Application to NBER
Digital Economics and AI Tutorial

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I am Francesco Gabriele, sixth-year Economics PhD candidate at University of Southern California in Los Angeles. My research interests focus on Empirical Industrial Organization with an emphasis on Digital Economics and Artificial Intelligence. My research agenda also covers topics of Experimental and Behavioral Economics, discrete-continuous choice models, causal inference and machine learning.

With the increasing importance of information technologies on online platforms, digital marketing has become an integral part of business strategies. Online marketers leverage AI and pricing techniques to target audience effectively. Concurrently, growing public concerns about fairness of commercial use of customer data have led to the introduction of new regulations aimed at preserving users' privacy by strengthening data protection obligations for digital businesses. Addressing the challenges faced by digital companies in implementing personalized strategies and the impact of personalization on customers, is essential to inform policy-making and contribute to the privacy debate.

My research agenda focuses on how information technology enables digital platforms to use consumers' data, and how such information asymmetries shape marketing strategies and economic outcomes. In particular, my work seeks to understand the role of artificial intelligence in pricing strategies and the welfare consequences of e-commerce retailers' power to price discriminate. A characteristic innovation of my research approach consists in combining randomized field experiments and structural models, with causal inference tools and machine learning techniques.

Research Interest in Digital Economics and Artificial Intelligence

In my job market paper "The Welfare Effects of Behavior-based Price Discrimination in E-commerce", I study the welfare implications of price discrimination on e-commerce platforms. This paper develops a structural model of consumer demand and a pricing policy model to quantify the welfare effects of behavior-based price discrimination. Using data from a randomized controlled experiment on a cosmetics e-commerce site, the structural estimation reveals elastic demand to price discount treatments. With nonparametric estimation via machine learning, the counterfactual analysis tests different pricing algorithms and counterfactual simulations demonstrate that behavior-based personalized discounts lead to a welfare improvement for both the monopolist and its customers. I show that an e-commerce with monopolistic access to users' online history, adopts behavior-based price discrimination as a demand segregation mechanism. Personalized price discrimination increases e-commerce profit by 24% and

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consumer surplus by 4%, compared to a uniform price benchmark. Furthermore, past purchase history is informative for the monopolistic firm, since implementing behavior-based price discrimination improves the producer welfare by an additional 11%. While consumer surplus rises with personalized pricing, price discrimination based on consumer purchase histories seems not to harm returning customers. By presenting a novel definition behavior-based price discrimination and contributing to the empirical literature, the paper provides an original perspective in the current public policy debate regarding e-commerce pricing strategies.

I am very interested in attending the NBER Digital Economics and AI Tutorial next February. In recent years, artificial intelligence has proven to be a disruptive economic event, capable of revolutionizing many aspects of our world, including research. I am eager to learn more and gain new ideas and insights in order to enrich my research agenda. Also, my job market paper exploits machine learning, a field of artificial intelligence, to implement counterfactual analysis. By researching on these new techniques, I deepened my understanding of the challenges that ML and AI pose to a new generation of economists and how these will affect the Industrial Organization field. Thus, I believe that my research interests are very similar to the topic covered this year at NBER Digital Economics and AI Tutorial.

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