# The Future of Offline Retail Markets in Europe: A Structural Demand and Supply Modeling Approach

In recent decades, the Internet has revolutionized retail, with many industries increasingly operating through online platforms. As a result of this transformation, consumer shopping habits and business operations have undergone significant changes.

**E-Commerce enhancing consumer welfare and business efficiency:** E-commerce positively impacts consumer welfare. Traditional shopping barriers such as store hours and geographical limitations of product availability become irrelevant due to online sales. Consumers now have a vast choice of products at competitive prices and can shop anytime, anywhere. Consequently, for many, online shopping has become the preferred method for purchasing certain products and services.

For businesses, e-commerce is a tool for more effective marketing and product distribution. The Internet allows for more efficient communication with potential customers, thus reducing product search costs. Lower search costs generally increase the level of competition among sellers and manufacturers. Additionally, companies gain tools for product differentiation, as well as the ability to implement price discrimination and better interact with customers through targeted marketing and personalized services.

**Trends in offline retail and the impact of COVID-19:** The increasing reliance of consumers on online platforms raises questions about the future of traditional retail shops and the impact of this transition on consumer welfare, the distribution of profits between online and offline shops, and employment, especially in small, traditional retailers.

The COVID-19 pandemic has been a catalyst for the digital economy. In retail, the temporary closure of physical stores led many industries to shift to online platforms, resulting in significant changes in retail trends and strategies with consequences for traditional sales channels.

This research project aims to highlight these changes through empirical analysis using advanced economic models. Specifically, we will use detailed data on sales volumes and prices across various distribution channels for a range of refrigerators available in Belgium, France, Germany, and Poland from 2019 to 2022, including monthly details. These years cover the period before, during, and after the COVID-19 pandemic. Refrigerators, being large-sized products, are sold in both traditional and online stores. We have access to this valuable data through another project focusing on energy efficiency.

The data will be analyzed using the most advanced structural econometric models, enabling us to model customer and firm behaviors in the face of the temporary closure of traditional sales channels. The results of the proposed project will help understand the transformation of retail in the face of advancing digitization and the role played by the COVID-19 pandemic in this process.

We will also analyze changes in the market structure of brick-and-mortar retail in terms of number and location of shops selling refrigerators and other household appliances. It is important to understand how the increasing share of online sales impacts the number of brick-and-mortar outlets, and how COVID-19 pandemic contributed to this.

**Comparative international analysis in the EU context:** Trends in online retail can vary significantly between individual EU countries and within regions of a country. In this project, we will examine how factors such as internet infrastructure, availability of physical stores, and regional consumer preferences contribute to these differences. Additionally, for France and Germany, we will analyze data at the regional level to capture within-country differences in online retail.