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Sea bream price integration along value chain in Spain

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Spanish wholesalers could exercise a degree of negotiation

In Spain, all levels of the sea bream value chain adjusted their prices to changes in the wholesale level, whether for domestic or imported fish.

Sea bream aquaculture in the Mediterranean Sea faces various constraints that include increasing supply in fully developed markets, the effects of financial crises in many consumer countries and the difficulties of negotiating with concentrated retailers. These constraints have raised interest in analyzing the ways in which prices are set in the international market and along the value chain.

Horizontal price integration allows identification of who exerts price leadership in markets, while vertical integration informs about the transmission of prices across value chain levels and potential issues of market power. The authors studied the value chain for sea bream in Spain as it relates to competition between different producing countries and its impact on the prices of local traders.

Study setup

The prices for sea bream at ex-farm, wholesale and retail levels have been collected weekly for sea bream from 2009 to 2013 by Spain's Ministry of Agriculture and Food through the Observatory of Food. Prices for Spain's imports from Greece and Turkey were obtained from the European Commission's Eurostat trade database.

Integration among the price series was analyzed using the Johansen test, a procedure for testing co-integration of several time series. The limited sample size of the available data did not allow conducting a single model. Instead, two separate models were used to illustrate horizontal and vertical price integration.

The first model studied price competition among Greece, Turkey and Spain, the three largest producers of sea bream. A second model studied transmission across ex-farm, wholesale and retail prices. One limitation of this partial analysis and the sample size was that results were conclusive for rejecting issues of market power, but could not conclude whether any agent in the value chain was acting like a cartel.

Results

The model involving the prices of imports from Greece and Turkey and the Spanish ex-farm prices resulted in one co-integrating vector (Table 1). This implicated that the three origins compete in the same undifferentiated market. Subsequent tests indicated that Greek prices were endogenous, meaning that price changes for Greek sea bream followed the rest of the market changes and were caused by the prices of Turkey and Spain.

Polanco, Price integration, Table 1

Rank	Eigenvalue	Trace	P Value	L-max	P Value
0	0.505	59.503	0***	33.800	0.002***
1	0.351	25.703	0.050*	20.791	0.028**
2	0.097	4.911	0.615	4.911	0.617

Table 1. Price integration across Greece, Turkey and Spain.

The prices of Turkish imports and domestic Spanish ex-farm product were related to each other, with Turkey acting as price leader. However, Spanish prices were found to be exogenous, caused by variables not included in the model, such as long-term contracts with local retailers or other institutions.

Ultimately, changes in the prices of any of the three competitors were replicated by the other two in a perfectly delineated market.

The model assessing price transmission along the Spanish value chain also found one co-integrating vector (Table 2). In this case, it confirmed that shifts in ex-farm price reached the retail level, suggesting that no actors exerted definitive market power. Furthermore, ex-farm and retail prices were found to be endogenous, and can be explained by the links among them and the wholesale level. The prices at the wholesale level, instead, were exogenous and affected by causes not included in this model. Domestic ex-farm prices were related to retail prices, but they did not seem to affect wholesale prices.

Polanco, Price integration, Table 2

Rank	Eigenvalue	Trace	P Value	L-max	P Value
0	0.783	101.36	0***	73.553	0***
1	0.439	27.809	0***	27.805	0***
2	0.004	0.003	0.975	0.003	0.975

Table 2. Price integration across ex-farm, wholesale and retail prices in Spain.

To clarify the relationships among the different price series, paired causation tests were performed crossing domestic and import prices. When the prices of Turkish imports were substituted for domestic ex-farm prices, one co-integrating vector was found (Table 3). Once again, wholesale prices were exogenous, affecting both Turkish and retail prices. This meant that Turkish exporters were adopting the prices of Spanish wholesalers, and Spanish retailers adapted their prices as the wholesale price changed.

Polanco, Price integration, Table 3

Rank	Eigenvalue	Trace	P Value	L-max	P Value
0	0.640	96.167	0***	49.130	0***
1	0.556	47.037	0***	39.052	0***
2	0.153	7.985	0.260	7.985	0.260

Table 3. Price integration across Turkish imports, wholesale and retail prices in Spain.

Perspectives

The ex-farm prices of sea bream in Spain are partially affected by international competition led by Turkish imports and by the prices set by wholesalers. Despite this, there is still a place for negotiation and trade agreements, as well as the possibility of effective differentiation, since a significant part of their variation is not explained by international competitors.

Spanish farmers' prices also interact with the retail level in a bidirectional relation indicating perfect price transmission between agents. Retailers accommodate the prices of sea bream according to changes in farmers' costs, and also respond to the levels of consumer demand. No evidence was found that retailers exerted power over farmers has been found, or that farmers behaved as a cartel.

While the results in assessing the exercise of market power at any level of the value chain were not conclusive, there was evidence that Spanish wholesalers could exercise a degree of negotiation. While totally independent of the behavior of the other actors, wholesale prices for sea bream affected all other observed prices. All levels of the value chain adjusted their prices to changes in the wholesale level, whether for domestic or imported sea bream.

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