by consumers attitudes toward immaterial aspects such as food safety or respect of the environment. Consumers' attitudes are the object under investigation in the present analysis.

The remainder of the article is organized to have next section devoted to the conceptual basis of the paper, followed by sections on the description of the survey and of the methodology. The subsequent section provides a detailed description of the empirical results. The paper concludes with recommendations for practitioners and policy makers.

2. On the attitudes toward food safety and environmental issues

The perception of quality attributes is complex and plays a key role in the market of fish and seafood products. Apart for personal factors - values, beliefs, attitudes, and demographics [27] - the perception of quality depends on how consumers infer quality from a variety of signals and information sources [13,19–21,26,33,37,9]. The most important quality attributes of fish and seafood - freshness, naturalness, healthiness, nutritional value, geographical origin and production method - are "credence" attributes and cannot be assessed by consumers even after consumption. Thus, consumers tend to use extrinsic cues such as price or labels in order to infer on fish quality [10]. showed that, *ceteris paribus*, health-label is preferred to eco-label and fair-trade label. Duggan et al. (2016) [15] conclude on the use of fisheries certifications as tool to communicate seafood sustainability. However, despite public policies are often based on the presumption that additional information help consumers in their decision-making process, the risk of information overloading is a potential danger [22]: it is likely that consumers ignore some label information if they are perceived as not predictive of quality. This hypothesis is supported by a pan-European survey [32] that investigated trust in information sources on fish products: despite most respondents declared to take into consideration all labels, it is proved they are most interested in information on safety guarantees and quality marks.

As already mentioned, studies on how attitudes toward food safety and environmental issues influence consumers' choices are limited in number. On the other, it is likely that consumers' attitudes play a significant role: consumers have different perceptions on the degree of safety of seafood, depending on the country of origin of the product [40]. The evidence on how environmental issues affect consumption of seafood is rather mixed: Hall et al. (2013) [24] found that consumers are uncertain about environmental benefits and problems associated with aquaculture; Olson et al. [31], McClenachan et al. [30], Fabinyi, [17] and Swartz et al. [38] conclude that consumer support seafood sustainability and are very concerned about environmental sustainability.

Third-party certifications and related labelling (e.g. organic labels, eco-labels, fair-trade labels) are emerging novel instruments for ensuring food quality and safety in the global agrifood system: some

scholars argue they are perceived as objective and independent [1], but the efficacy of such schemes is crucially determined by consumers attitudes toward food safety and environmental issues. Given these premises, two research questions are worth investigation: first, which type of consumers' attitudes are likely to matter in consumer choices? second, how consumers attitude toward food safety and environmental issues tends to alter consumers decisions?. Few European studies explored consumers' attitudes toward certification labels on seafood products, whilst the studies on food safety and environmental issues in food consumption choices is increasing more and more: until now, a consensus on how consumers attitudes influence their choices has not been reached. For instance, Massoud et al. [29] found that the food industry is generally more concerned with safety issues rather than environmental issues. On the contrary, McClenachan et al. [30] conclude that consumer strongly support for environmental sustainability in seafood markets.

The present analysis is conducted on fish consumers in Italy in order to investigate how attitudes toward food safety and environmental issues influence consumption choices. The focus is on the oyster market which account for more than 12% of EU aquaculture in terms of production value ¹ and it is therefore relevant for the whole seafood sector. To the extent that policymakers, producers, and taxpayers are interested in enhancing the sustainability of the aquacultural markets, understanding how consumers' attitudes influence their choices is an important and pressing goal.

The contribution of the paper is at least twofold. First, by analyzing a very high value product (oyster) it is possible to understand how attitudes toward sustainability influence consumption of high quality goods in niche markets: the findings help understanding how to enhance the transition to bioeconomies. The difficulty in surveying consumers of niche products (limited in number by the nature of the market) makes the present analysis of particular interest: it complements previous evidence on larger markets. Second, by focusing on attitudes, the analysis complements the literature on certifications and labels: the analysis provides insights to characterize solutions to guide consumers in their decision making process (e.g. though information campaign on the importance of sustainability and bioeconomies), apart from informing on the potential impact of ex-post solutions (e.g. when the product is marketed).

3. Methodology

3.1. The choice experiment

A pilot study, based on focus group discussions, precedes the analysis, so to select the relevant quality attributes associated with consumer purchasing decisions, and avoid to under- or over-identify the model specification. The four focus groups, conducted in major Italian cities (Milano, Bologna, Roma and Bari), allowed us to investigate consumers' purchasing behaviours and consumption habits for oysters. The next step has been to conduct two in-depth interviews with economic operators that have great expertise in production, processing and selling of oysters. Four main attributes affecting consumers' choice for oysters have been identified: species, country of origin, size and price. The choice experiment includes these four attributes and other additional variables, such as certification labelling and preparation format, that have been introduced as control factors.

Each attribute appears in the choice experiment with two or more levels, as detailed in Table 1. The study considers the two most important species of oysters cultivated and sold in Europe: the native "flat oyster" (*Ostrea edulis*) and the most common "cupped oyster" (*Crassostrea gigas*), native of Japan and brought to Europe in the

¹ The most important products are salmon and trout, which account for 21% and 14% of EU aquaculture, respectively [16].

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