Charles Gauthier

Research

My research contributes to the understanding of the consumer behavior by testing economic models and estimating structural parameters capable of explaining choices. My research draws tools from revealed preference and partial identification to interpret observed choices in a new light and give guidance for policy-making. The partial identification paradigm naturally complements standard revealed preference analysis by providing a statistical framework that can be used in models involving shape constraints. My research applies these tools to nonparametric and semiparametric models in both observational and experimental data sets. The application of a revealed preference analysis to original applications sometimes require methodological developments.

In Gauthier (2020), I am interested in set estimating the discount factor in the exponential discounting model. The discount factor is important for understanding intertemporal choices and appears in countless empirical applications. In Gauthier (2021), I turn my attention to the elasticity of price with respect to shopping intensity in a general model of price search. This parameter quantifies the effect of shopping intensity on prices paid and has implications for understanding consumption inequality. In a joint working paper, I am interested in risk-aversion which is crucial for decision-making under uncertainty such as in health economics and finance. In each of these studies, much consideration is given to the validity of the models to justify inferences drawn from them.

Price Search and Consumption Inequality: Robust, Credible and Valid Inference

The steady rise in income inequality has attracted much attention in the recent years. However, economics rather advocates to focus on consumption inequality as consumers are generally thought to derive utility from consumption. Using panel data on shopping expenditures from the Nielsen Homescan Dataset, I document that low-income consumers pay lower prices than high-income consumers and that both income groups have comparable food consumption levels. I investigate whether these facts are explained by heterogeneity in price search, the process by which consumers affect their own prices paid by taking advantage of coupons, deals, and price variations across stores. I propose a model where consumers can pay lower prices by shopping more frequently. The impacts of shopping frequency on prices paid depend on the consumer shopping technology. I develop a revealed preference methodology to set identify the shopping technology in a computationally tractable fashion. My approach allows for nonparametric concave preferences, rich heterogeneity, and measurement error in prices. To ensure the validity of the model, I statistically test its assumptions in the data. I show that the data are consistent with the model and that a doubling of shopping frequency decreases prices paid by about 19%. Furthermore, I show that heterogeneity in price search mitigates between-group consumption inequality by almost 15% for a fraction of consumers and creates within-group consumption inequality by the same order of magnitude. My results show that price search explains part of the gap in prices paid between income groups and highlight the importance of price search for understanding consumption inequality.

Robust Inference on Discount Factors

The exponential discounting model is a predominant tool for analyzing dynamic choice in applied work. Its attractiveness rests in that time preferences are summarized by a single parame-

ter—the discount factor. This allows one to tractably analyze a decision maker's intertemporal choices, which is crucial in a vast range of applications. Accordingly, many studies have tried to recover its key time parameter. However, a common feature in this literature is the specification of the consumer's preferences. This constitutes a potentially important limitation as erroneously specifying preferences may lead to spurious estimates of the discount factor. As such, this paper provides set estimates of individual-specific discount factors by using the concavity of the utility function without relying on parametric assumptions. Furthermore, I develop a novel methodology that allows me to evaluate the sensitivity of discounts factors with respect to measurement error in variables. Given observations on prices and demands from a checkout scanner panel data set, I find that accounting for unobserved individual heterogeneity is important as observable characteristics fail to capture differences in discounting.

Choice under Uncertainty: Expected Utility and Risk Aversion

Risk aversion is the tendency of individuals to prefer payoffs with low uncertainty to those with high uncertainty. This feature is usually captured by a constant relative risk aversion (CRRA) utility function. Further, individuals are generally assumed to gauge the value of a payoff by the expected utility it provides. However, the equity premium puzzle documents that such assumptions yield a risk aversion parameter that cannot simultaneously explain high returns on equity and low returns on the risk-free asset observed in the data. Using data from a large-scale experiment, this joint project aims to provide new insights into the reasons for the equity premium puzzle by using a novel econometric methodology.

Future Work

In the next years, I plan to explore whether the rejection of price search behavior in households is due to preference and search heterogeneity among individuals within the household. The development of a framework that accounts for this type of heterogeneity is important to quantify the impacts of search on households and understand the implications of search on consumption inequality for this segment of the population. In a different line of research, I plan to provide a new test for instrument validity that is applicable in general settings. Since instrumental variable (IV) does not always have empirical content, this project will also look for conditions that guarantee the refutability of IV. The usefulness of this test will be assessed by verifying the validity of various instruments in applications of interest. Finally, I also intend on using and extending some of the tools employed in my research for the nonparametric estimation of production functions.