

Abstract

We study pairwise exchange of endowments without monetary transfers on the dichotomous preference domain. This setting is motivated by applications such as living donor kidney exchange, where only pairwise exchanges are feasible due to logistical or medical constraints, and agents express binary preferences over allocations. Another example arises in two-sided platforms for employee-employer matching, where employers consider employees acceptable if they possess specific skills required for a task, while employees evaluate potential employers based on whether the offered salary exceeds their minimum acceptable level and on practical constraints such as location or working hours. These factors give rise to dichotomous preferences over potential matches.

While in the classical strict preference domain no mechanism can simultaneously satisfy efficiency, incentive compatibility, and individual rationality under pairwise exchange constraints, these three desiderata are jointly satisfiable on the dichotomous preference domain. We provide the first characterization of mechanisms satisfying these properties in this setting. We show that the combination of efficiency, incentive compatibility, individual rationality, consistency, and respect for improvement tightly characterizes a class of mechanisms. We also argue that consistency may have a natural and practically meaningful interpretation in the context of donor exchange, where transplantation operations are performed sequentially after a match is determined.