Analysis of price transmission and market power in the European seafood value chain

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T.4.1: Description of the seafood value chain

T.4.2: Analysis of price transmission and market power

T.4.3: Analyse the effect of margins of processors-traders on fish and seafood producers’ incomes and margins

T.4.4: Analyse the economic impact of transparency, (CSR), and industry requirements on seafood producers
Due to growing social and economic concerns about the breakdown of the value added in food value chains (Bjorndal et al, 2014), price transmission has received increasing attention in the scientific field in recent years.

Furthermore, seafood sector in the EU faces various constraints that include:

- **Increasing supply in fully developed markets**
- **Effects of financial crises** in many consumer countries
- **Difficulties of negotiating with concentrated retailers**

Research goals

- Analyse **market delimitation and price transmission from the primary sector to the retail stage** in selected seafood value chains.

- Scrutinise the **influence of international trade on domestic prices formation** for different intra and extra EU trade flows and domestic markets of seafood commodities.

- Identification of **asymmetries in the transmission of prices and market powers in the seafood value chains**

It is possible to study **price integration** by analyzing **price linkages**

The price integration analysis has been used in various research applications in the field of fisheries markets:


- **Different products/producers → Market integration → Horizontal price integration** (Nielsen (2004); Asche et al. (2005); Nielsen et al. (2007); Asche et al. (2007); Vinuya (2007); Nielsen et al. (2009); Jimenez-Toribio et al. (2010a); Asche et al. (2012); Rodriguez et al. (2013) Schrobback et al. (2014), Fernández-Polanco and Llorente (2015) Blomquist (2015), García-Enríquez et al. (2017)).

Given the non-stationary nature of most of the price series, the statistical method used to study the relationships among these is the **cointegration analysis**.

**Co-integration analysis requires non-stationary price series data and univariate unit root (nonstationary) test can indicate the stationary properties of the data** (Norma Lopez et al. 2014).

The **Augmented Dickey-Fuller (ADF)** test (Dickey & Fuller, 1979; 1981) is used to test the time series properties of the data (non-stationarity).

When the price series are non-stationary the **Johansen test** (Johansen, 1991) is the natural approach (Asche et al. 2007).

Also **weak exogeneity** and **Granger causality** tests are applied to understand price leadership and price transmission.

Materials and Methods

Literature review
Data Collection

Statistical Analysis

Discussion
- Industrial partners
- Stakeholders
- Partners

Dissemination
- Deliverable
- Social media
- Conferences
- Web
- Scientific Papers
- Non-Scientific Papers

Materials and Methods

Whitefish CS
- Fresh hake in Spain
- Fresh cod in France
- Fresh cod in UK
- Frozen hake in Spain

Salmonids CS
- Smoked salmonids in France
- Smoked salmonids in Spain
- Fresh salmon in Spain
- Fresh trout in Italy
- Fresh salmon in Finland

Coastal Fisheries CS
- Scallops in France
- Scallops in UK

Mussel CS
- Fresh mussel in France
- Fresh mussel in Spain
- Fresh mussel in Italy

Flatfish CS
- Turbot value chain (Spain/UK/Netherlands)
- Sole in Italy
- Sole in France

Seabream/Seabass CS
- Seabass in France
- Seabass in Italy
- Seabass in Greece
- Seabream in Greece
- Seabream in Italy
- Seabream in Spain

32 CASES
10 SPECIES
5 PRODUCTS
Cases with independent prices

Cases with price integration

The cases in which price integration were found can be classified in three main categories according to the levels of the value chain analysed and the number of countries involved.

- 1. Price transmission in domestic value chain cover the relations across prices in different levels of the value chain within one country.
- 2. Cases which include price series from different countries in models of international trade.
- 3. Models tested in a single level of the value chain for different products, looking for competitive links across the products.

Sample size could be behind the lack of integration in France and Italy for value chains in which vertical or horizontal integration have been found in other countries.

The diversity of species and harvest procedures allows explaining the lack of association across the price series of the different countries from where the frozen hake is imported into the Spanish market.

The models tested for the fresh cod value chain in Spain (focused in international trade) differs from those in France and the UK (focused in the domestic value chain). The connection of import with retail prices, significant in the case of Spain, was rejected for France and the UK.

In the case of sole, exvessel prices of France and Italy have been confronted with imports and retail. The differentiation between industrial fleets imports and national small scale catches allows explaining the lack of integration across the price series in both cases.

Lack of integration was found also across the prices of turbot exports from Portugal, mainly farmed turbot, and the exvessel prices of wild turbot in Spain and the UK.

Trout price series were found to be independent in France and Spain.
Seabream & Seabass
Significant results in price integration were found for seabream in Spain and Italy and Greece. The three countries provide examples of vertical and horizontal integration.

Mussel
Vertical integration was found in the value chain of fresh mussels in Spain. Upstream price transmission in which the exfarm price is being affected by wholesale prices and transferred to exports, but not to the retail place. This result is consistent with the fact of a highly fragmented harvesting industry and a much more concentrated processing industry.

Whitefish
Price transmission in the Spanish market of fresh hake works downstream. The prices of fresh hake at the wholesale and retail levels change according to previous changer in the Ex-vessel price of domestic catches, and have no connection at all with the price of imports. In the case of frozen fillets, retail prices are reciprocally connected with the prices of imports according to the country of origin.

Salmonids
The value chain of salmon provides an example of downstream price transmission which stands in France and Spain both for fresh and smoked products. Import price is transferred to wholesale and retail so any change in the prices at the starting point of the value chain will reach final consumers.
**Seabream & Seabass**
Seabream imports from Turkey into the Spanish market are leading the changes in the price of domestic production and imports from Greece.

**Mussel**
Fresh Spanish mussels in the French market were found not to affect the price of French mussels at the retail price.

**Whitefish**
Frozen whole hake imports to Spain are differentiated by country due to the variety of species and technologies of fishing and processing. In contrast, imported frozen fillets of hake operate in a delimitated market and their prices are related each other. Downstream price transmission was found in the value chain of imported fresh cod into the Spanish market from Norway using Denmark as point of entry into the EU.

**Flatfish**
Exvessel prices of turbot in Spain and the UK are related, but differentiated from Portuguese exports, mainly farmed turbot, and the Netherlands. These result reveals differentiation across productive industries.
The cases for **seabream**, **mussel**, **whitefish** and **flatfish** were covered and explained in the previous group, since they cover international value chains and horizontal integration was already tested.

The new models involve **substitution across seabass and seabream in the Greek market** and **across Norwegian, Scottish and Organic or quality certified salmon in the French wholesale market**.

The main results are as follows:

- **Seabass and seabream do not substitute each other in the Greek market.**

- **Norwegian product leads the changes in prices of Scottish and other labelled products in the wholesale market of fresh and smoked salmon in France.**
Thank you!


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