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Commission



# Impact of seafood imports on the EU Small-Scale Coastal Fleet



LAST UPDATE: APRIL 2021

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Manuscript completed in April 2021.

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PDF ISBN 978-92-76-28910-4 doi:10.2771/734846 KL-02-21-036-EN-N

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## 1 Study summary

International trade has become an important component of seafood production, with the growth in seafood trade greatly outpacing both population growth and seafood production growth. The EU plays a significant role in the international seafood market as the world's largest seafood importer. The growing import of seafood into the EU has brought a large volume and variety of seafood to store shelves, fish counters and restaurant plates, but it may also be impacting EU production – the businesses and lives of EU fishers and the value chains they supply.

The impact of seafood imports on domestic production has received much less research and policy attention than the impact of (terrestrial) food imports on agricultural production. The theoretical issues are the same, however. As with all imports, the potential impact on domestic production is a combination of two necessary conditions: first, that imported products and domestic production function as substitutes (i.e. their markets are integrated), and second, that the producer is a 'price taker' in the market (i.e. they lack market power to influence prices). Previous studies have found several examples of integrated markets for seafood products at a European (and sometimes global) level, so there is ample scope for the import of seafood to have an impact, although the results vary on a case-by-case basis.

This study explores the impact of seafood imports on the EU small-scale coastal fleet (SSCF) – vessels under 12 metres that use passive gear (i.e. non-towed). The full scope of the EU SSCF and the fisheries it targets are extremely diverse. In Spain alone, the SSCF lands over a thousand identified species. Still, despite this diversity, SSCF production value is still concentrated on a limited number of key species. In terms of the economic importance of the SSCF, France, Italy, United Kingdom, Spain, Greece, and Portugal are the most important Member States, comprising the vast majority of SSCF vessels and landed value. Descriptive statistics for SSCF and seafood imports were provided for each EU Member State with a SSCF in Annex 1. The extended version of the report is available upon request: compared to this public version, it contains a chapter analysing the impact of imports on a domestic fishing industry, a section regarding the statistical analysis carried out to determine market integration, an appendix with the semi-structured interview questions for the three case studies and a technical appendix describing the statistical methodology applied within the study.

To test for market integration, statistical analyses were conducted on SSCF landing prices and imports of substitute products using monthly data. Based on the statistical analyses, we classified market integration into four categories along a spectrum from complete substitutability (e.g. homogenous products) to complete independence (e.g. product differentiation): non-existent, loose, moderate, and tight. Where no market power for the SSCF was found, it was concluded that that seafood imports were likely having an impact on SSCF businesses.

Data challenges limited the number of cases that could be statistically analysed. The main challenges concerned the collection of SSCF-specific prices as well as the collection of trade data at the right level of species aggregation. In addition, datasets on imports and SSCF production needed to be long enough and complete enough (i.e. no or few missing values) to allow for a robust statistical analysis. In total, thirteen cases were analysed: cod in southern Sweden, lobster in northern France, octopus in northern Spain, cuttlefish in eastern Italy, seabass in north-western France, gilthead seabream in western France, sole in western France, lobster in the UK, lobster in south-eastern Ireland, octopus in central Portugal, cuttlefish in central Portugal, blackspot seabream in central Portugal, and seabass in central Portugal.

In three of the thirteen cases analysed (cod in southern Sweden, lobster in northern France, and lobster in the UK), SSCF production was found to be moderately integrated with extra-EU imports. In the other ten cases, market integration was found to be loose or non-existent. There were no cases of tight or perfectly integrated markets. In two of the three moderately integrated cases (cod in

southern Sweden and lobster in the UK), the SSCF was a price taker in the market, meaning that extra-EU imports may be having an impact on the EU SSCF through market prices.

At the intra-EU level, in two of the thirteen cases analysed (lobster in northern France, octopus in northern Spain), SSCF production was found to be tightly integrated with intra-EU imports, with a third case of moderate integration (gilthead seabream in western France). However, in all three cases, the SSCF was identified as the price maker, so there is little anticipated impact for the MS analysed.

This statistical analysis was complemented by in-depth studies for three of the test cases. These case studies included interviews with key participants in the value chain for seafood imports and SSCF production for the selected species and area. Each case study revealed an important market dynamic to caveat the statistical analysis. For cod in southern Sweden, interviewees indicated that issues outside of trade, specifically the poor ecological state of the Baltic cod stock and widespread seal predation, were much more significant business concerns for cod fishers, despite Swedish cod being one of the test cases with moderate market integration and little market power for the SSCF. For lobster in northern France, where it appears that markets are moderately integrated, interviewees indicated that there may be more integration between imports and SSCF production when SSCF landings are lower grade, cheaper products. For octopus in Spain, there was a similar emphasis on product specification – in this case between fresh and frozen products.

It is not advisable to extrapolate from these findings to broader conclusions at the EU level. The findings of this study, which echo previous studies on seafood market integration, indicate that markets are case-specific and conclusions from one fishery may not even hold across an EU Member State, and even less so for the whole EU. The many cases that were not covered, for example due to a lack of data, were generally less prominent markets. This may make them more likely to differentiate in a niche market and therefore insulated from seafood imports, or equally it may make them more likely to function in the seafood market as a substitutable with seafood imports due to a lack of familiarity. The impact of seafood imports on these EU fisheries is therefore ambiguous and the total impact of imports on EU fisheries is highly uncertain.

The study findings do indicate, however, that several key seafood markets in the EU, at least those of significant importance for the SSCF, are not significantly integrated with imports. In cases of loose or no market integration, any impact on the SSCF from seafood imports is expected to be minimal. The possible reasons for this finding are not analysed in this study, but may include differentiation by product type (e.g. fresh), geographic differentiation (e.g. local labels), small and informal supply chains that are difficult to enter with small returns, or a lack of close substitutes. Additionally, market integration for the EU industrial fleets is not analysed in this study but many of the same explanations could apply – although to a lesser degree given the differing characteristics of their production (e.g. more processed seafood, larger supply chains that are easier to enter).

A lack of market integration highlights the importance of other factors in price determination for the EU SSCF. Other influences, such as policies and institutions, may have a significant role to play in EU seafood markets, and, importantly, there is still scope for impactful SSCF market strategies despite the increase in seafood imports.

The EUMOFA team acknowledges with grateful thanks the input, feedback and expertise provided by Johan Blomquist and Staffan Waldo, who authored the Swedish case study; Sebastian Metz, who was responsible for the French and Spanish case studies and also conducted the econometric analysis on the other ten cases; Griffin Carpenter, who was responsible for the background, literature review and country fiches. In addition, all of them contributed to the study discussion and conclusions.

## 2 Study objectives and definitions

### 2.1 Study objectives

An ad hoc study was requested by DG MARE to better understand the functioning of supply chains and markets for the EU small-scale coastal fleet (SSCF) and to analyse potential market interaction with seafood imports. The objectives of this study are fivefold:

1. For the EU and each EU Member State with a marine fishing fleet, identify and describe the SSCF and the markets it supplies.
2. For the EU and each EU Member State with a marine fishing fleet, identify and describe the import of seafood and the markets these products supplies.
3. Identify and analyse the sourcing strategies used by actors in fishery supply chains (e.g. retailers, fishmongers, wholesalers), particularly those sourcing products from the EU SSCF.
4. Based on this information, investigate the observed and potential impact of seafood imports on the EU SSCF.
5. Identify communities or regions that are most impacted by imports due to a high dependency or interaction with the local fishing fleet.

This study delivers these objectives through multiple integrated methodologies. First, existing information on seafood trade and local competition with imports is provided through a literature review of secondary sources. Second, statistical analysis was used to test for market interactions between seafood imports and the EU SSCF. Third, case studies are explored for Baltic Sea cod in southern Sweden, lobster in northern France, and octopus in northern Spain. These three case studies use local, specified data and interviews with key stakeholders along the supply chain. Fourth, the SSCF and seafood imports are analysed using descriptive statistics for the EU and each Member State with a marine fishing fleet.

### 2.2 Definitions

Throughout this study, a consistent set of definitions was applied for the EU SSCF and seafood imports.

#### 2.2.1 The EU small-scale coastal fleet

Different MS apply different definitions for their 'small-scale' fishing fleet. Frequently this distinction is made based on the length of the vessel, although some Member States use multiple criteria and others make no distinction at all (Davies et al., 2018). At the EU level, EU Regulation 508/2014 of the EMFF defines the small-scale coastal fishery as "fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear, as listed in Table 3 of Annex I to Commission Regulation (EC) No 26/2004".

The Scientific, Technical and Economic Committee for Fisheries (STECF), which provides scientific advice for use in EU fisheries management, applies the EMFF definition of the SSCF in its provision of economic data:

*Small-scale coastal fleet (SSCF) - includes all vessels under 12 meters using passive gears. According to the DCF gear definitions these include: 'drift and/or fixed netters', 'pots and/or traps', 'hooks', 'passive gears only', 'other passive gears', 'polyvalent passive gears only', 'active and passive gears'.*

As STECF data forms the basis of fleet economic analysis in EU fisheries, SSCF is defined in this study as "fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear". A careful analysis of the STECF database of fleet economic performance shows that for

several Member States (e.g. France, Denmark), the fleet segmentation does not follow the strict definition of SSCF, as passive gear segments (notably HOK, FPO, DFN and PGP segments) are associated with the marginal use of towed gears (notably dredge DRB and sometimes trawl OTB and OTM) when the information is available. For some Member States, the precise combination gear and species caught is not available in the dataset prior to 2015 (only the main gear was reported), which may also lead to the inclusion of vessels using towed gears in passive gear segments. This data issue is a caveat to the study results that follow.

### **2.2.2 Extra-EU and intra-EU imports**

This study focuses on the effect of imports on the activity of SSCF vessels. Imports could be defined from two separate channels:

- Extra-EU imports: products originating from third countries that are sold in the EU, including those landed in the EU from vessels flagged by non-EU countries.
- Intra-EU imports: products originating from one Member State and sold in a second Member State, including those products landed in a Member State other than the flag of the vessel.

The policy relevance of the two channels differs significantly, with the latter determined by the EU's internal market. The focus of this study is on extra-EU imports, although intra-EU imports sometimes included in the subsequent analysis (specified in the text).

There is, however, a delineation issue between the two channels due to the 'Rotterdam effect', where trade is recorded to one country due to the inclusion of quasi-transit goods. Where possible, this issue was addressed in the study methodology by excluding intra-EU trade flows that likely originate from extra-EU countries, but the potential issue cannot be fully accounted for. The consequence is that some products may appear to be intra-EU imports but were originally extra-EU imports further back in the supply chain. A smaller issue is extra-EU imports that were first exports EU exports and then re-entered the EU market (e.g. EU-caught seafood that is exported for processing outside the EU and then exported back to the EU market for final consumption).

There is also a delineation issue when considering intra-EU imports. Potential effects of intra-EU imports on the SSCF could be understood as a broader question concerning competition between regional fishing fleets inside the single market either at Member State level (e.g. octopus in Galicia versus octopus in Asturias) or at the EU level (e.g. octopus in Galicia versus octopus in Northern Portugal, lobster in Bretagne versus lobster in Scotland). In some cases, regional competition could illustrate the impact of production from EU offshore and distant water fleets on the SSCF, but they could also show how several SSCF segments may compete (see for example the octopus case study and the lobster case study).

### **2.2.3 Market integration**

Tests for market integration measure the extent to which prices in different markets are interrelated. These tests can focus on prices of a homogeneous commodity in two different locations or two potentially substitutable commodities in close locations. Some methods rely on a model specification based only on prices, without including any information on quantities traded (notably the times series analyses based on vector autoregression models). Other methods are based on models integrating both prices and quantities, notably the evaluation of cross-price elasticities (not developed in this study). The method developed for this study relies only on price information. To test for market integration, statistical analyses were conducted on SSCF landing prices and imports of substitute products using monthly data. Based on the statical analyses (notably the variance decomposition), we classified market integration into four categories (non-existent, loose, moderate, and tight) along a spectrum from complete substitutability (e.g. homogenous products) to complete independence (e.g. product differentiation).

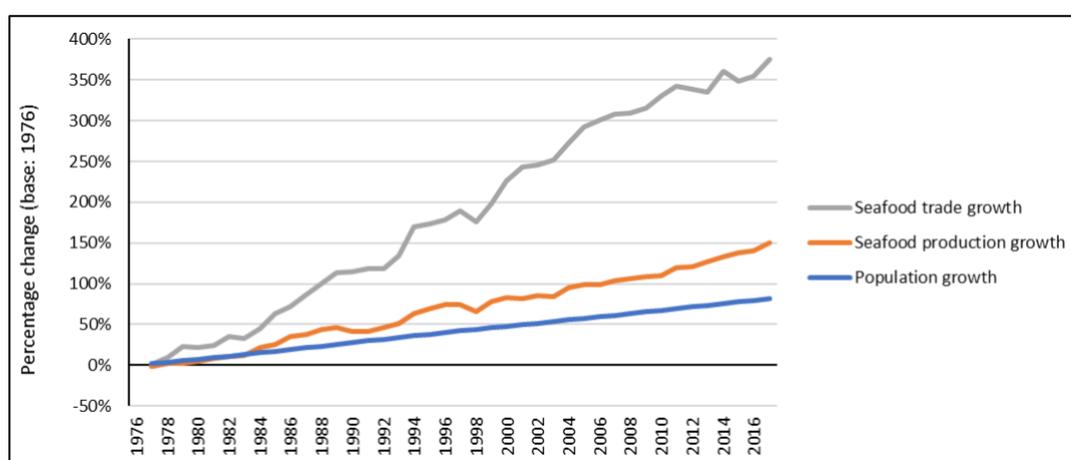
## 3 Background

### 3.1 Patterns in seafood trade

By value, seafood is the most traded food commodity in the world (Terazono, 2016). This position at the top is partly explained by large quantities of production – over 171 million tonnes in 2016 (FAO, 2018) – but also by the trade-oriented nature of fisheries production – perhaps explained by the coastal setting in which marine fisheries are situated. At a global level, 40% of all seafood production is exported. Seafood trade is also spurred by comparatively low tariffs, especially compared to other food products (OECD, 2003; Melchior, 2006).

Despite the long history of seafood trade, the level of trade continues to grow dramatically at 9.1% per year (FAO, 2020b). This growth rate in seafood trade greatly outpaces both world population growth (2.0%) and the production of seafood itself (3.7% with most growth coming from aquaculture) (Figure 3-1). With seafood trade outpacing seafood production, the share of global fish consumption supplied by imports, which currently stands at 22% (39 million tonnes), is also increasing.

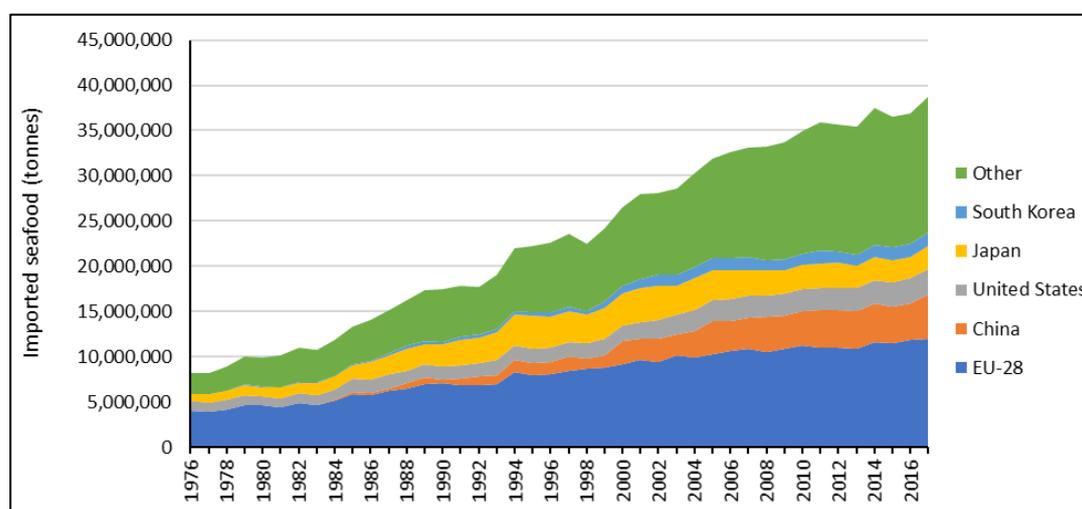
**Figure 3-1: Trends in global population, seafood production, and seafood trade**



Source: Authors' calculations based on World Bank, 2020; FAO, 2020a; FAO, 2020b.

The EU holds a key position in seafood trade as the single largest seafood destination market. In 2017, 31% of all seafood imported was to an EU Member State including 38% by value (including intra-EU trade) (Figure 3-2).

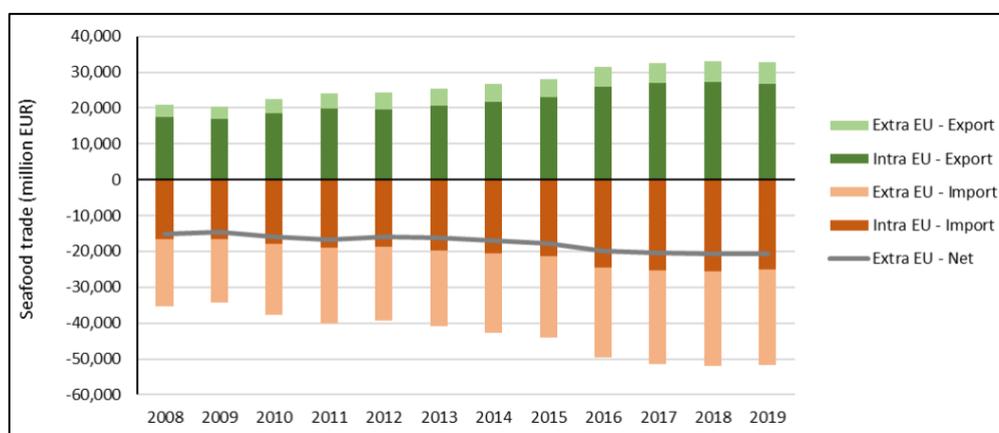
**Figure 3-2: Seafood imports by country**



Source: Authors' calculations based on FAO, 2020b.

This importance of seafood trade to the EU market is also a vulnerability, however, as the EU relies on imports to maintain a high level of fish consumption (Figure 3-3). Imported seafood now represents more than 60% of all seafood consumed in the EU (Josupeit, 2016) – a share that continues to grow.

**Figure 3-3: Intra and Extra EU seafood trade flows**



Source: Authors' calculations based on EUMOFA, 2020a. Monetary values have been adjusted for inflation (2015 constant prices using Eurostat GDP deflator).

International trade has become an important part of consumption in the EU, bringing a large volume and wide variety of seafood to store shelves, fish counters and restaurant plates. But trade can also have an impact on the production side. There are of course direct impacts on seafood producer outside of the EU, but also impacts on local producers – the businesses and lives of EU fishers and the value chains they supply.

### 3.2 Policy context

Concerns regarding the impact of imports on EU producers have been raised at a high political level. One recent example is the fall in prices of citrus fruits in the EU and questions in the European Parliament (Tremosa I Balcells, 2019) and a February 2019 hearing (Fresh Plaza, 2019) on the potential connection to an increase in imports of citrus fruits from South Africa, Egypt, Morocco, and Turkey.

Compared to agriculture, the impact of imports on domestic production has received far less attention, but there have been occasions. In 2018, the European Parliament adopted Report on the optimisation of the value chain in the EU fishing sector (2017/2119(INI)) which notes that “the EU fishing sector is facing ever-more difficult and complex challenges” and lists “competition from imports of products from third countries” among other challenges. Among its recommendations, the Parliament “encourages the Commission to conduct a study on the impact of imports on local fisheries”. Similar observations and recommendations were also made in a 2010 European Parliament Report that were made in the context of reforming the Common Fisheries Policy (2009/2238(INI)).

While the 2017 ratification of Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada removed tariffs on Canadian lobster and could further increase these imports (see 4.2 for a case study on French lobster), few concerns were raised at the time from the EU fishing sector. The only reported concerns were from lobster exporters in the US who continued to face tariffs on their exports to the EU market and were thus comparatively disadvantaged (White, 2017; FAO, 2018b).

The issue of seafood imports recently arose in response to the Covid-19 public health crisis as EU Member States, like many nations globally, sought to promote sales from local producers during the crisis. This resulted in accusations from Scottish seafood exporters that the French fishing industry was engaging in anti-competitive practices in their efforts to promote local sales (Holmyard, 2020). There were even demands to block the import of any French products coming into Scotland (Finlay,

2020a), although the French government denied that any anti-competitive practice was taking place (Finlay, 2020b).

## 4 Case studies

This section presents the findings of three case studies: Swedish cod, French lobster, and Spanish octopus. They were selected based on the following attributes:

- For each case study, a species-export country combination with a large flow of value to an importing EU Member State relative to other flows of species between those countries (e.g. species A from country X, sold in EU country Y, which has a higher financial value than flows of other seafood products between those two countries).
  - Swedish imports of cod are dominated by Norway with 93% of the extra-EU imports and 85% of total imports.
  - Canada is responsible for 62% of the extra-EU imports, but indirect trade routes mean further imports enter as intra-EU trade, for example imports from Canada first entering the EU market through the Netherlands and then onto France.
  - The majority (58%) of extra-EU imports of octopus to Spain come from Morocco. Spain is a large exporter but a small importer of octopus through intra-EU trade.
- For each case study, a species that is a significant share of catch value for the SSCF in the importing EU Member State and a large number of affected vessels (>100).
  - For the two Swedish SSCF segments totalling 700 vessels (SWE NAO DFN0010 and SWE NAO DFN1012), cod represents 8 and 18% of their landed value. Only some of these vessels fish cod.
  - Four French SSCF segments totalling 500 vessels (FRA NAO FPO0010, FRA NAO FPO1012, FRA NAO PGP0010, FRA NAO PMP0010) rely on lobster (*Homarus gammarus*) for between 10 and 20% of their landed value.
  - Three Spanish SSCF segments totalling 1,100 vessels operating in the Mediterranean Sea (ESP MBS DFN0612, ESP MBS PMP0006, ESP MBS PMP0612) rely on octopus for between 10 and 20% of their landed value, while in the Northeast Atlantic one Spanish SSCF segment (ESP NAO FPO1012) relies on octopus for 70% of its landed value and two more (ESP NAO PMP0010, ESP NAO PMP1012) rely on octopus for 20% of their landed value. These Northeast Atlantic fleet segments total 2,100 vessels.
- Taken together, a geographic spread between the import Member State/region/fishery.
  - The Baltic Sea (Swedish cod case study), English Channel (French lobster case study), and the Bay of Biscay/Northeast Atlantic (Spanish octopus case study) represent three distinct areas of EU waters.
- Taken together, geographic spread between the export countries and the EU's trading relationship with them.
  - The main export countries of Norway (Swedish cod case study), Canada (French lobster case study), and Morocco (Spanish octopus case study) cover three different continents. Norway has access to the EU's single market through the European Economic Area agreement, the new Comprehensive Economic and Trade Agreement between Canada and the EU has eliminated tariffs (8%) on lobster imports from Canada, while Morocco operates under an "advance status" trade agreement and the EU and Morocco have been negotiating a Deep and Comprehensive Free Trade Agreement for several years.
- Taken together, a focus on different processing stages and points in the seafood supply chain.

- Imported cod to Sweden is mostly fresh, imported lobster to France is mostly live, and imported octopus to Spain is mostly chilled or frozen.

The three case studies use quantitative analysis though local, specified data combined with a qualitative approach that include a literature review and interviews with key stakeholders across the supply chain. In all three case studies more detailed data is available than what is available at the EU level in the statistical analysis. The semi-structured interviews were conducted from April 2020 to June 2020.

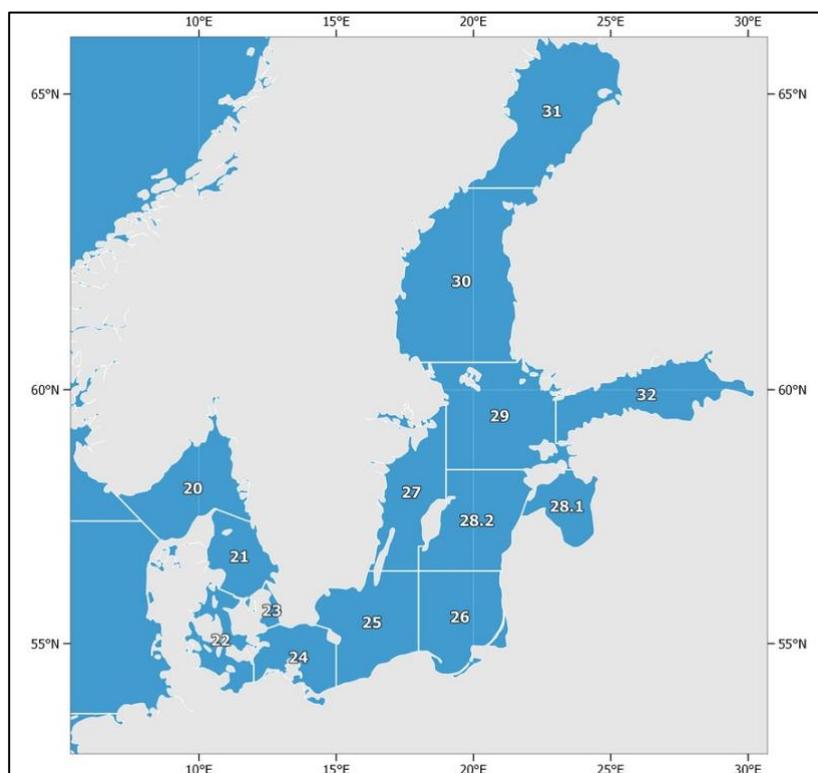
## 4.1 Cod in southern Sweden

### 4.1.1 Background

Cod (*Gadus morhua*) is caught by the Swedish fishing fleet in three marine areas: the North Sea (ICES areas 20-21; Kattegat and Skagerrak), the western Baltic Sea (ICES squares 22-24), and the eastern Baltic Sea (ICES areas 25-29,32). Swedish quotas in the Kattegat and Skagerrak are small (below 1,000 tons in 2019) and are mainly used as bycatch in the valuable Nephrops fishery. The focus of this case study is the Baltic Sea cod.

The Baltic Sea cod fishery has faced substantial changes in recent years. In the early 1980s, the cod fishery was booming with around 350,000 tonnes of cod landed annually (ICES, 2019). This marks a stark comparison to the current (2020) situation where cod fisheries in the eastern Baltic Sea is under a moratorium (EU Council, 2019). Traditionally, the eastern Baltic cod stock has been larger than the western; illustrated by the Swedish quotas in 2012 which were 3,312 tonnes for the western Baltic cod stock and 15,791 tonnes for the eastern Baltic cod stock. In 2020, the quota is 592 tonnes of cod to be caught in ICES areas 22 and 23 which is part of the area for the western Baltic cod stock.

**Figure 4-1: Map of ICES subareas in the Baltic Sea and transition area**



Source: FAO, 2020c

The total allowable catches (TACs) for the Baltic cod stocks are set by the EU Council of Ministers each year and Member States then allocate their national quotas amongst their vessels. In Sweden, the cod quota is allocated to different fleet segments depending on gear types (active or passive gears).

Traditionally, around 75% of the Swedish quota has been allocated to vessels using active gears (demersal trawls), and 25% to SSCF.<sup>1</sup> The main gear types used by the SSCF are bottom set gillnet, trammel net, and longline. Gillnet and trammel net are bottom anchored nets while longline is a baited line left in the water for the cod to take the bait. Gillnet is the dominant gear making up around 75% of total cod catches in the small-scale fishery, and longline is second with around 20%.<sup>2</sup>

The SSCF cod fishery along the Baltic Sea coastline has been declining for years and the total fleet along the south coast decreased by over 30% from 2008 to 2017 (Waldo & Blomquist, 2020) to a current total around 175 vessels. However, many of these are vessels less active and run by retired fishers. A civil servant for fisheries in the region noted in an interview for this study that even before the moratorium they only had a few vessels providing substantial landings of cod. The critical situation for the Baltic cod stocks is reflected in the economic performance of the cod vessels which turned from a positive profit in 2008/09 into major losses since about 2015 (Waldo and Blomquist, 2020).

A problem put forward by SSCF fishers on the eastern Baltic Sea stock is their dependency on cod (Waldo et al., 2020b). The Baltic Sea contains few species and access to some of the major alternatives to cod has been restricted by new regulations the past few years. The eel fishery is heavily restricted and not possible to enter, and the salmon fishery was lost due to the ban on driftnets. Thus, the fishers have few options and the fishery is described in the interviews as being instable based on the low flexibility. However, one of fishers interviewed for this study has tried to broaden his business by fishing for species like turbot, herring, and perch (Swedish fisher 1, personal communication, April 2020). Focus is on processed products (e.g. vacuum packaged fillets) for the local premium market. The fisher pointed out that the major market issue is not demand for his products but his own supply that is restricted by seals eating the fish from the nets and difficulties getting permits to adapt the fishery to the new situation with cod.

A major issue put forward in both interviews and for the small-scale fishery in the Baltic Sea is the development of the grey seal population. Seals compete for the resource by predation (although not primarily cod), eating cod from the nets causing major economic damages, and infecting the cod with parasites. This is shown to have major negative impacts on the economic performance of the small-scale fishery (Waldo et al, 2020a) and fishers express that “They [authorities] must do something. If we are to have any fisheries left” (citation from Waldo et al, 2020b).

#### **4.1.2 Imports of cod to Sweden**

Cod imports to Sweden originate mainly from outside the EU (Eurostat, 2020). In 2018, about 94% of the imported quantity of cod came from non-EU countries. In the list of exporting countries, Norway stands out as the major exporter of cod. In 2018, around 90% of all cod imported originated from Norway. Sweden imports both fresh/chilled cod (whole fish) as well as processed cod (fillets, smoked, dried, etc.). In the statistical analysis the focus is on fresh/chilled cod, which constitutes the majority of the imported volume. The import of fresh/chilled cod is more likely to compete directly with dockside landings than processed cod, which is at another level in the value chain. The solid line of Figure 4-2 shows the total quantity (in tonnes) of imported fresh/chilled cod to Sweden between 1997 and 2019. The right y-axis shows the share of total import quantity that comes from Norway. As can

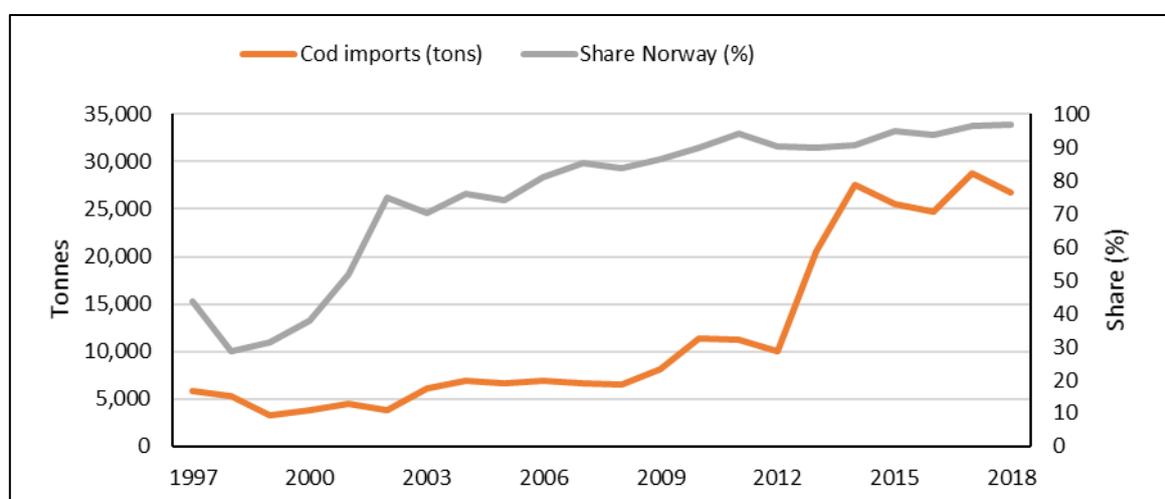
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<sup>1</sup> Until 2017, the quota was regulated by yearly catch rations for each vessel. From the first of January 2017, however, the demersal fishery has entered an individual quota system with quotas that are transferable within the year, but not between years (not a full ITQ system). The small-scale fishery using passive gears is, however, not included in this system. The small-scale fishery has a joint quota shared by all coastal fishermen.

<sup>2</sup> These catch statistics are calculated from vessel logbooks for the period 2006-2016.

be seen, import quantity has increased substantially in recent years. The figure also shows that the share of cod imported from Norway has increased steadily over the years.

**Figure 4-2: Quantity of cod imported and share of imports from Norway**



Source: Authors' calculations based on Eurostat, 2020a.

The quantity of cod imported in recent years is large in comparison to the landings from the Swedish SSCF cod fishery. According to the Swedish landing statistics,<sup>3</sup> the quantity of cod landed in 2016 by SSCF vessels was around 900 tonnes, which may be compared to 25,000 tonnes of imported (fresh and chilled) cod from Norway.

A representative of a major wholesaler for fresh fish in Sweden stated that almost all cod they sell is from Norway where they have a contract with a Norwegian supplier (Swedish wholesaler 1, personal communication, April 2020). The country of origin or whether the fish was caught by SSCF vessels are not factors taken into account in their fish trade in general, since Swedish customers are primarily concerned with other attributes such as price, quality and eco-labelling. These consumer preferences in the Swedish seafood market have been firmly established in existing studies (Eumofa, 2018). Fish supply is, according to the interviewee, highly volatile and decisions where to buy are made daily. Long-term relations with suppliers known to be regular providers of fish are combined with short term purchases on the world market (e.g. Norway, Denmark, Iceland, and the Netherlands).

#### **4.1.3 Cod market structure and the potential impact of imports**

Environmental certification is an important issue in the Swedish market for cod. According to a representative of a major wholesaler, a large share of the Swedish market is closed for fish that is not certified by the Marine Stewardship Council (MSC) (Swedish wholesaler 1, personal communication, April 2020). This requirement for MSC certification includes most of the large buyers such as major retail chains and many public authorities (Sundblad et al., 2020).

In the case study interviews, a major wholesaler and a major processor of Baltic Sea cod both pointed to the eco-labelling of fish as a significant determinant of market sourcing strategies (personal communications, April 2020). Blomquist et al. (2020) show that losing the MSC label made prices for the Baltic Sea cod to drop. A processor claimed that the WWF sustainable fish list is even more important than MSC for the Swedish cod market (personal communication, April 2020). The WWF list contains a red, yellow, and green label, where green is the best choice to eat, red is to be avoided, and yellow is to be treated with caution. The largest retail chain in Sweden, ICA, has a policy to follow the WWF fish guide and avoid red listed fish as much as possible (ICA, 2020).

<sup>3</sup> Sales notes from the Swedish Agency for Marine and Water Management (SwAM). More information about this dataset is provided in the statistical analysis.

The local Baltic Sea cod fishery is described as volume based in one of the interviews (Swedish civil servant 1, personal communication, April 2020). This has, according to the interviewee, caused focus to be less on the quality of the product and local value chains. Local fishers have tended not to negotiate prices but to deliver to a wholesaler without knowing the price (this view was confirmed by other interviews).

Traditionally there have been some alternative buyers competing for the fish, but today one buyer is dominant providing regular transport services from local harbours along the entire coastline. The transport service includes landings from both the eastern and western Baltic Sea cod stock, thus connecting the markets for the two stocks.

One buyer interviewed for the study had a strong local base and to a large extent buy the fish landed by the local vessels. This sourcing strategy causes quantities to vary substantially depending on local fishing conditions. During the cod moratorium, the company has imported cod to keep their processing plants running. They prefer the locally caught fish since customers such as local restaurants and hotels demand it (and the company is built with the local fishery as the base for the business), but also see an opportunity with imports as a way of getting fish when local landings are small (Swedish processor 1, personal communication, April 2020). The company not only imports cod but also exports it. The export does not differentiate between cod fished by trawl or gillnet. Thus, exporting is a market channel for the landings from the SSCF fishery when demand for Swedish cod is low. The latter has been the case due to the environmental concerns discussed above.

Whether cod imports impact the prices of Swedish cod in general and the landings of the SSCF in particular depends on the market structure. A small-scale fisher expresses that for the volume-based fisheries the market is dependent on Norwegian prices but that the local small-scale fishers are serving a local market that is not. This is due to a demand for locally produced fish, especially from summer tourists (Swedish fisher 1, personal communication, April 2020). A fisher that sells to a high-end and local market also claimed that competition from imports is weak. Rather, he focuses on the local dimension and the fact that customers can see him fishing (Swedish fisher 2, personal communication, April 2020) although this might be due to the specific target group of the company.

Traditionally, when cod landings were sold outside the local port, they could see the price of their cod landings drop seasonally when the Norwegian 'Skrei' cod entered the market. This is clearly an indication of imports affecting prices. A representative of a major buyer of Baltic Sea cod (Swedish processor 1, personal communication, April 2020) also confirmed that the local prices to a large extent follow the world market prices. A statistical analysis by Hammarlund (2015) shows that the volume of local cod landings in the Baltic Sea in the years 1997-2011 does not have a major impact on the price, which support the view that the cod is being sold on a larger market where the Baltic landings only constitute a minor share of the traded volumes.

However, it is possible that this link has weakened recently as the quantity of locally produced cod has declined substantially and therefore a small submarket of local consumers who have a high willingness to pay for locally-produced food now represent a larger share of total SSCF cod sales.

#### **4.1.4 Statistical analysis of cod imports and SSCF production**

The focus of the statistical analysis is on Norwegian cod as the vast majority of imported cod to Sweden originates in Norway, the focus. The imports include both fresh/chilled cod (whole fish) as well as processed cod (fillets, smoked, dried etc.).

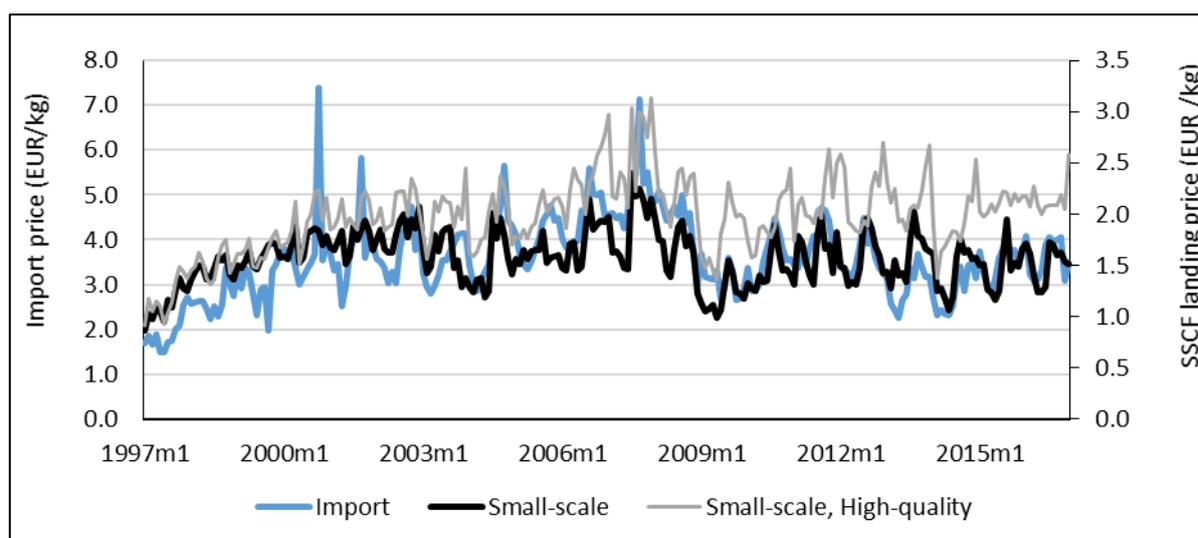
Price data for SSCF cod production comes from sales notes from the Swedish Agency for Marine and Water Management (SwAM). A complete set of sales notes were available from 1 January 1997 to 31 December 2016, which yields 821,507 observations. Each observation contains information about volumes and prices for a specific landing for an individual vessel. The sales notes further include information about the fleet segment of the vessel, which makes it possible to identify SSCF landings

as sales from vessels below 12 meters fishing with passive gear (i.e. SSCF). Landings that do not qualify as SSCF are consequently defined as sales by 'large-scale vessels' for comparison. The sales notes also include information about prices of cod for different sizes and qualities.<sup>4</sup> To separate the quality of fish, high-quality cod was defined as larger than 2 kg and quality class E.<sup>5</sup>

Daily landings were aggregated to monthly averages in order to match import statistics, and prices were converted from SEK to EUR using the average monthly exchange rates from Eurostat (2020b). Information on monthly imports of cod is obtained from Eurostat international trade database (2020a). The volume and value of fresh or chilled cod, HS6 code 030250 (1997-2011) and code 030251 (2012-2016) were used to calculate import prices. This yields three price series: imported cod, SSCF landings of cod, and SSCF landings of high-quality cod.

Figure 4-3 shows the three price series over time, where prices of small-scale landings are measured on the right y-axis and the import prices are measured on the left y-axis. As can be seen, while average prices differ substantially the three price series follow each other quite closely over time, at least up to year 2007. After 2007, the price premium of high-quality cod has increased. There is also a clear seasonal pattern where the prices are higher in July to October. The average price of SSCF cod landings is 1.57 EUR/kg during the time period, which may be compared to 3.58 EUR/kg for the Norwegian cod. The higher price of imported cod is likely due to costs related to transportation and packaging are included in the import price, which is not the case for dockside prices.

**Figure 4-3: Import price and SSCF price**



Source: Authors' calculations using SwAM sales notes and Eurostat (2020a).

Note: Monthly averages 1997-2016 (nominal values).

The results from the statistical analysis show that the import price has a positive and significant effect on Swedish SSCF cod prices.<sup>6</sup> This conclusion holds for both the average SSCF price and for landings of high quality. Regarding the direction of the effect, the conclusion is that the import price affects the price of SSCF landings but not the other way around. Thus, the import price of Norwegian cod affects the price of SSCF cod in Sweden, while the import price is not affected by fluctuations in SSCF prices. A lower import price of Norwegian cod would therefore reduce Swedish SSCF cod prices.

<sup>4</sup> Size classes and quality ratings are defined by the European Commission (European Commission, 1996).

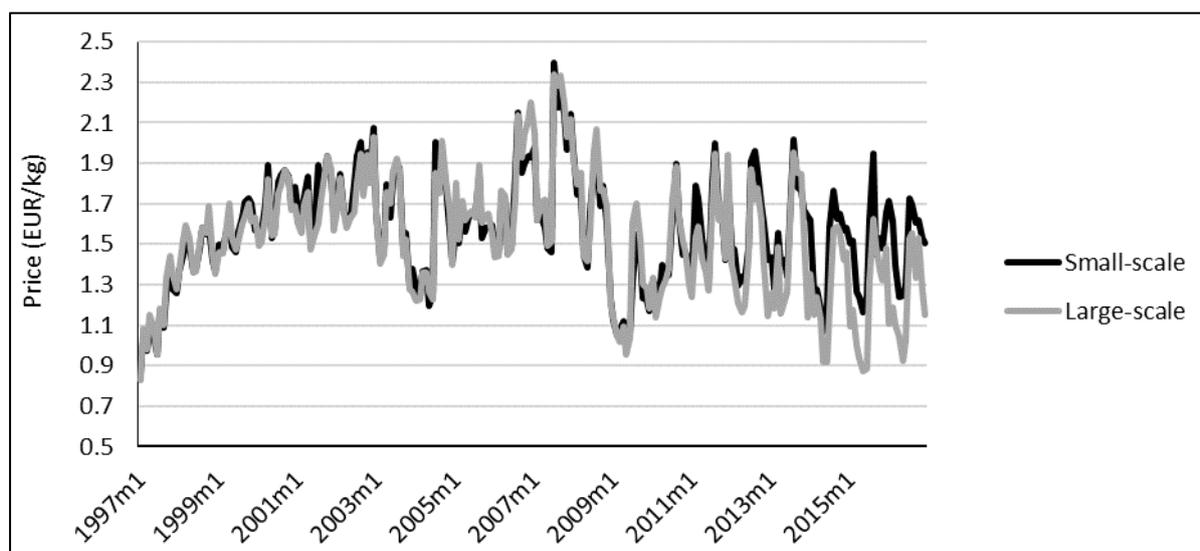
<sup>5</sup> Blomquist et al. (2015) show that buyers of cod in Sweden pay a price premium for large cod (over 2 kg), but only if it is also of high quality (quality class E).

<sup>6</sup> The results from the statistical analysis show that the price series are stationary and therefore a vector autoregression (VAR) approach is used to model the relationship between import prices and small-scale prices.

The results from the model also reveal that both the import price and the SSCF price are persistent over time, meaning a shock to the import price will also affect SSCF prices over several months (not just in the same month).

In addition to competition from imports, SSCF cod fishers may face competition from the large-scale trawl fishery in the Baltic Sea. As some of the interviewees noted, buyers may not differentiate between cod fished by trawl and the passive gears used by the SSCF, such as gillnet and longline. If this is the case, the expectation is for a small price differential between small- and large-scale landing prices. To investigate this issue, Figure 4-4 shows the average monthly prices of SSCF landings and large-scale landings between 1997 and 2016.

**Figure 4-4: SSCF and large-scale prices**



Source: Authors' calculations using SwAM sales notes (nominal values).

Note: Monthly averages 1997-2016 (nominal values).

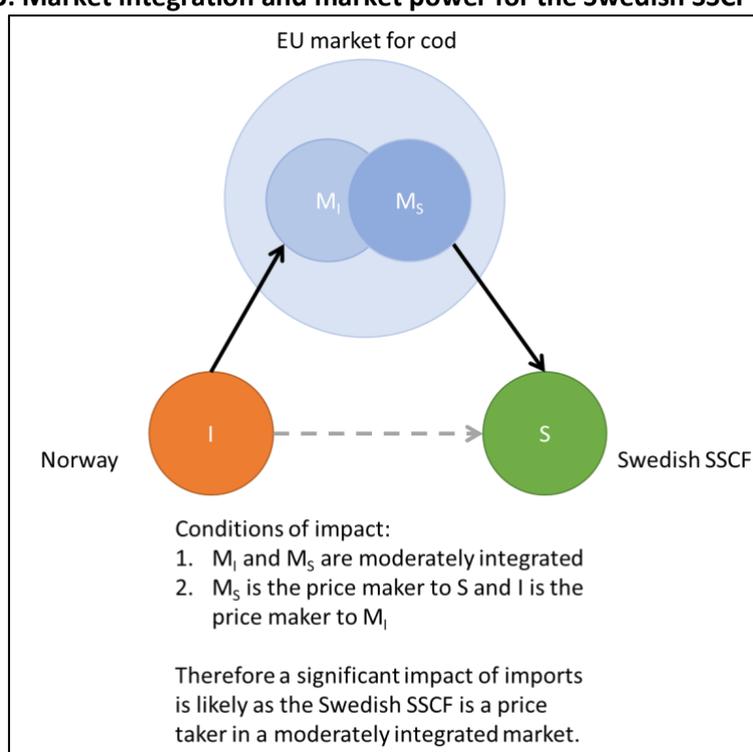
From this data it is clear that SSCF and large-scale prices follow each other very closely. The sample correlation coefficient is 0.91 and a simple regression analysis including deterministic seasonal components show that the relationship is almost exactly one-to-one (coefficient 1.02). This finding is consistent with the interviews saying that SSCF and large-scale landings of cod are not differentiated in the Swedish cod market, at least not at the aggregate level (as expressed by some local fishers, exceptions may exist). The fact that SSCF landings seem to be part of a larger cod market may help explain the impact of the Norwegian cod price. In a study of the first-hand cod market in Europe (Denmark, Sweden, UK, Norway, Iceland), Nielsen (2005) found this market to be perfectly integrated so that the law of one price holds. This implies that cod landed in different countries are close to perfect substitutes and that prices across countries follow each other closely over time. The cod prices in the EU, including the Swedish SSCF landings, will therefore be influenced by the large cod fisheries in Norway and Iceland.

### 4.1.5 Summary of results

The conclusions from the empirical analysis and the interviews are as follows:

- The majority of cod imported to Sweden originates from Norway. Price fluctuations of imported cod impact dockside prices of SSCF cod landings in Sweden. SSCF cod and imported cod are substitutes implying that a lower import price would reduce the SSCF cod price.
- The markets for SSCF and large-scale landings are not differentiated in the Swedish cod market, at least not in the period analysed (1997-2016). There are, however, examples from the interviews of SSCF cod fishers that sell their catch to a local (premium) market.
- It is not easy to access the food retail market in Sweden without an eco-label and the Swedish SSCF cod fishery is not MSC certified. Intra-EU export is therefore a market outlet for cod from the SSCF fishery.
- Previous studies have found evidence of market integration of cod between European countries. This is in line with the statistical analysis where there is market integration between SSCF and imported cod and SSCF prices are influenced by Norwegian cod prices.
- While the interviews point out that imports of cod imply competition, they also bring up other important challenges, such as the moratorium on the eastern Baltic Sea fishery and the problems with seal predation.

**Figure 4-5: Market integration and market power for the Swedish SSCF cod fishery**



Note: Blue circles and their spacing indicate the degree of integration between the market for imports (M<sub>I</sub>) and the market for SSCF products (M<sub>S</sub>). The solid lines indicate a direct relationship and the dotted line indicates an indirect relationship between the markets (M), the country of origin for imports (I), and the domestic SSCF fishery (S). Arrows on the lines (or lack thereof) indicate market power (i.e. which actor is determining the price for another actor).

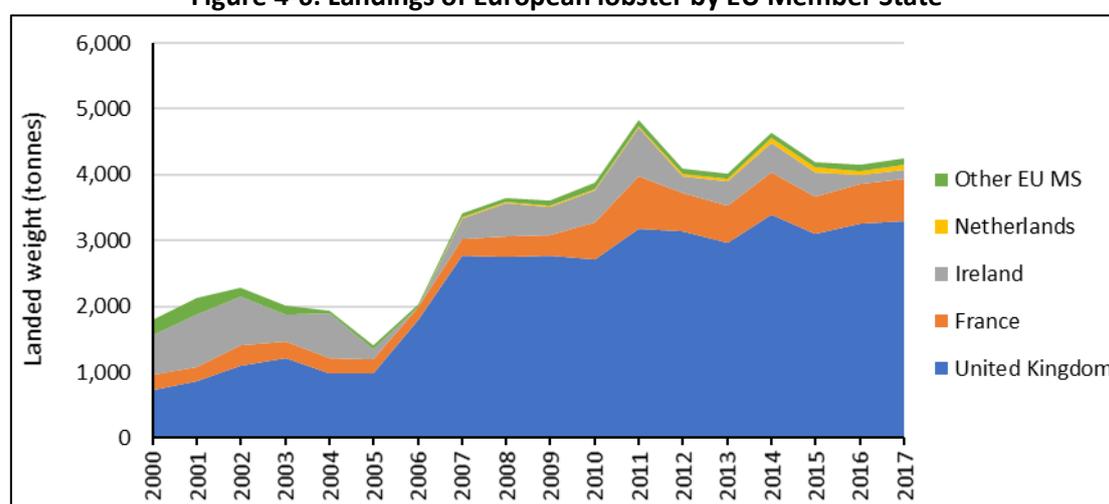
## 4.2 Lobster in northern France

European Lobster (*Homarus gamarus*) is among the top five SSCF species in value in France. The SSCF catch represent 85% of the national lobster production (in quantities and value).

### 4.2.1 Background

In recent years, France has been the third largest EU producer of European lobster by quantity (after the UK and Ireland) and the second largest producer by value (after the UK) (Figure 4-6). The total reported production is oscillating between 600 and 700 tonnes, for a recorded value of EUR 10 to 13 million. Overall, France is the second largest EU producer, accounting for 14% of the quantities of European Lobster produced in the EU and 11% of the value generated by the lobster fisheries. UK is the main producer with 71% of the catch and 76% of the value generated at the EU level. At the regional level, Normandie and Bretagne are the top producing regions in France.

**Figure 4-6: Landings of European lobster by EU Member State**



Note: The quantities reported for Ireland in 2006 have been removed from the time series, as they seem far too high (outlier).

Source: Authors' calculations based on Eumofa, 2020a.

In France, European lobster is predominantly caught by small-scale vessels with specific pots and traps (i.e. SSCF). According to the latest Annual Economic Report (STECF 2019), the largest share of the production is caught by vessels under 10m, despite a constant decline over the last decade (from 75% of the value in 2010 to 55% in 2017). Vessels from 10 to 12 meters are also declining. The SSCF vessels' catch represent annually between 85% and 90% of the total French production (in quantity and value).

The European lobster fishery is not regulated by TACs and quotas. A limited entry system has been implemented at the national level by the producers (Comite National Des Peches CNPMM, 2020), with specific technical measures in place to manage the fishery (minimum landing size). Some regional fishing committees are also implementing specific management measures. In Bretagne for example, local technical measures consist of (Comite Regional des Peches Maritimes et des Elevages Marins de Bretagne, 2020):

- designated no take zones;
- a mandatory escape panel in the pot to avoid catching the smaller lobsters;
- a ban of the parlour system in most parts of Bretagne waters.

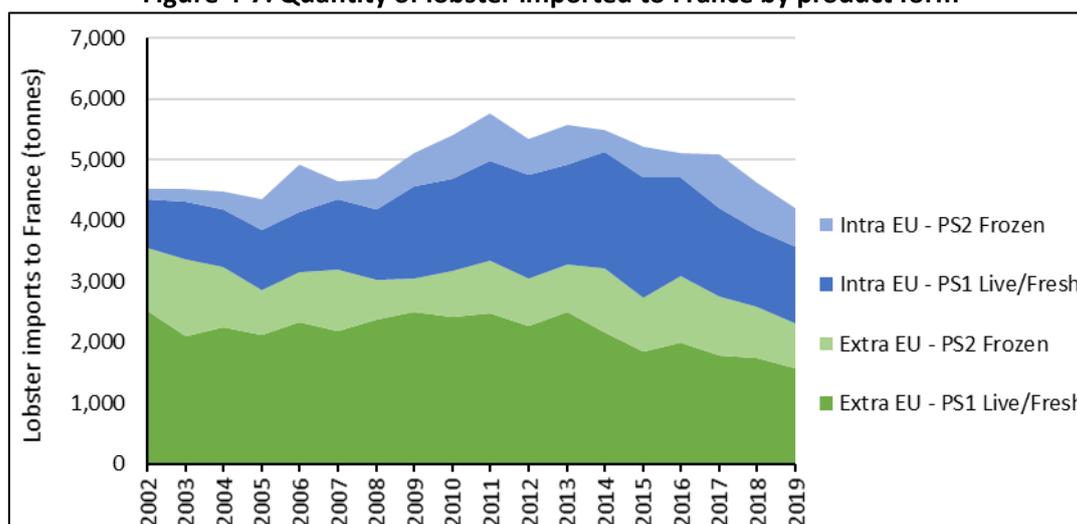
### 4.2.2 Imports of lobster to France

France imports between four to five times its national production of lobster, between 4 000 and 5 000 tonnes between 2002 and 2019 (Figure 4-7). The importance of intra-EU imports has gradually increased. In 2002, EU Member States were providing less than a quarter of the French imports (22% of the quantities imported in 2002), but their share progressed regularly to almost half in 2019 (45% of the quantities imported in 2019). Most of the products imported by France are classed as live/fresh, the share of live/fresh products in the imports oscillating around 70% (Eumofa, 2020a).

Intra-EU imports are considered close substitutes to landings from the French SSCF. The lobster caught by the British and Irish fishing fleets are from the same species (*Homarus gamarus*) and are produced predominantly by SSCF vessels. In the UK, SSCF caught lobster accounts for 83% of recorded landed weight and value, while in Ireland, SSCF caught lobster accounts for 72% of landed weight of 82% of landed value (STECF, 2019).

Extra-EU imports mainly originate from North America and come from a biologically distinct species, American Lobster (*Homarus americanus*), but a close substitute species in consumer markets. This case study concentrates on the competition between SSCF products and imported substitutes, from the same species fished by another EU Member State (European lobster caught by UK fishing vessels) and from a close substitute originated from extra-EU countries (American lobster caught by Canadian vessels).

**Figure 4-7: Quantity of lobster imported to France by product form**

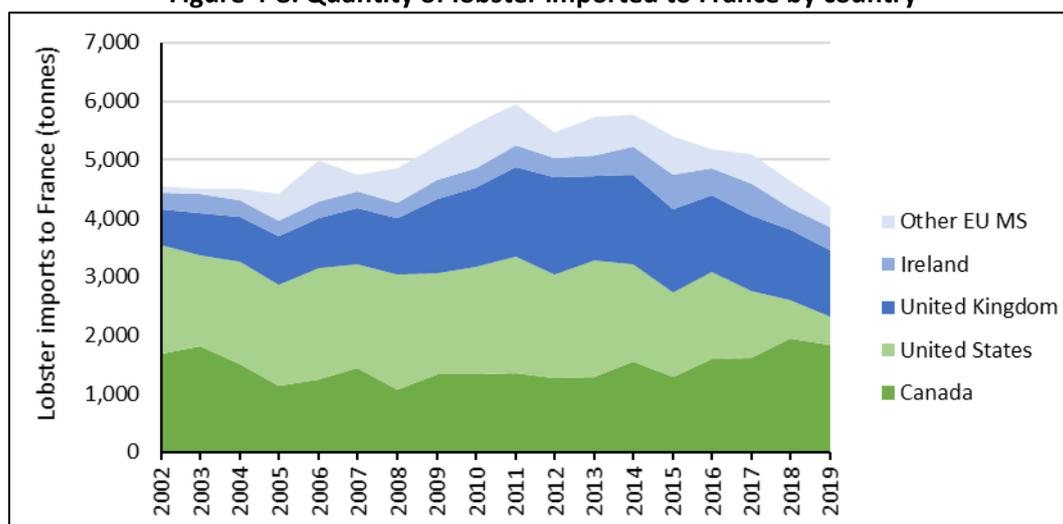


Note: Other presentations are omitted (PS3 and PS5) due to their low levels.

Source: Authors' calculations based on Eumofa, 2020a.

Since 2002, 90% of the quantity of lobster imported by France originated in four countries: Canada has remained the first provider of the French market for the entire period, while the USA lost its second place to the UK in 2017. Ireland was the fourth provider to the French market over the entire period between 2002 and 2019 (Figure 4-8). With the recent decision of the UK to leave the EU, the French imports of lobster will predominantly originate from extra-EU countries.

Figure 4-8: Quantity of lobster imported to France by country

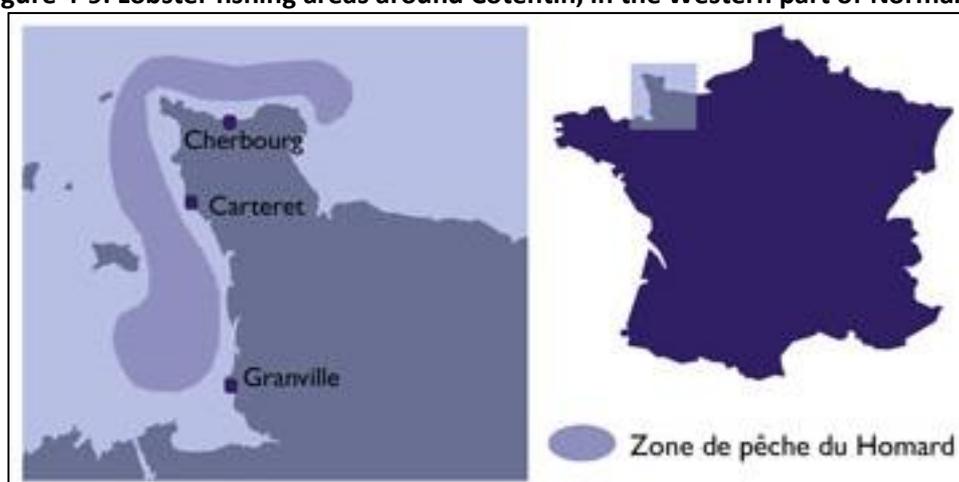


Source: Authors' calculations based on Eumofa, 2020a.

### 4.2.3 Lobster market structure and the potential impact of imports

As lobster is not managed through quota limits, French fishing producer organisations (POs), which attract fishers for their quota management functions, have few lobster fishers in their membership. The PO based in Normandie (OP Normandie), indicated that its members were accounting for only 20 of the 150 tonnes produced in the Cotentin (French PO 1, personal communication, May 2020).

Figure 4-9: Lobster fishing areas around Cotentin, in the Western part of Normandy



Source: Normandie Fraicheur Mer [n.d.].

For most regions, there is no organisation specifically focusing on the market issues potentially faced by fishermen, as Fishing Committees only focus on fisheries management issues. A specific marketing organisation, Normandie Fraicheur Mer (NFM), was launched in 1997 by fishing organisations, some auctions and some first buyers (mareyeurs) from the area to fill this gap. In 2017, two POs (OP Normandie and FROM Nord) and the regional fishing committee for Normandie (CRPMEM Normandie) joined the association. NFM's main objective consist in helping the sector to increase the market value of the fish landed, with a specific focus on the quality of the catch and the implementation of regional and quality trademarks (Label Rouge), Protected Geographical Indication and ecolabelling. NFM has developed a local quality trademark (homard du Cotentin) to promote the freshness of products caught out of the Normandy coast by local small-scale vessels, notably lobster. This fishery has also achieved MSC certification in 2011. Operating on the same fishing ground that

the Jersey Lobster fishery, the MSC evaluation was performed jointly on both sides (MSC, 2020a; Normandie Fraicheur Mer [n.d.]).

Interviews were held with various stakeholders of the entire French lobster supply chain, covering the production, the first sale (mareyeurs), wholesalers, importers and retailers, as well as support organisations (fishermen associations, mareyeurs associations and Normandie Fraicheur Mer).

At almost every stage of the supply chain, there is a consensus to describe European lobster (*Homarus gamarus*) and Canadian lobster (*Homarus americanus*) as two distinct products: compared to Canadian lobster, European lobster is perceived as a product of higher quality, with a distinct taste (French support association 1, French support association 2, French wholesaler 1, French retailer 1, personal communication, May-June 2020). Stakeholders indicate however that the provenance of the European Lobster (French or British) is not perceived as a major difference by consumers, except maybe in coastal areas and in high-end shops and restaurants. The small-scale dimension is however not identified at the consumer level, maybe because of the predominance of small-scale vessels in the production, but also because of an indifference to products specifically from the SSCF from stakeholders in Bretagne and Normandie, and more generally in France. As lobster is almost exclusively caught using passive gears, the small-scale dimension may be less prevalent for lobster compared to species potentially caught by small-scale passive gears and large-scale trawlers (seabass for example).

Some fishmongers and first buyers (mareyeurs) in Bretagne mentioned that an important share of SSCF lobster fishers are selling their catch through short supply chains, limited to one or two intermediaries between the fishing vessel and end-consumers. These stakeholders indicated that SSCF vessels could engage in contractual arrangements with restaurants, mareyeurs, fishmongers, setting a fixed price for a certain period. For most stakeholders mentioning this particular set-up, this fringe of SSCF vessels are considered less prone to outside competition. Lobster prices observed under the most important auctions for this species (Granville in Normandie, Saint-Quay Portrieux in Bretagne and to a lesser extent Roscoff also in Bretagne) seem to be the indicator used to set the price of these agreements (French fishmonger 1, French support association 1, French wholesaler 1, personal communication, May-June 2020).

The national retailer contacted for the study indicated that from their angle there are two types of customers buying lobster (French wholesaler 1, French retailer 1, personal communication, May 2020):

- Price-indifferent consumers are used to buy European lobster (no matter the provenance in Europe) and would not switch to Canadian lobster even when the price difference between the two species is high (notably during the festive season).
- Consumers with a tighter budget are more interested in the price than the provenance. For these consumers, the important factor is a psychological price of 25 EUR/kg. Depending on the season, this price may be obtained either by sourcing live European lobster (spring and beginning of the summer) or live Canadian lobster (from the end of the summer to the whole winter).

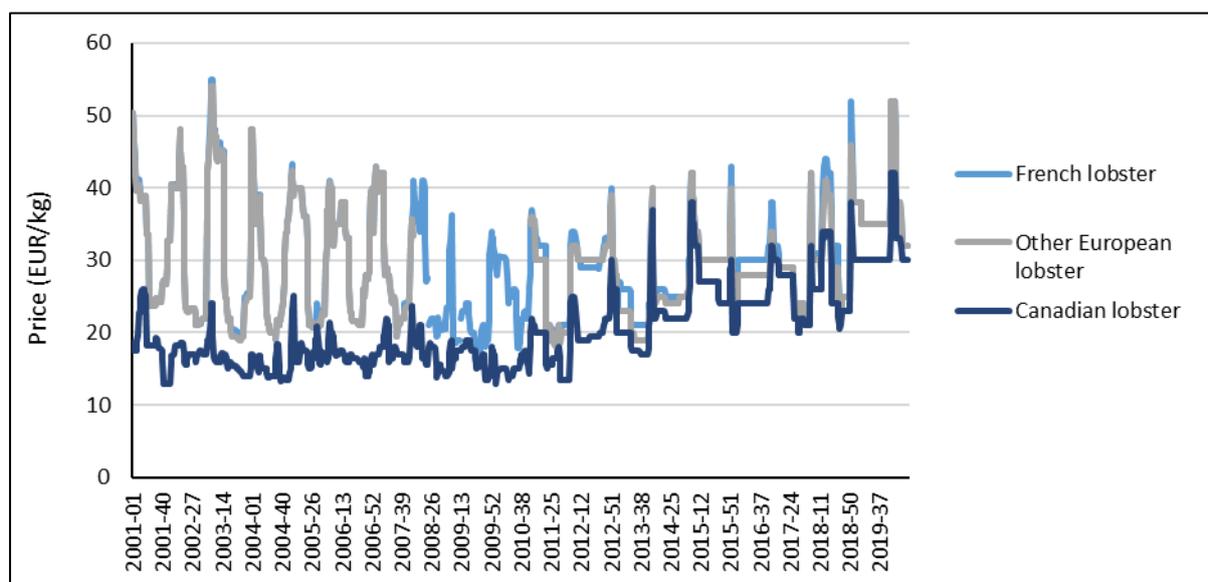
In comparison, traders based in the UK indicated that European lobster and Canadian lobster are treated far more as substitutes for consumers in the UK than in France (UK trader 1, UK trader 2, personal communication, June 2020).

Some interviewees consider that the SSCF lobster is destined to a niche market, either along the coastline or towards specific channels identifying the lobster as Breton or Normand (French support association 1, French support association 2, personal communication, May-June 2020).. It is, for example, striking to observe that three prices for live lobster are tracked in Rungis market (the wholesale market of Paris and the neighbouring regions): Breton lobster (which is the commercial

name for European lobster caught in French waters), imported European lobster and imported Canadian Lobster.

It should be noted however that the price difference observed in Rungis between French and other European lobster is extremely small and often identical (for more than half the weeks between 2001 and 2019).

**Figure 4-10: Weekly wholesale price for lobster at the Rungis Market**



Source: Réseau des Nouvelles des Marchés, 2020

Overall, the stakeholder perceptions of lobster imports converge toward a widening of the consumer base, with the inclusion of price-sensitive consumers who would only buy lobster if there was a special offer in the supermarket. Some interviewees also mentioned that the influx of frozen products has allowed to widen further the base of consumers, notably due to the arrival on the French market of portion-sized frozen American lobster stocked by supermarkets before the festive season some 15-20 years ago (French wholesaler 1, French retailer 1, personal communication, May-June 2020). Hard-discounters (Lidl, Aldi) are regularly attracting customers by offering a portion-size frozen American lobster (around 325g) for 6-7 EUR/kg, which is cheaper than most uncooked European Lobster at quayside price in France or in UK during the fourth quarter.

Few stakeholders indicated however that this recent evolution may have an impact on quayside prices in France, most of them indicating that the two markets are separate, notably because the current labelling regulation requires fishmongers and retailers to indicate the species and the provenance of the lobster to customers. However, some buyers mentioned that the lowest range of the market may be integrated, due to the apparent indifference of some consumers to the species of lobster they purchase (French support association 1, French support association 2, personal communication, May-June 2020).

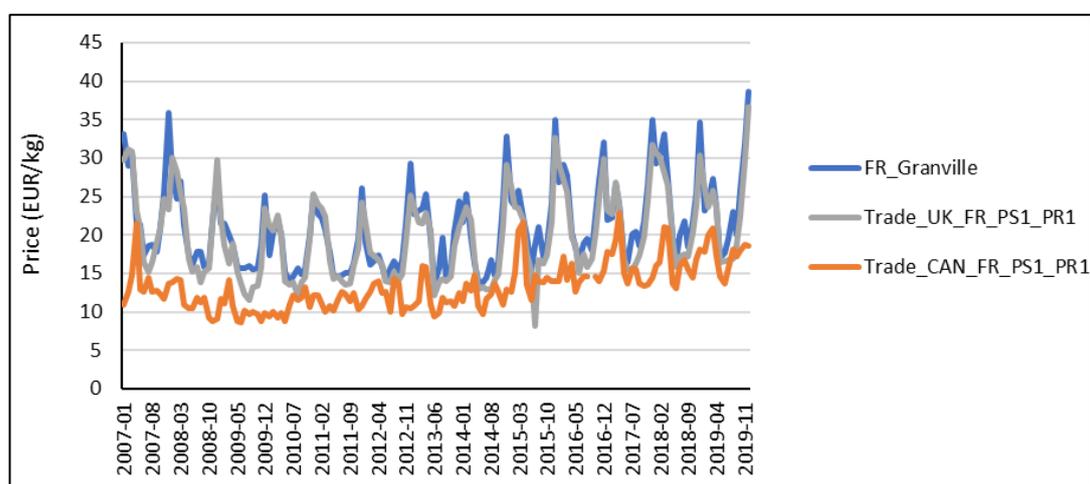
#### 4.2.4 Statistical analysis of lobster imports and SSCF production

Testing the impact of imports on quayside prices observed in France rely on the conjoint analysis of three price trends:

- Monthly quayside prices observed in Granville (Normandie) for European Lobster, as transmitted to Eumofa by the French administration. Following discussions with first buyers, the price trend used is an aggregation of all sizes sold under the auction (Presentation 'Whole', Preservation 'Alive'). Granville was selected as best source for SSCF price in France as it is the first French port by value over period 2010-2019 and the vast majority of vessels fishing lobster around Normandy are potters under 12 metres;
- Monthly prices of fresh lobster imports from the UK to France, as UK is the main European provider to the French market, as reported in the Eumofa database (Presentation PS1, Preservation PR1);
- Monthly prices of fresh lobster imports from Canada to France (Presentation PS1, Preservation PR1).

The main results of the analysis are reported in this section.

**Figure 4-11: Monthly wholesale price for lobster at the Granville auction**



Source: Authors' calculations based on Eumofa, 2020a.

Note: Imports of fresh lobster from UK to France and imports of fresh lobster from Canada to France. Monthly averages between 2007 and 2019 (nominal values).

These three price trends exhibit seasonal patterns (see Figure 4-11). However various tests lead us to consider all of them as stationary. The implementation of specific time-series techniques for this kind of price trends (vector autoregression VAR model was conclusive enough to derive some important findings:

1. Price variation in French production has an influence on the price of imports from the UK to France, but not in the opposite direction (i.e. France is the price maker). At the European level, UK and France are the two largest lobster producers, and the SSCF represent a majority of lobster production in both Member States. This analysis indicates that the price obtained by UK fishers is (at least partially) influenced by the production of the SSCF in France. In this particular case, the local production is driving some of the price fluctuations of a part of the imports.
2. Price variations of the Canadian imports have an influence on the price of the French production, but not the opposite. Despite the impressions of several stakeholders that Canadian lobster and European lobster evolve in two separate markets, the statistical analysis indicates integration between these two products, even if they are not perfectly substitutable (as they are different species).

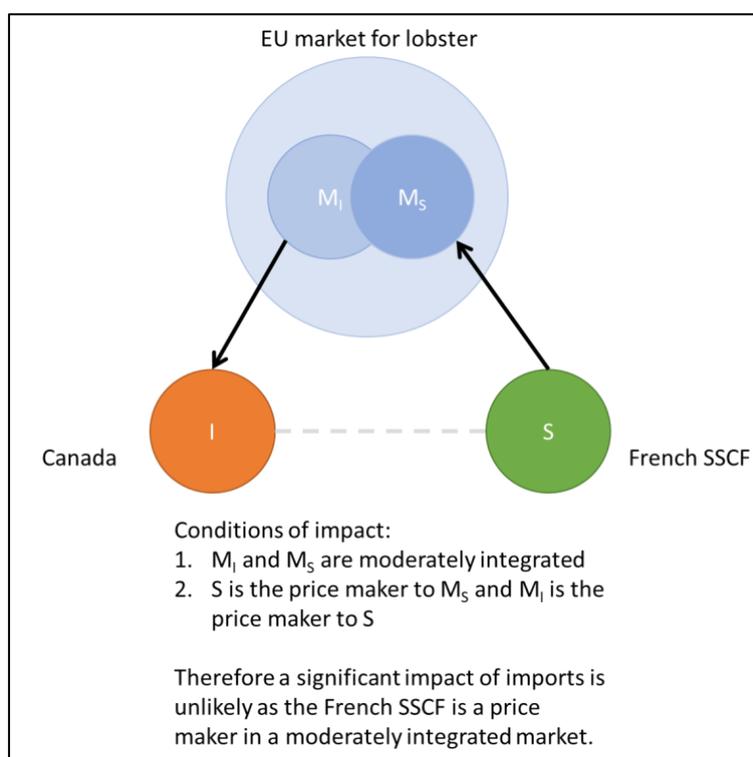
3. Price variations of the Canadian imports have an influence on the price of imports from the UK to France, but not the opposite, which is coherent with the two previous findings. UK prices are therefore influenced by both the French production prices and the Canadian exports to France. This may be due to the particular situation of the British market where consumers seem to be far less sensitive to species differentiation (compared to France).

#### 4.2.5 Summary of results

Main findings for the lobster case study:

- This case study is a typical example of two distinct species that some consumers may differentiate, but which are partially substitutable.
- It is not certain that prices recorded under French auctions are a true representation of the price received by the SSCF as some of them may sell their catch under contractual arrangements that may not be fully captured by the fish auctions recordings (“hors criée”).
- Despite a general view among stakeholders that imports from Canada (and to a certain extent from USA) are a separate market from the European production, the statistical analysis indicates that Canadian price fluctuations have an impact on French production prices and on British production prices.
- Price fluctuations of French lobster appear to impact the prices of the lobster imported from the UK to France, while lobster imports from UK to France have no impact on French SSCF prices.
- With the UK exit from the EU, what is currently intra-EU market competition for the French SSCF will become extra-EU import competition. If current market dynamics persist, the lobster case would be an example of EU SSCF production influencing the price of extra-EU imports.

**Figure 4-12: Market integration and market power in the French SSCF lobster fishery**



Note: Blue circles and their spacing indicate the degree of integration between the market for imports ( $M_I$ ) and the market for SSCF products ( $M_S$ ). The solid lines indicate a direct relationship and the dotted line indicates an indirect relationship between the markets (M), the country of origin for imports (I), and the domestic SSCF fishery (S). Arrows on the lines (or lack thereof) indicate market power (i.e. which actor is determining the price for another actor).

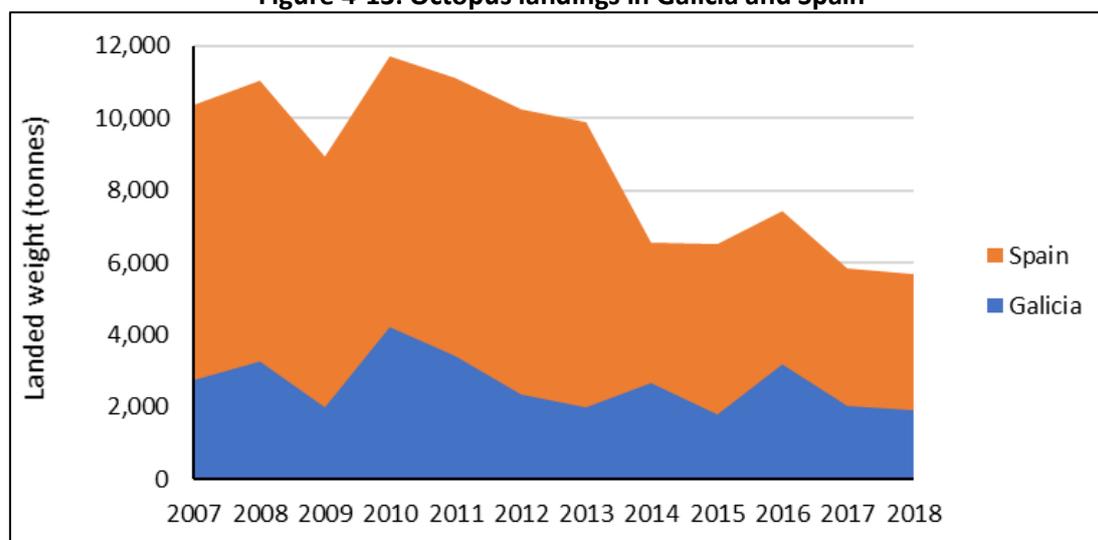
### 4.3 Octopus in northern Spain

Octopus is the most significant species by landed value for the Spanish SSCF, but with important regional variation. This case study focuses on the production in Galicia. In Galicia, octopus is perceived as an important species for the SSCF vessels, but also as a cultural asset. ‘Octopus a feira’ is often presented as one of the most iconic Galician seafood recipes, appreciated by locals and tourists.

#### 4.3.1 Background

Galicia has become one of the main producing regions, as the regional production has remained fairly stable while the Spanish production<sup>7</sup> has declined over the last 15 years. In recent years, the Galician production has represented close to 25% of the Spanish production (Figure 4-13). The decline of the national production is notably due the diminution of reported catch along the Mediterranean coast.

**Figure 4-13: Octopus landings in Galicia and Spain**



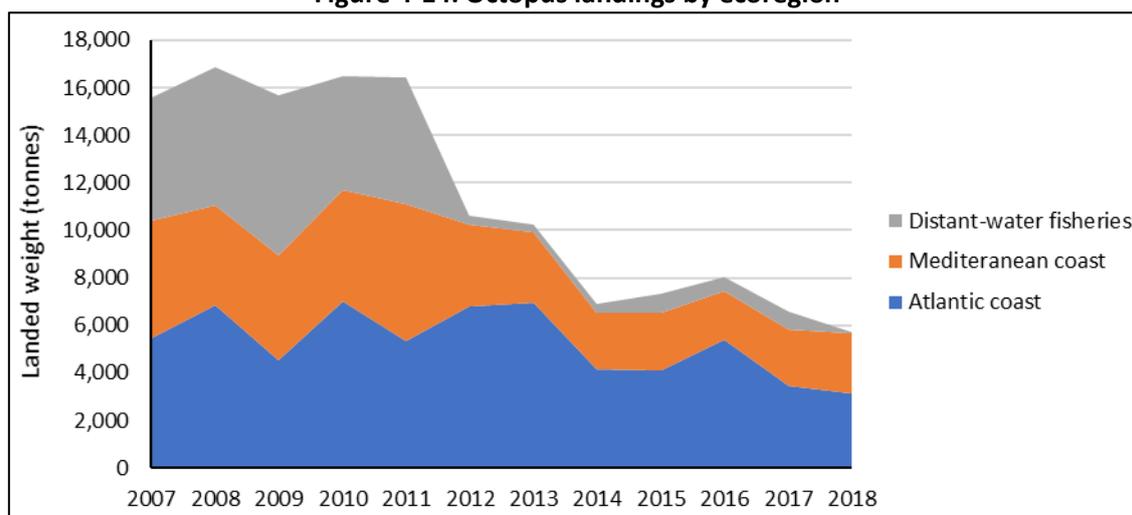
Source: Authors' calculations based on Xunta de Galicia and MAPA.

Note: Includes Atlantic and Mediterranean coasts.

The Spanish fishing sector is also engaged in distant-water fisheries catching octopus either as a target species or as a bycatch along the West African coast (notably in Morocco, Mauritania, Senegal and Guinea Bissau). The fishing opportunities for the distant-water fleets have however dramatically reduced since 2012 (Figure 4-14).

<sup>7</sup> Around the Iberian Peninsula, not counting distant water fisheries along the African coastline.

Figure 4-14: Octopus landings by ecoregion



Source: Authors' calculations based on MAPA

According to Ballesteros (2018), almost 30% of the 4,500 fishing vessels registered in Galicia had a license to catch octopus in coastal waters in 2015, with half of the license vessels recording some landings of octopus. Octopus is targeted using specific pots and traps.<sup>8</sup> Most of these vessels are below the SSCF threshold of 12 metres (88%).

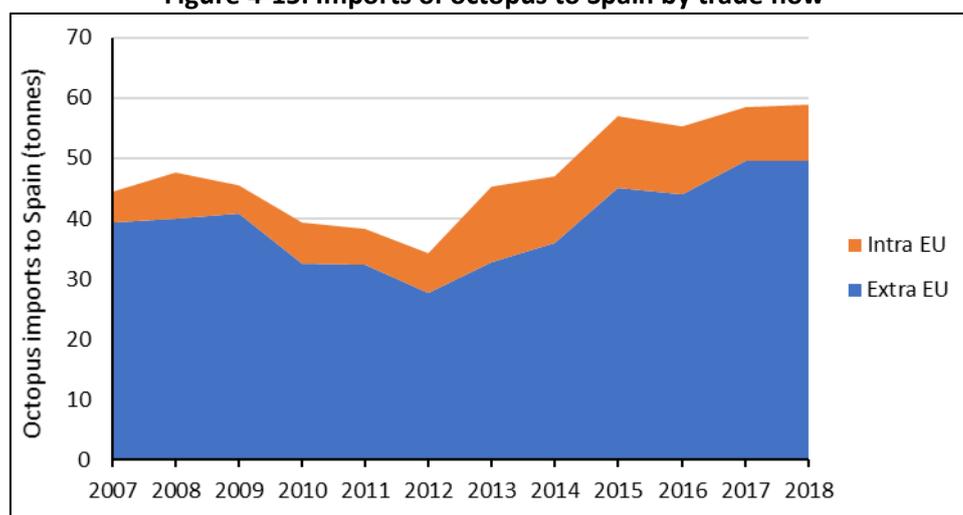
In her work, Ballesteros noted that an important share of the catch in Galician waters was not recorded in official statistics (which are covering mostly auction sales), representing up to 50% of the total catch which is an important characteristic of several SSCF fisheries. This gap in the first sale statistics is problematic for estimating the level of interdependence of the SSCF octopus market with the products caught by the Spanish distant fleet fishing along the African coast and the imported products.

<sup>8</sup> In the DCF methodology these landings are recorded as polyvalent vessels using active and passive gears (PMP segment).

### 4.3.2 Imports of octopus to Spain

The quantities imported by the Spanish seafood sector have exceeded by far the level of national production over the last 10 years, with an annual level of imports close to 60,000 tonnes (equivalent liveweight) in 2018. Most of the octopus imported in Spain originates from countries outside the EU (Figure 4-15). Over the period between 2007 and 2018, frozen products accounted for 94% of the quantities imported in Spain. Despite representing a limited fraction of the imports (5% over the period), the quantities of fresh imports are almost matching the level of the Galician production.

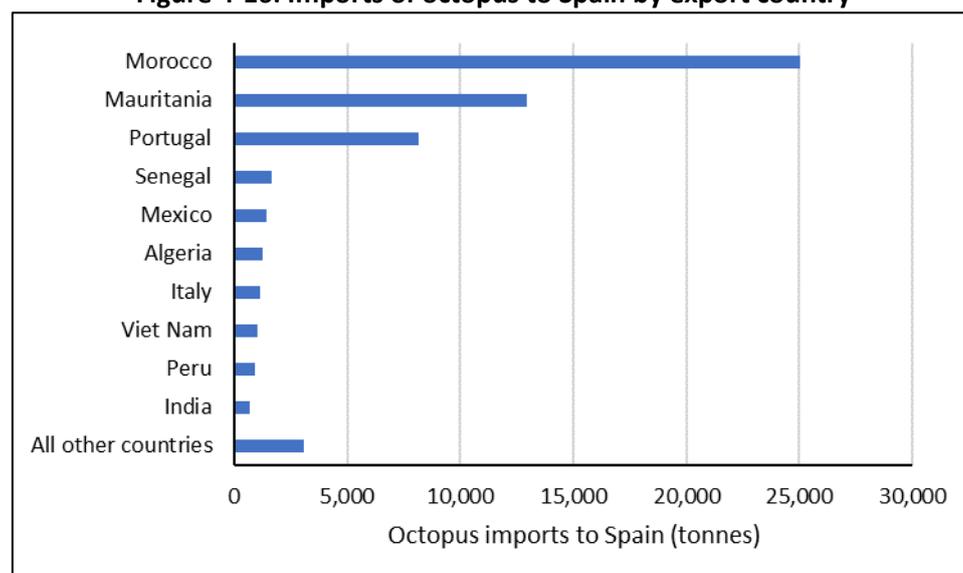
**Figure 4-15: Imports of octopus to Spain by trade flow**



Source: Authors' calculations based on EUMOFA, 2020a.

Over the period between 2015 and 2018, three countries accounted for 80% of the quantities imported by Spain: Morocco (44%), Mauritania (23%) and Portugal (14%). Stakeholders have indicated that some of the products identified as imported from Portugal in the trade statistics were originating from Morocco and Mauritania, notably when Portuguese companies sort and apportion the octopus to meet their customers' requirements.

**Figure 4-16: Imports of octopus to Spain by export country**



Source: Authors' calculations based on Eumofa, 2020a.

Note: Average quantities between 2015 and 2018.

In addition to the potential access to West African fishing grounds under SFPAs, several Spanish companies have secured a direct access to the fishing grounds in western Africa over the last two decades, either by operating fishing vessels registered in the coastal states (notably in Morocco), or by setting up local processing facilities to secure supplies, notably:

- Profand, based in Vigo, which is vertically integrated with freezer vessels registered in Morocco (Profand Marruecos) and in Senegal (Complexe Senefand) (Profand, 2017);
- Grupo Unión Martín, based in the Canary Islands, which controls seven vessels under Moroccan flag while having an agreement with Moroccan fishing companies (22 vessels). Unión Martín has also forged several partnerships in Mauritania to access local products (notably cephalopods) (Grupo Unión Martín, 2017).

### **4.3.3 Octopus market structure and the potential impact of imports**

Producers in Galicia have implemented two different regional identification systems to differentiate their production:

- PescadeRías is a regional certification scheme developed by the regional government of Galicia (Xunta de Galicia) in the late 2000s, with the aim to identify the production the Galician small-scale fleets products (PescadeRías, n.d.);
- Pulpodelonja (polbodelonxa in Galician) is a collective trademark developed by two cofradías (Confraría de Pescadores de Lira / Confraría de Pescadores de Muros) under the umbrella of the Flag GALP Seo de Fisterra Ría de Muros-Noia Costa Sostible. This trademark was launched in 2013 and covers the octopus production of two rías (Pulpodelonja, 2020).

The interviews indicated that the sector (producers and traders) sees these initiatives as important tools to differentiate the SSCF products from imports and distant-water productions. There is however no consensus as to whether these identification mechanisms are strong enough to isolate the Galician production from the rest of the market (Spanish fishermen association 1, Spanish wholesaler 1, Spanish wholesaler 2, Spanish NGO 1, personal communication, March-April 2020).

There is currently no eco-labelled fishery for octopus in Galicia. In the nearby province of Asturias, the SSCF octopus fishery has become the first octopus fishery achieving the MSC certification in 2016 (MSC, 2020b). During a workshop organised by the Interreg project 'Cephs to Chef' held in Santiago de Compostela at the beginning of March 2020, stakeholders have indicated that the MSC-certified octopus was fetching a better price from export markets (Northern Europe and Northern America) than from the domestic market, due to a lower interest for eco-labelled products by Spanish consumers. Interviewees indicated that Galicia is an important processing hub for the octopus in Spain. Local production competes with imports from Portugal and North-western African countries (mainly Morocco and Mauritania) (Spanish wholesaler 1, Spanish wholesaler 2, Spanish NGO 1, personal communication, March-April 2020).

Some interviewees considered that the SSCF products are destined to a localised market, notably the hospitality sector (bars and restaurants), but also Galician customers looking for regional products. From their perspective, consumers would make a difference between local-caught SSCF products and imports, especially when looking for fresh products (Spanish wholesaler 1, Spanish NGO 1, March-April 2020). This is balanced by a recent Eumofa study that analysed price transmission in the octopus market and found that in the hospitality sector, Moroccan imports are preferred to Spanish production as the price is lower and it is perceived to be easier to cook (Eumofa, 2020b).

However, some traders indicated that the price of Octopus in Galicia may be influenced by the production level in Morocco, even for the SSCF-caught octopus (Spanish wholesaler 2, personal communication, March 2020). During the 'Cephs to Chef' workshop, several stakeholders (traders and processors) indicated that their perception of the market was that important landings in Morocco

could depress prices in some Galician ports, indicating a potential connection between SSCF products and imports. There was, however, no consensus on this degree of integration.

#### **4.3.4 Statistical analysis of octopus imports and SSCF production**

Testing the impact of imports on quayside prices observed in France rely on the conjoint analysis of three price trends:

- Monthly quayside prices observed in Ribeira for Octopus, as recorded by the Galician authorities. Ribeira is by far the largest octopus landing port in Galician statistics;
- Monthly prices of fresh octopus imports from Portugal to Spain, as Portugal is the main European provider to the Spanish market, as reported in the Eumofa database (Presentation PS1, Preservation PR1);
- Monthly prices of frozen octopus imports from Morocco to Spain, as most recorded trade between Morocco and Europe, as reported in the Eumofa database (Presentation PR1, Preservation PS2).

This is an imperfect comparison, notably because the shelf life of frozen products allows wholesalers and importers to arbitrate their purchasing decision if import prices are too high, thus lowering the direct link between prices observed on the quayside in Galicia and import prices. The main results of the analysis are reported in this section.

These three price trends exhibit some seasonal patterns. However various tests lead us to consider all of them as seasonally stationary. The implementation of specific time-series techniques for this kind of price trends (vector autoregression VAR) was conclusive enough to derive some important findings:

1. Price variation in octopus landed in Ribeira has an influence on the price of imports from Portugal to Spain, but not the opposite. At the European level, Spain and Portugal are amongst the two largest octopus producers, with the SSCF representing a large share of production for both Member States. In this particular case, the local production seems to drive some of the price fluctuations of imports of fresh products.
2. There is no indication that price variations of the production landed in Ribeira have an influence or are influenced by price variations of the imports of frozen products from Morocco. This may however be integrated to the fresh/frozen dimension. Despite the impressions of several stakeholders, the statistical analysis indicates only loose market integration between these two products.
3. Price variations of the Portuguese imports to Spain are influenced by the price variations of imports from the Morocco to Spain and by the price variations of the production in Ribeira, but not the opposite, which is coherent with the two previous findings.

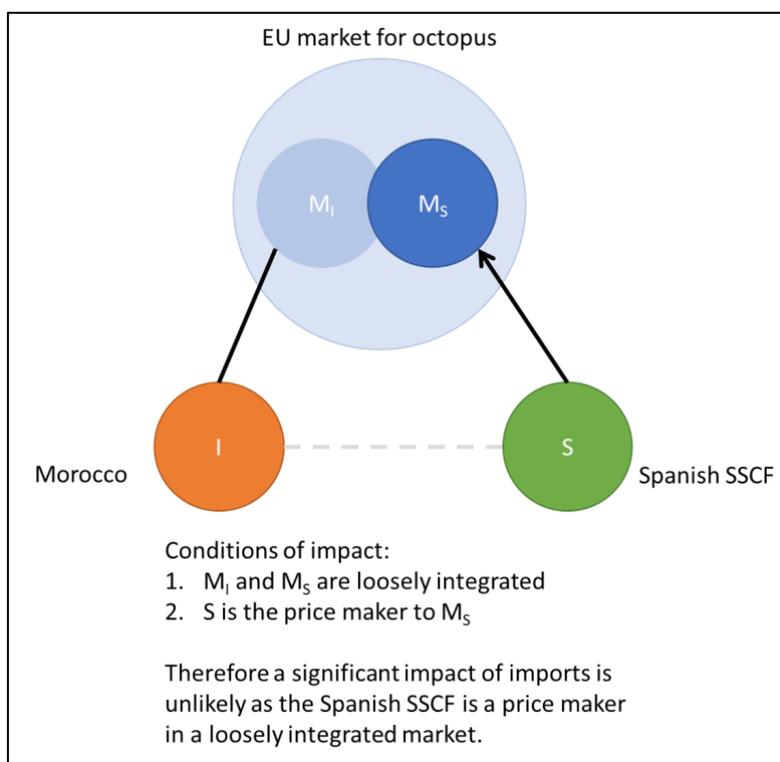
#### **4.3.5 Summary of results**

Main findings for the octopus case study:

- It is not certain that price observed in statistics are a true representation of the price received by SSCF vessels as several sources indicate important volumes of catches that are not recorded in auction statistics in Galicia (as for the French lobster case).
- Some stakeholders believe that imports from Morocco may have an influence on the Galician production price, although the statistical showed no clear indication that Moroccan export price fluctuations have an impact on Galician production prices.
- The price fluctuation of Galician SSCF octopus appears to impact the prices of the octopus imported by Spain from Portugal, while octopus imports from Portugal to Spain have no impact on Galician SSCF prices.
- Anecdotal evidence from the nearby Asturian octopus fishery indicates that eco-certified products fetch better prices on specific export markets (Northern Europe, North America)

than on the Spanish market. This shows that SSCF products are not only sold on local domestic markets but can also compete advantageously in distant markets when specific attributes are identified through ecolabelling or other certification systems.

**Figure 4-17: Market integration and market power in the Spanish SSCF octopus fishery**



Note: Blue circles and their spacing indicate the degree of integration between the market for imports ( $M_I$ ) and the market for SSCF products ( $M_S$ ). The solid lines indicate a direct relationship and the dotted line indicates an indirect relationship between the markets ( $M$ ), the country of origin for imports ( $I$ ), and the domestic SSCF fishery ( $S$ ). Arrows on the lines (or lack thereof) indicate market power (i.e. which actor is determining the price for another actor).

## 5 Discussion of findings

### 5.1 Importance of SSCF

In many EU Member States, the SSCF constitute the vast majority of the fishing fleet, often totalling over 90% of the fleet. Despite smaller amounts of landings than their counterparts in the large-scale fleet, the SSCF contributes significantly to employment, culture, and economic resilience in many coastal communities. In some cases, the SSCF may bring tourism or support other local supply chains. This importance of the SSCF combined with the high level of seafood trade gives rise to the question about whether the two are integrated and to what degree.

### 5.2 Summary of findings on the impact of imports and the SSCF

A necessary condition for any impact of imports on the SSCF is that their products compete with each other in the same markets, i.e. that their markets are integrated to some degree. Previous studies have emphasised the case-specific nature with no generalisable rule as to whether products are in the same market. The results of this study confirm the importance of case-specific market analysis.

In three of the thirteen cases analysed (cod in southern Sweden, lobster in northern France, and lobster in the UK), SSCF production found to compete in the same market (SSCF production is moderately integrated with extra-EU imports). In all other cases, the conclusion is that SSCF production and extra-EU imports do not compete in the same market (market integration was found to be loose or non-existent). There were no cases of tight or perfectly integrated markets. In two of the three moderately integrated cases (cod in southern Sweden and lobster in the UK), the SSCF was a price taker in the market, meaning that extra-EU imports may determine the market price for EU SSCF.

In two of the thirteen cases analysed, SSCF production was found to be tightly integrated to intra-EU imports, with a third case moderately integrated. However, in all three cases, the SSCF was identified as the price maker, so there is little anticipated impact for the MS analysed (following from the fact that cases were selected based on size and significance).

**Table 5-1: Summary of findings**

Note: The degree of market integration is defined based on thresholds for the results of the forecast error variance decomposition. Not integrated: 0-0.05, loosely integrated: 0.05-0.25, moderately integrated: 0.25-0.75, tightly integrated: 0.75-0.95, perfectly integrated: 0.95-1. Market position is defined based on the combined results of the VAR model, the variance decomposition, and expert interviews. There is less confidence in this identification strategy than in cases where variables are nonstationary and tests for cointegration are used.

| Case study                        | Market integration of imports and SSCF   | SSCF market position | Market features  | Stakeholder summary   |
|-----------------------------------|--|----------------------|--|---|
| <i>Cod in southern Sweden</i>     | Extra-EU imports: moderately integrated<br><br>Intra-EU imports: not relevant (small quantity) | SSCF: price taker    | <ul style="list-style-type: none"> <li>Prices tightly integrated with large-scale fisheries</li> <li>Low volumes can be sold at small-scale markets</li> </ul> | <ul style="list-style-type: none"> <li>Long history of Norwegian imports;</li> <li>Little concern about imports;</li> <li>Many other issues affecting cod fishery (quota, seals);</li> <li>Swedish market demands MSC;</li> <li>No differentiation for SSCF product.</li> </ul> |
| <i>Lobster in northern France</i> | Extra-EU imports: moderately integrated  | SSCF: price maker    | <ul style="list-style-type: none"> <li>EU price is highly seasonal, but not for imports</li> </ul>   | <ul style="list-style-type: none"> <li>Expectation that Canadian and European lobster are different markets;</li> </ul>   |

| Case study                                 | Market integration of imports and SSCF   | SSCF market position | Market features  | Stakeholder summary   |
|--|--|----------------------|--|---|
|  | Intra-EU imports: tightly integrated   |                      |  | <ul style="list-style-type: none"> <li>• Little concern about imports;</li> <li>• Fringe customers are switching from the European lobster to Canadian lobster when the price difference is too high</li> </ul>                           |
| <i>Octopus in northern Spain</i>           | Extra-EU imports: loosely integrated<br>Intra-EU imports: tightly integrated                               | SSCF: price maker    | <ul style="list-style-type: none"> <li>• Slightly different product (SSCF fresh product vs. frozen imports)</li> </ul> | <ul style="list-style-type: none"> <li>• Mixed expectations about whether markets are integrated;</li> <li>• Some concern about imports;</li> <li>• No local interest in eco-labelling, but some interest through SSCF export.</li> </ul> |
| <i>Cuttlefish in eastern Italy</i>         | Extra-EU imports: loosely integrated in the short-term (via Spain)<br>Intra-EU imports: loosely integrated | SSCF: neither        | <ul style="list-style-type: none"> <li>• Extra-EU imports transit through Spain</li> </ul>                             |   |
| <i>Seabass in north-western France</i>     | Extra-EU imports: loosely integrated (via Spain)<br>Intra-EU imports: loosely integrated                   | SSCF: price maker    | <ul style="list-style-type: none"> <li>• Comparison of line-caught (premium product) and aquaculture</li> </ul>        |   |
| <i>Gilthead seabream in western France</i> | Extra-EU imports: not integrated (via Spain)<br>Intra-EU imports: moderately integrated                    | SSCF: price maker    | <ul style="list-style-type: none"> <li>• Comparison of wild-caught (premium product) and aquaculture</li> </ul>        |   |
| <i>Sole in western France</i>              | Extra-EU imports: loosely integrated<br>Intra-EU imports: loosely integrated                               | SSCF: price maker    | <ul style="list-style-type: none"> <li>• UK imports will become extra-EU imports</li> </ul>                            |   |
| <i>Lobster in the UK</i>                   | Extra-EU imports: moderately integrated<br>Intra-EU imports: not relevant (small quantity)                 | SSCF: price taker    | <ul style="list-style-type: none"> <li>• Most of the UK production is exported to the rest of the EU</li> </ul>        |   |
| <i>Lobster in south-eastern Ireland</i>    | Extra-EU imports: loosely integrated   | SSCF: price taker    | <ul style="list-style-type: none"> <li>• Most of the Irish production is exported to the rest of the EU</li> </ul>     |   |

| <i>Case study</i>                         | <i>Market integration of imports and SSCF</i>  | <i>SSCF market position</i>       | <i>Market features</i>   | <i>Stakeholder summary</i> |
|---|--|-----------------------------------|--|----------------------------|
|   | Intra-EU imports: not relevant (small quantity)  |                                   |  |                            |
| <i>Octopus in central Portugal</i>        | Extra-EU imports: loosely integrated (via Spain)<br>Intra-EU imports: loosely integrated         | SSCF: price taker (some evidence) | <ul style="list-style-type: none"> <li>Slightly different product (SSCF fresh product vs. frozen imports)</li> </ul> |                            |
| <i>Cuttlefish in central Portugal</i>     | Extra-EU imports: loosely integrated (via Spain)<br>Intra-EU imports: loosely integrated         | SSCF: price maker                 | <ul style="list-style-type: none"> <li>Extra-EU imports transit through Spain</li> </ul>                             |                            |
| <i>Black seabream in central Portugal</i> | Extra-EU imports: not integrated (via Spain)<br>Intra-EU imports: loosely integrated (via Spain) | SSCF: price maker (some evidence) | <ul style="list-style-type: none"> <li>Comparison of wild-caught (premium product) and aquaculture</li> </ul>        |                            |
| <i>Seabass in central Portugal</i>        | Extra-EU imports: not integrated (via Spain)<br>Intra-EU imports: loosely integrated             | SSCF: price maker (some evidence) | <ul style="list-style-type: none"> <li>Comparison of wild-caught (premium product) and aquaculture</li> </ul>        |                            |

### 5.3 Synthesis of case studies

The three case studies that were explored in more detail through stakeholder interviews offer further details to these findings. The cod fishery in southern Sweden was the clearest case of market integration between extra-EU imports and SSCF production. In this market, the SSCF are price takers due to the large volumes of cod sold from Norway. These results are consistent with previous literature on the European whitefish market. In such a situation, there could be a concern of import competition for the SSCF, however interviews for the case study revealed other concerns were much more prevalent. On the retail side, sustainability concerns prevent retailers from sourcing SSCF cod landings. Across the whole supply chain, the interviews confirmed that there is no separate market for either 'Swedish' or 'small-scale' landings – or at least not at any significant scale. Despite this, Swedish fishers were much more concerned about low fishing opportunities and seal predation than about the impact of imported cod.

The lobster fishery in northern France is generally assumed to be distinct from extra-EU imports from Canada and the US, but the statistical analysis for the case study reveals that the two products are partially substitutable. The exit of the UK from the European Union will have a significant impact on the market as UK lobster exports to France shift from intra-EU imports to extra-EU imports. However, the analysis indicates that France is the price maker, suggesting that any increases in the cost of trade would be compensated for in the price of UK exports rather than higher consumption prices in France. This aligns with some previous literature on Brexit impact analysis in the seafood sector (Carpenter, 2017).

The octopus fishery in northern Spain was found to be loosely integrated. While there are significant imports of octopus from Morocco that some stakeholders felt put price pressure on SSCF production, different statistical tests for market integration yielded conflicting results. In addition, a large portion of Morocco imports are frozen whereas SSCF production is sold fresh so there is a reason to suspect that the products serve distinct markets.

As for intra-EU trade, the Spanish SSCF serve as a price maker for other exporters (e.g. Portugal) which reflects the significant volume of Spanish SSCF production.

### 5.4 Summary conclusions

The study findings are specific to the thirteen cases analysed and should not be extrapolated from to reach broader conclusions at the EU level. All results are case-specific and conclusions from one fishery may not even hold across an EU Member State, and even less so for the whole EU. The many cases that were not covered, for example due to a lack of data, are generally less prominent markets. This may make them more likely to differentiate in a niche market and therefore insulated from seafood imports, or equally it may make them more likely to function in the seafood market as a substitutable with seafood imports due to a lack of familiarity. The impact of seafood imports on these EU fisheries is therefore ambiguous and the total impact of imports on EU fisheries is highly uncertain.

This case-specific approach aligns with previous studies on seafood market integration; however the results of this study depart from previous studies in two important aspects. First, as a matter of statistical analysis, prices were found to be stationary in all thirteen cases analysed. As such, whereas previous studies use a cointegration approach, this approach was not possible and a broader range of statistical tests were performed. Second, whereas previous studies are case-specific, many examples of highly integrated markets have been found at a European and even global level, here, only moderate integration was found in a select few examples and most examples were found to be only loosely integrated. There are several potential reasons for this divergence, including the different statistical approaches which are less conclusive than the cointegration approach (Asche et al., 2004), the study focus on the SSCF which may operate separately from the market as a whole, and differences in the time period analysed.

## 5.5 Methodological challenges

### 5.5.1 Data challenges

There were several data challenges that complicated the statistical analysis in this study and prevented other from being conducted. First and foremost, it is not certain that price observed in data used in the statistical analysis is a true representation of the price received by SSCF vessels. For both the French lobster and Spanish octopus case studies several sources indicated important quantities of catch which are not accounted in the first sale statistics (auction sales). This concern may extend to the statistical analyses that were not elaborated as case studies. Nonetheless, the analysis was performed based on the best available information.

In several cases explored, there are concerns regarding the Rotterdam effect where trade is recorded to one country due to the inclusion of quasi-transit goods. This was addressed in the study in two different ways. In some cases, intra-EU imports were reclassified as extra-EU imports like the case of cuttlefish in Italy (via Spain), and seabass and seabream in France (via Spain). In other cases, species were not statistically analysed because of the inability to link trade and country of production, such as the imports of sole to France from the Netherlands (to assess intra-EU competition). Norwegian mackerel and Norwegian herring were also excluded from the statistical analysis as EU and Norwegian production are mixed. This limited the cases that were analysed.

Missing data presents a major problem for statistical analysis of time series. This includes situations where production and/or trade has a seasonal lull. In cases where there were relatively few instances of missing data, estimated values were generated by linear extrapolation. In cases where there were many instances of missing data, for example during a closed season, these cases were excluded from the statistical analysis (swordfish, eel, common spiny lobster). This further limited the cases that were analysed.

For some Member States, the precise combination gear and species caught is not available in the dataset (only the main gear was reported), which may also lead to the inclusion of vessels using towed gears in passive gear segments.

These data challenges serve as important caveats to the study findings.

### 5.5.2 Statistical analysis and cointegration

At the methodological level, all the case studies depart from much of the previous literature that tests for integration in the seafood market. Whereas most studies either find evidence that seafood prices are nonstationary (i.e. the mean and variance are not constant), or assume it to be the case, the cases analysed here all appear to be stationary. Part of this difference may be due to the treatment of data gaps and outliers. In this study as much of the reported data was used as possible (only five data points were removed from the different price series across all statistical analyses) or and extreme cases of data gaps were excluded from the analysis altogether (exclusion criteria 2 from Table 5-3). As such, whereas previous studies have used cointegration analysis to deal with nonstationary prices, this study employs a different, broader set of statistical tools to test for market integration.

### 5.5.3 Status of the UK in the EU

The UK is a significant part of the EU seafood market including EUR 130 million of annual production from the SSCF (third largest in the EU after France and Italy). Some of the study results could change as imports from the UK would shift from intra-EU to extra-EU. These imports might not continue in the same quantity or price as outside the EU market UK seafood exporters will face tariff and non-tariff measures (e.g. phytosanitary checks, catch certificates, export health certificate, rules of origin requirements). At the time of writing there is still uncertainty about UK export arrangements in 2021 onwards and if a trade deal will be reached between the UK and EU.

## 5.6 Impacts of trade beyond direct imports

While direct imports of a similar product are the most obvious cases of market integration, they are not the only ones. The law of one price implies that even without direct competition if the market is integrated then changes in one market effect the other. This finding has been confirmed in previous studies and has consequences for policy responses to imports, for example Asche (2001) found that measures taken in the US to reduce Norwegian salmon imports were ultimately inefficient as other international suppliers took over the Norwegian position in the highly integrated global salmon market.

It is also important to recognise that trade works in two directions. This is of course true at a macro level but even within the EU SSCF there are several examples of fisheries that pursue extra-EU export as their primary market. This study has only explored the potential effects seafood imports on the EU SSCF rather than the potential effects of seafood trade (including exports).

## 5.7 Regional impacts

The methodology used in this study, like previous studies, focuses on specific cases of potential competition between seafood imports and domestic production. As such, regional impacts can only be discerned through any trends evidenced in the thirteen cases analysed. This is a small number of cases from which to extrapolate. However, one cautious finding from the results is that the SSCF in northern Europe (Sweden, Estonia, UK, Ireland) were more likely to operate in integrated markets and operate as a price taker. If this trend in the results is illustrative, the SSCF in northern Europe is generally more at risk from seafood import competition than southern Europe. Such a result could reflect the views of consumers in northern Europe towards seafood and a weaker differentiation between species, product form, and method of capture (Eumofa, 2018). This, in turn, is also influenced by production strategies, and was a theme in the three case studies.

## 5.8 SSCF position in the market

In the completion of this study, several issues emerged relating to the market for SSCF products but transcending the issue of imports alone. One issue, particularly important to the Swedish SSCF cod fishery, was that the poor state of the stock meant that Swedish retailers committed to sustainability and eco-labelling were specifically not sourcing from Swedish SSCF production. Improving the sustainability of fish stocks targeted by the SSCF – coupled with the certification of the necessary eco-labels – is therefore a strategy for the SSCF to access important markets. In the Asturian octopus fishery, the SSCF pursued this eco-certification strategy to sell to northern European markets as the local market was already by cheaper product and there was no local sustainability premium.

Market strategies for SSCF product extend beyond sustainability but generally involve creating a niche for SSCF production. While there are some examples of differentiated markets for SSCF production, these markets tend to be extremely small (e.g. with Swedish SSCF cod at low production levels it appears that market integration is loosening). Generally, these markets are local to production. In situations where there is a lack of local interest and the SSCF depends on export there is a greater challenge in creating a differentiated product (e.g. UK lobster).

More broadly, these strategies can be integrated to the SSCF gaining broader economic power. Studies on fishery supply chains have found relative to other players in the value chain, the SSCF receive “the smallest economic benefits for their products” with processors and retail markets receiving more of the distributional benefits of the value chain owing to their stronger bargaining power (Bjørndal et al., 2015). Issues of imports and their effect on the EU SSCF is therefore closely linked to other developments in securing a market and livelihood for SSCF fishers.

## 6 Conclusions

The EU's Common Fisheries Policy affirms a commitment to the economic sustainability of the EU SSCF. At the same time, the EU market is a major importer of seafood. In light of this, concerns have been raised that extra-EU seafood imports could be negatively impacting the economic sustainability of the EU SSCF. Seafood imports could be impacting the EU SSCF if two conditions are present. First, the markets for SSCF production and EU imports would need to be integrated, meaning that seafood imports and SSCF production are sold as substitute products and their prices trend together. Second, in terms of market power, the SSCF needs to function as the price taker, meaning that lower-priced seafood imports would force SSCF prices downward.

Using this framework, the impact of seafood imports can only be assessed at the level of a defined market. For many SSCF products, this is at a very local level and is dependent on several external factors of which seafood imports is just one.

Data challenges limited the number of cases that could be statistically analysed, for example difficulties acquiring SSCF-specific prices and trade data at the right level of species aggregation. Datasets on imports and SSCF production also need to be long enough and complete enough (i.e. no or few missing values) to allow for a robust analysis of market integration.

In total, thirteen cases were analysed: cod in southern Sweden, lobster in northern France, octopus in northern Spain, cuttlefish in eastern Italy, seabass in north-western France, gilthead seabream in western France, sole in western France, lobster in the UK, lobster in south-eastern Ireland, octopus in central Portugal, cuttlefish in central Portugal, blackspot seabream in central Portugal, and seabass in central Portugal. The first three cases were further elaborated through cases studies that included interviews with SSCF fishers, processors, importers, and retailers.

The Swedish cod case study revealed that Norwegian cod imports and SSCF production are integrated with SSCF serving as a price taker, yet Swedish fishers were more concerned about impacts from low quotas due to the state of the stock and seal predation. These localised problems may not be true in a different context.

The French lobster case study revealed that whether European lobster and American lobster operate in the same market depends on the quality of the lobster (lower grade lobster being sold in the same market) and also on the perception of individuals. While UK lobster become extra-EU imports, this trade flow was found to have no significant impact on French SSCF prices.

The Spanish octopus case study revealed that imports of Moroccan octopus and Spanish SSCF production are only loosely integrated. This may be due in part to different product stages as a share of Moroccan octopus imports are sold frozen whereas Spanish SSCF production is sold fresh.

The statistical analysis for the ten other cases revealed even less market integration than the case study examples, most often finding loose market integration, but with findings differing on a case-by-case basis and nuanced by issues such as intra-EU trade. Despite being a highly traded global product, it appears that the local still matters in EU fisheries.

These important findings at a granular level point towards a case-specific understanding of seafood markets and point away from generalised conclusions at the EU or the MS level. The impact of seafood imports on the many SSCF fisheries not covered in this study is therefore ambiguous and drawing any conclusions total impact of imports on EU fisheries is thus highly uncertain and is not advised.

The study findings also highlight the importance of non-trade impacts on price determination for the EU SSCF. Other influences, such as policies and institutions, may have a significant role to play in these markets, and, importantly, there may still be scope for impactful SSCF market strategies despite the increase in seafood trade.

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