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Comunicaciones de Teoría de Juegos

Obvious Manipulations in Many-to-One Matching with and without Contracts

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In the two-sided many-to-one matching model with contracts, there is a bilateral market whose disjoint sides are typically referred to as doctors and hospitals. The problem consists of assigning agents from one side of the market to agents on the opposite side, through some contracts. In the studied many-to-one model, each doctor can sign one contract at most, whereas the hospitals can sign multiple contracts. Since two agents wishing to sign an existing contract are free to do it, and also the agents can unilaterally terminate previous contracts if they find it convenient, we will consider stable allocations, i.e., outcomes that are sustainable over time, supposing the market remains unchanged.

In addition to stability, the non-manipulability of a matching rule also has a central role in two-sided matching literature. An agent manipulates a matching rule if there exists a situation in which it obtains a better result for him declaring an alternative preference to his true one. In the many-to-one matching model (with and without contracts) and substitutable preferences, any stable matching will be susceptible to manipulations. Given that manipulations can not be completely avoided in this context we look for stable matching rules that at least prevent obvious manipulations, as these are defined by Troyan and Morrill (2020). A manipulation is .^obviousïf it is much easier for agents to recognize and execute successfully than others in a specific and formal sense.

Our first result states that the D-optimal matching rule is not obviously manipulable (for doctors) in the general context of a many-to-one matching model with contracts and substitutable preferences for hospitals. Hence, although there are no matching rules that are non-manipulable at least there is a matching rule that is non-obviously manipulable in such context. Surprisingly we show that the opposite result holds for the H-optimal matching rule which turns out to be obviously manipulable even in the particular context of a one-to-one matching model with contracts. This result is surprising because it reveals a substantial difference between the models with and without contracts from the point of view of the strategic behavior of agents. Finally, we prove that the H-optimal matching rule is not obviously manipulable in the context of the many-to-one classical matching model without contracts and substitutable preferences for hospitals.