

Extended Abstract

Please do not add your name or affiliation

Paper Title	An analysis of the household demand for fish and seafood in Great Britain
--------------------	--

Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	200 words max
<p>Though seafood is high in nutrients that provide a range of health benefits, most people in Great Britain only eat around half the amount of seafood recommended by health professionals. Therefore, this study aims to analyse the consumers' demand for fish and seafood in Great Britain. The data used in the analysis comes from a home-scanner dataset for Great Britain, which contains weekly data on food and drink purchases for consumption at home, covering the period 2013-2021. The demand was estimated using the Rotterdam model. Price and income elasticities were computed for eleven fish and seafood categories across seven household groups: pre-family, young family, middle family, older family, older dependents, empty nests, and retired family. Our analysis reveals that families with children consistently allocate a lower share of their grocery spending to fish and seafood consumption compared to households without children. Canned oily fish and frozen processed fish products emerge as popular choices across diverse household groups. Most household groups show a higher responsiveness to changes in prices for chilled fresh/smoked fish products compared to frozen fish items. However, across all household groups, the demand for the majority of fish products is inelastic in terms of their own price changes.</p>	
Keywords	Fish and seafood consumption, Great Britain, Household groups, Rotterdam model, Demand elasticities
JEL Code	D12 see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	100 – 250 words
<p>Seafood is an important source of lean protein, omega-3 fatty acids, vitamins, and minerals. Greenhouse gas emissions linked to fish production are significantly lower than those related to red meat and pork production. The United Kingdom (UK) is a significant producer of fish and seafood. However, because consumption patterns do not align with production, the country is also a net importer. Most people in the UK only eat around half the amount of seafood recommendation. The decline in UK seafood consumption is primarily attributed to a 25 per cent reduction in retail purchases over the past decade, resulting in approximately \$7.7 billion lost in retail seafood sales. Yet, only a very few empirical studies can be found in the literature that estimate the demand for fish in the UK.</p> <p>This study analyses the consumer demand for fish in Great Britain (GB) using time-series data and employing the Rotterdam model. In a departure from the previous studies, this study compares the fish consumption patterns of different household groups (pre-family, young</p>	

family, middle family, older family, older dependents, empty nests, and retired family) which are classified based on the composition of the family. Because, the dynamics of family composition, such as the presence or absence of children and the life stage of family members, determine the selection of food, owing to the particularities in nutritional needs and food preferences.

Methodology

100 – 250 words

Data

The data used for this study were drawn from the Kantar Worldpanel dataset for Great Britain that contains weekly acquisition data of food and drink purchases for consumption at home for 12,492 households covering the period January 2013 to December 2021. Fish products were categorized into five main groups initially: canned, chilled fresh or smoked, chilled prepared, frozen fresh or smoked, and frozen processed. Each of these was then divided into four subgroups (oily, lean, shellfish, and other), resulting in a total of 20 fish subgroups. Some minor categories were aggregated to accommodate instances of zero consumption levels and ended up focusing on eleven fish categories.

Model specification

In this study, to estimate the expenditure and price elasticities, the Rotterdam model was used because it aligns with demand theory, exhibits excellent aggregated properties, can be interpreted as approximations to the true, unknown ones, and is characterized by simplicity, making it easy to estimate and interpret parameter values. The model also permits the incorporation of external factors influencing demand, either with or without imposing theoretical constraints. To address the seasonality in fish and seafood consumption, monthly dummy variables were included in the model. Testing of stationarity of the variables found no indication of it. We also tested for the homogeneity and symmetry of the demand theory hypotheses and found that they were consistent with the data. Therefore, the demand model was estimated using the Seemingly Unrelated Regression (SUR) procedure.

Results

100 – 250 words

Fish and seafood consumption patterns

Empty nest and retired groups buy larger quantities of fish, especially frozen processed fish, while younger families make more modest purchases. Chilled prepared oily, shellfish, & other show the highest annual consumption growth at 8.28 percent. When comparing the expenditure share of fish in families with children to those without children, a noticeable trend emerges. The families with children consistently allocate a relatively lower percentage of their total grocery expenditure to the whole fish group, ranging from 2.12 percent to 2.16 percent. In contrast, households without children tend to allocate a slightly higher percentage, ranging from 2.40 per cent to 3.23 per cent. Canned oily fish and frozen processed fish products dominate spending across all demographics.

Demand elasticities

Across the seven household groups, the demand for the chilled fresh/smoked oily is the most price-responsive, whereas the frozen fresh fish product group has the lowest price elasticity of demand. Most of the own-price elasticities are less than one in absolute values, indicating

the demand for most of the fish products is inelastic in response to price changes. The sign and magnitude of cross-price elasticities vary considerably across household groups, but not necessarily in any systematic pattern.

The findings show that all expenditure elasticities for all household groups are positive and significant implying their appeal and affordability in higher-income brackets. The varied expenditure elasticities for different product categories within family groups emphasize the nuanced nature of consumer choices.

Discussion and Conclusion

100 – 250 words

Families with children consistently spend a lower share on fish and seafood compared to households without children, indicating a systematic difference in how whole fish is prioritized among these family demographics, potentially influencing consumer preferences and behaviours in grocery expenditures. Most people prefer convenient options emphasizing the importance of timesaving in fish consumption. Every household category is more responsive to price changes for chilled fresh/smoked fish than frozen fish, likely due to perceived perishability. Longer shelf life and storage convenience with frozen fish result in lower sensitivity to price fluctuations, highlighting differences in price sensitivity between the two categories. Varied expenditure elasticities across family groups highlight complex consumer preferences.

This study contributes to the food demand literature by econometrically estimating the demand for a variety of fish products in different household groups in GB for the first time, and our findings have important policy and market implications. Recognizing the difference in spending patterns, policymakers could target support or promotions for whole fish among families with children. Educating and incentivizing these households may influence their purchasing behaviour. Fish businesses can diversify whole fish and seafood offerings to meet the preferences of families with and without children, enhancing market competitiveness through tailored product options and marketing. However, focusing on increasing fish demand only, in the absence of adequate increases in fish supply, will create pressure for fish prices to go up. It is therefore required to focus on sustainable production of fish where consumer demand exhibits elastic responses.