

Breaking ties in school choice: Specialized Schools and Walk-Zones

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Abstract

We study school choice problems with indifferences in priority orders and provide necessary and sufficient conditions for the existence of a *strategyproof* and *student optimal stable matching*, or *constrained efficient*, mechanism. As a first step, we analyze the case in which no school can admit more than one applicant, and schools are either *specialized*, i.e., have a strict priority ranking of all applicants, or *non-specialized*, i.e., all applicants have equal priority. We show that a strategy-proof and constrained efficient mechanism exists if and only if there are no *unsolvable four-way ties*. The proof of existence is constructive and uses a deferred acceptance algorithm with preference based tie-breaking. The characterization result is then extended to general school choice environments and we discuss the relation to previous works by Ergin (Econometrica, 2002), Erdil and Ergin (American Economic Review, 2008), and Roth et al (American Economic Review, forthcoming).

In the second part of the paper, we study the case where a student's priority for a school is, among potentially some other factors, determined by whether she lives in the *walk-zone* of the school or not. For such environments, we show that our tie-breaking procedure can sometimes be used to achieve strategy-proofness and constrained efficiency if participants' preferences for a school are correlated with their distance from it.

Keywords: Strategy-Proofness, School Choice, Equal Priority.

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