

# Understanding the supply of seafood products: between firms' strategies, marketing choices and management decisions. The case of scallops in France.

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**Abstract:** Despite creeping innovations and progresses, the supply of seafood products is fairly limited by natural and technological constraints. Meanwhile, the global demand for seafood products is expanding, due to demographical and growth effects. As a result, a scope for high valuation of such a natural and renewable resource is expected in many places across the world. However, some fisheries products remain poorly valued, despite their taste and health characteristics. This can be due to several factors, sometimes interrelated, such as the supply strategies of fishing firms, the sourcing strategies of processing businesses, the preferences of the consumers or the management regulation in place. In this paper, the case of the French scallop fisheries is explored, as scallops count among the most important species in terms of both harvesting and trade in France. It is shown that as the supply behaviours of the fishing firms are strongly influenced by the management systems in place, a part processing enterprises tends to privilege imports substitution products. On the other hand, the paper also presents the case of a vertical integration strategy developed in France, and discusses some of the associated effects.

**Keywords:** Supply strategies, seafood products, resource valorisation, consumer behaviours, scallops, English Channel.

## 1 INTRODUCTION

The supply of seafood products comes from two sectors: professional fishing exploiting marine stocks and aquaculture. Because of natural constraints, the supply from marine stocks is intrinsically limited, and had been reaching a maximum in the last period at around 90 millions tons (FAO, 2012). While the supply from the aquaculture sector is still expanding, with a peak at 67 millions tons in 2012, some limits are expected in the next future, mostly due to space constraints and environmental concerns (FAO, 2013; Péron et al., 2010).

In the same time, the demand for seafood products remains elevated, and is even expected to rise for several reasons. In developed countries, the demand for seafood products mostly increases because consumers pay a greater attention to health and environmental characteristics of food products. In developing or emerging countries, the on-going demand for seafood products can be explained both by demographical and economic features. In particular, when the population becomes wealthier, a change in the diet occurs, with a move from basic products to high quality ones, such as seafood products. In both areas, consumers are increasingly interested by authentic, natural products, and a growing part of the demand comes from 'experience' or 'discovery' consumption behaviours.

In a globalised world, the conjunction of these two trends should result in an increase in the price of seafood product, explaining why the supplying and sourcing of seafood products is becoming a major concern not only for seafood traders, processors and retailers, but also for marine resources managers aiming at making a better use of the common natural resources (Le Gallic and Fournier, 2013). In this context, the paper addresses the following research question: can firms' strategies and fisheries management decisions explain the supply of seafood products in a given country.

In order to keep the analysis as concrete as possible, the question is applied to one of the major seafood product in France, scallops. The first part of the paper presents the context of the study, which is undertaken as part of an interdisciplinary research project. Some key features of the French scallops market are also described in section 2.2, focussing especially on consumer behaviours and associated trade flows. Some preliminary results are then developed and discussed in a second part, in order to understand the strategies developed by both business actors and public institutions.

## 2 MATERIAL END METHODS

### 2.1 The COMANCHE Project

The king scallop *Pecten maximus* is the most important species in landings (as well in tons as in value) for the French inshore fleet of the English Channel. The main exploited sea beds, within the Bay of Seine and the Bay of Saint-Brieuc (see Fig 1, red circles), are assessed since more than 30 years by annual scientific surveys conducted by Ifremer and long-term databases are available; many specific studies on this species have also been carried out, but no global project taking into account the whole set of research topics - from the comprehension of the biological phenomenon to the economic aspects related to the fisheries -, was undertaken yet.



Fig. 1. The English Channel and the two main French scallop fishing grounds

The COMANCHE project (Ecosystem interactions and anthropogenic impacts on king scallop populations in the English Channel) was built to meet this logic. Funded by the French National Agency for Research (ANR), it aims to improve our knowledge on king scallop across the whole English Channel, through an ecosystem approach to fisheries, by calling upon a large range of scientific disciplines (physics, chemistry, genetics, ecology, geostatistics, modelling, economics....).

The COMANCHE project aims to study the king scallop at different levels, from the population to the ecosystem and the human society. Thus the project is structured in three scientific axes. The third axis in particular concerns the exploitation of the king scallop and the analysis of the relationships between management regimes and economic performance of value chains in the fisheries.

### 2.2 The French Scallop market

The market for scallops, as for the bulk of seafood products, is highly globalised (OECD, 2003; FAO, 2013). The production of scallops-like products worldwide accounts for more than 2.2 millions tons each year, and is worth USD 800 millions (FAO, 2013). While the three largest producers are China, Japan and the United-States, France ranks at the sixth position, with an average harvesting fluctuating between 20.000 and 30.000 tons during the last decade. As a result, scallop is the fifth most important marine species in France, and the first in some areas such as the English Channel (FranceAgriMer, 2013).

In terms of market and trade however, France turns to be the most important place in the world, accounting for 25 % of the worldwide market with over 180.000 tons consumed par year (in equivalent shell-on products). Scallops are essentially imported unshelled and frozen, either by final consumers or by processing companies. In the recent years the main country of origin for import products has been Argentina, with a price-competitive

scallop labelled by the Marine Stewardship Council (MSC), but scallops also come from the United-States, Uruguay, United-kingdom or Peru.

It is estimated that the market for frozen shucked products was around 7.000 tons in 2009, and that a quarter of the consumers were buying frozen raw scallops in 2009, compared to 10 % in 2000. Another new feature in the consumer behaviours concerns the increasing demand for ready-made food<sup>1</sup>, which evolved from 2.500 tons in 2003 to 4.300 tons in 2009 (Monfort, 2010). In line with the general consumption, the scallop's consumer is moving from fresh products to preserved commodities, presenting a growing level of processing (Mesnildrey et al., 2010).

However, a niche, high valued market still exists for live and fresh products. This market is estimated at around 40 million euro per year in France, but is also expanding abroad. French exports of chilled scallops account for 2.500 to 3.000 tons, especially to surrounding European countries (Monfort, 2010). However, such a high-profile product can also be found in emerging market like Dubai, where the last Conference of the American Academic & Scholarly Research Center (AASRC) was hosted (see Fig.2).



Fig. 2. Fresh, chilled unshelled King scallops in a retailing store – Dubai, November the 4<sup>th</sup>, 2013.

While all these features should create the potential for a high valorisation of scallops in France, some paradoxical market facts can at the same time be observed. First of all, the average national ex-vessel price<sup>2</sup> of scallops has continuously decreased from 3.31 euro per kilogram in 2000 to 2.42 euro per kilogram in 2008, in current values. When analysing in greater details the prices of the two main scallops' fisheries, namely the Bay of Saint-Brieuc and the Bay of Seine, then it can be further observed that the average annual price respectively varies during the same period from 2.2 to 1.9 euro per kilogram, and from 3.5 to 2.5 euro per kilogram (Le Grand et al., 2012a; 2012b).

In a similar vein, more than 700 tons of scallops fished in the France are withdrawn from the market and thrown away every year. In the Eastern English Channel, where the Bay of Seine is located, the rate of public market intervention reached 13% of the production in 2010 (FranceAgriMer, 2010). In 2009, one of the most important regional press journal reported that for the first ever time, 40 tons of scallops were thrown away, due to the lack of buyers, while at the same time retail prices remain unchanged<sup>3</sup>.

<sup>1</sup> i.e. industry-made Value Added Products incorporating scallops

<sup>2</sup> i.e. the price paid to the fishing firm

<sup>3</sup> <http://www.ouest-france.fr/40-tonnes-de-saint-jacques-la-poubelle-297530>

While these elements clearly reveal a form of intra-industry trade (Krugman, and Obstfeld, 1991) they also question of the optimal use of a high-quality and scarce marine resource and the impacts of the business strategies at different levels of the value chain. These issues are explored in the following section 3.

### 3 RESULTS

The paradoxical market features described above can be explained by some associated business and governmental strategies, regarding both the public management of the fisheries and the private organisations of the supply chain.

#### 3.1 Management Strategies

In order to understand the relatively low and stable price received by the fishing firms for such a high-profile natural good, the analysis of the management systems in place can provide some preliminary insights. In France, the harvesting of scallops is limited to a given period of time, in general from October to April. However, due to competitive behaviours to access the common resource<sup>4</sup>, the domestic supply is highly concentrated in the first part of the fishing season, with almost half of the production being realised between October and December (Le Grand et al., 2012a; 2012b). In accordance with the economic theory, such a concentration of the supply is likely to result in price moderation or decrease.

This organisation of the production is currently reinforced by the public mechanisms regulating the European Union market of fisheries products (the Common Market Organisation – CMO - part of the Common Fisheries Policies). One of the objectives of the CMO is to ensure that producers receive a minimum and decent return for their activity. When the market price reaches down a given threshold, the fishing firms get a public support through the withdrawal price system, which acts as a ‘safety net’. The counterpart of this system consists in using the product benefiting from the subsidies only for non-human consumption (mostly fishmeal), or in destroying it. While the mechanism might have some relevance regarding the social side of the fisheries, it also has effects on market strategies, as the mean prices observed tend to align to the official intervention price (FranceAgriMer, 2010).

In the Bay of Saint-Brieuc scallops’ fisheries, the situation slightly differs, as in addition to the national regulations regarding the fishing seasons, local management decisions are set to limit the number of fishing days. In general, the production is allowed two days a week, during 45 minutes or one hour. Due to the length of the fishing season, this implies that the total production of around 9.000 tons is realised in 40 days. The concentration of the supply described above is thus strongly accentuated, explaining why the price in the area is the lowest in France, and so stable.

#### 3.2 Business Strategies

One of the business strategies able to explain the little demand for domestic resources and the use of import products concerns the processing firms, which use scallops as a basis for preserved or ready-made food. Processing firms are looking for some key elements when sourcing the raw material, including regularity in the quality, the price and the availability of the product. As the production of scallops in France is highly seasonal for regulatory reasons (see section 3.1), most of the processors tend to secure their sourcing by selecting suppliers from other part of the world, where similar regulations do not exist<sup>5</sup>. Even when the processing firms communicate on the traditional or local characteristics of their commodities, they are in general using import products as key ingredient of the recipe. Such a strategy can occur partly because of the globalisation of the supply chain and associated improvements in the logistic organisation, but also because of the consumer behaviours. In one hand, not all the consumers are familiar with or pay attention to the origin of the commodities. In the other hand, a growing part of the consumers is looking for differentiated goods, especially with lower prices.

A specific business strategy in place in the Bay of Saint-Brieuc can further explain the relatively low price paid to the fishing firms. In this area, half of the production is directly bought by a joint-venture established between the Professional Organisation and a private holding, in order to supply in particular a processing plant owed by

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<sup>4</sup> So-called ‘race for fish’ and ‘derby fishing’ behaviours in fisheries economics

<sup>5</sup> France is the only European Union country currently applying these types of seasonal measures for scallops.



the agro-industrial group<sup>6</sup>. The limited number of fishing days are organised in order to cope with the logistic organisation of the processing plant (in 2013, scallops fishing was for instance prohibited on the Fridays, Saturdays and the days preceding bank holidays, where the demand for fresh high-quality seafood is indeed the higher). Moreover, the technical capacities of the processing plant are also integrated as a constraint in the management system, resulting in a production quota of 240 tons a week<sup>7</sup>. Lastly, an alternative, private form of withdrawal price scheme has been implemented in the Bay of Saint-Brieuc fishery. This scheme is aligned to the European Union one, and provides the fishing firm some security. But the price is set at a level slightly higher than the official one, in order to allow the 'withdrawn' product to be use for human consumption. As far as the industrial organisation is concerned, such a vertical integration of the management system is likely to result in an efficient use of the natural seafood product for the processing plants. As for the scallops harvesters however, the little flexibility imposed can prevent the fishing firms to match efficiently with evolving market opportunities.

#### 4 DISCUSSION AND CONCLUSION

The paper aimed at analysing the key characteristics of the supply strategies developed in the case of one of the most high-profile seafood product in France, the scallops. It shows that the production realised by domestic harvesters is highly influenced by the national and local management systems in place. In particular, the organised concentration of the production, associated with official withdrawal schemes, is pushing the prices down to the relatively low levels, despite the steady demand for scallops-like products in France. In the Bay of Saint-Brieuc fishery, one of the major production areas, a specific industrial organisation reinforces this national feature. The vertical integration of the production system, including the design of a fishing calendar and the implementation of a local withdrawal price decided in association with the agro-industrial group co-owning the processing plant, results in a stable and low price (2.2 to 1.9 euro per kilogram).

On the other hand, the organised seasonality of the domestic production, together with the limits of the supply imposed by the natural characteristics of the resource, is likely to explain why the bulk of the processing firms source their raw material abroad, in order to fit to regularity constraints, especially regarding the availability of the product. These imports are mostly used to match the demand for ready-made food, which is steadily increasing.

As far as the valorisation of the domestic resource is concerned, some improvements could indeed occur for the benefit of fishing firms and society as a whole. Due to the domestic and the growing foreign demand for high-quality food, the niche market presented in section 2.2 could bring some new opportunities, providing some modifications occurs in the management systems to increase the flexibility of the harvesters. More precisely, as French King scallops differs from other scallops-like products by the taste and the size, the potential for generating high value-added might be greater if the product was sold fresh rather than incorporated in an industry-made commodity. In order to allow French operators to exploit in particular the new opportunities offered in some emerging markets, a global transformation of the management system and the associated value chain might be needed.

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<sup>6</sup> The co-owned plant is dedicated to unshell the scallops, and the resulting product is subsequently bought by the processing company to produce frozen shucked meat or ready-made food.

<sup>7</sup> <http://www.cobrenord.com/resources/DEC+07-2013.pdf>

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## BIOGRAPHIES

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