Assignment Protocols with Informational Frictions

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Extended abstract:

We compare procedures for matching workers with employers, papers with journals, etc., in environments where there is uncertainty ex ante about the qualities of the workers (or papers), where the efficient assignment would match higher-quality workers (papers) with higher-quality employers (journals), and where different assignment protocols generate and use different noisy information. We first demonstrate the advantages of the supermodular stochastic ordering (Meyer and Strulovici, 2015) as a tool for ranking assignment protocols in the presence of frictions.

We then focus on three very stylized assignment protocols. The centralized `one-shot' procedure assigns the workers to firms assortatively based on a single noisy sample of observations on all of the workers. In the `top-down' procedure, the best firm samples all of the workers and chooses one on the basis of its sample; then the second best firm resamples the remaining workers, chooses one based only on its own observations; and so on, until all workers are matched with a different firm. In the `bottom-up' procedure, sampling begins at the second worst firm and continues with the third worst, etc., with each firm eliminating one of the remaining workers from the set it is willing to accept, thus allocating that worker to the next-worst firm. The `top-down' and `bottom-up' procedures are approximate representations of the different sorting procedures used by economics and law journals, respectively.

Making minimal assumptions on the distribution of worker qualities, we show how the properties of the noise in observations determine the relative performance, according to the supermodular ordering, of the three protocols. Despite the much lower sampling cost of the `one-shot' procedure, we identify conditions where the `one-shot' procedure dominates the `top-down' procedure or the `bottom-up' procedure. We also show that the size and the asymmetry of the shocks to observed worker quality play a key role in the relative performance of the `top-down' and `bottom-up' procedures.