

Abstract:

In school choice, "quota" or "capacity" is an important element since it determines feasible matchings, however it is usually assumed to be exogenous thus is treated as a primitive. Given a set of potentially implementable quota distributions, which quotas are optimal for students, in a sense that it assures stable matchings which are not Pareto dominated by any other stable matching at any implementable quota distribution? There does not exist such an optimal quota distribution since students' preferences are ex ante unknown and optimal quota distributions vary depending on preferences realized. The problem presents a new challenge of designing a matching mechanism. We propose a novel matching mechanism, quota adjustment process (QAP), which finds an optimal quota distribution which guarantees a student-optimal stable matching among all implementable quota distributions in polynomial time. We conclude that changing the notion of quota which is used to be fixed to the one flexible will unanimously improve students' welfare in school choice.

As a featuring real practice, the University of Tsukuba in Japan faced such a problem in the process of admission reform, and we were requested to advise how to design a matching mechanism. The QAP we introduced in this paper was officially approved, and will be implemented at University of Tsukuba from 2022 on.