

**The Opacity of Search Markets:
Discrete Choices with (and without) Ordered Search**

I analyze search markets where the choices of firms (e.g. prices) may or may not be observed by consumers prior to search. First, I constructively prove that, for any classic discrete-choice model, there exist ordered search models that generate the same demands and expected consumer payoffs. Therefore, if consumers correctly anticipate the choices of firms, the family of ordered search models and the family of classic discrete-choice models are equivalent models for describing the selections of consumers. For individual consumer-firm pairs, the pairing is transparent if the choice of the firm is known to the consumer prior to search and opaque if not. Search markets are fully transparent if all pairings are transparent, fully opaque if no pairings are transparent and partially opaque if a positive measure of pairings are transparent and a positive measure are opaque. Regardless of the opacity of a market, the demand-side equivalence between classic discrete choice and ordered search holds in equilibrium. However, a firm's incentive to raise prices is increasing in the firm's relative opacity to consumers. In search markets with strategic complementarities, if one or more firms face increased opacity, all equilibrium prices increase. Moreover, partially (or fully) opaque markets with price competition may generate prices above the cartel pricing of firms in the equivalent fully transparent market. If an ordered search market is incorrectly modeled with the equivalent classic discrete-choice model, empirical estimates of firm profit margins and theoretical predictions of market prices correspond to the lower bound defined by full transparency. For datasets that include information about aggregate (or individual) search and selection, I outline an identification strategy that can be implemented to partially identify the underlying supply-side parameters of the search market.

In my second paper, I endogenize transparency in search markets and extend ordered search to include search over a network. Through the lens of the search model, I analyze markets where firms choose prices for products or locations on the network. In markets where consumers are able to pay for transparency prior to firm pricing, paying for transparency is analogous to contributing to a public good because prices decrease for all consumers in the market. If platforms control market transparency, platforms will adjust transparency to maximize total platform fees. Thus, the platform's optimal choice depends on the fee structure where a platform will impose transparency if the platform's incentives align with consumers. If firms simultaneously choose locations and transparency, a firm will never advertise in equilibrium because consumers correctly anticipate locations. However, lower transparency costs serve as a refinement over the set of possible equilibria because firms can inform consumers about location deviations by paying for transparency.

JEL Codes: D43, D83, L13.

Keywords: Ordered Search; Discrete Choice; Partial Identification;