

"Examining the Effects of Outside Options on Matching Outcomes in the DA Mechanism: An Experimental Approach"

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In countries with partially or fully centralized admission systems, many higher education applicants have access to options outside the centralized system, also known as off-platform or off-system options. While these outside options may not be as desirable as the top choices within the system, some may rank highly in applicants' preferences. For instance, educational programs at private universities can provide high-quality education comparable to, or even exceeding, the top-quality programs at the in-system state institutions.

The impact of outside options on the functioning of centralized admission systems has not been extensively examined. This paper aims to investigate how the availability of outside options for some applicants influences the strategies adopted by all participants in a centralized university admission system that utilizes the Gale-Shapley or deferred acceptance (DA) algorithm. The outside option is assumed to be both desirable, ranking just below the top choice among the in-system options, and to have lower admissions criteria than the most desirable in-system options. These are common features of private educational programs that aim to provide quality education, but recruit from a smaller pool of applicants from higher-income families.¹

In this study I construct and conduct an experiment to investigate how the availability of outside options for some applicants affects the decision-making of all participants in a centralized admission system that employs the DA mechanism. Two scenarios are considered: 1) when the length of ranked ordered lists (ROLs) is unconstrained, and 2) when the length of ROLs is constrained. For each of these cases, the analysis examines whether integrating the outside option into the centralized admissions system influences the decisions of applicants, as well as the characteristics of the resulting matchings.

The main findings can be summarized as follows. First, when the ROL length is not constrained and the outside option is not integrated into the centralized system, the availability of the outside option for some applicants does not significantly distort the decisions and matching outcomes of the participants.

Second, when the length of ROLs is constrained and the outside option is not integrated into the admission system, participants without access to the outside option adopt a more cautious strategy compared to participants with such access and are less inclined to truthfully list their top-ranked choice. Consequently, they are less likely to be allocated their first choice and are more likely to be undermatched.

¹ Some admission systems have places in the same educational programs that can be either in-system or outside options. For example, in Kazakhstan, tuition-free places in academic programs are distributed through the centralized mechanism, while full-tuition places in the same programs are also available, with lower admission requirements and a separate application process. The latter places can be viewed as outside options to the tuition-free places.

In Russia, admissions to educational programs are centralized within each university. Each university is required to distribute the tuition-free, state-sponsored places via the DA mechanism, but they have a separate admission process for the full-tuition places in the same programs, which tend to have lower admission requirements.

This finding suggests that if the preferred option is a tuition-free place in an educational program, while the outside option is a full-tuition place in the same or a similar program, applicants with higher incomes who can afford the tuition fees are more likely to be assigned to the tuition-free places compared to equally qualified applicants who lack the financial resources. This undesirable outcome occurs if the tuition-covering scholarship is merit-based, making admissions for the tuition-free places more competitive.

The first two results align with theoretical predictions, while the next one does not.

Third, contrary to the model's predictions, integrating outside options into the system significantly alters the strategies of participants and the resulting matching outcomes, even if the aftermarket is frictionless. When ROLs are unconstrained, this is due to the somewhat higher truth-telling rates of participants without the outside option. However, when ROLs are constrained in length, it is because many participants with access to the outside option make sub-optimal decisions, prioritizing the safer outside option due to a bias similar to the "district school bias".

When the ROLs are constrained in length, the integration of outside options into the centralized system leads to matchings that are less stable and more egalitarian. Specifically, participants with and without outside options have more comparable undermatching rates and probabilities of receiving their top choice.

The primary conclusion of this study is that the availability of outside options for some applicants affects the decisions of all participants and the resulting matching outcomes in the DA mechanism. The recommendation to integrate the outside options as much as possible into the centralized system should be carefully considered, particularly when the ROLs are constrained in length, as it may come at the cost of lower stability and higher undermatching rates for the participants with access to the outside options, but may also have equalizing effects, reducing the disparities between the matching outcomes of participants with and without such options.

A more straightforward policy recommendation to improve matching outcomes is to remove the restriction on the length of ROLs. When outside options are available to some applicants, even if they are not integrated into the system, eliminating the constraint on the ROL length leads to higher stability and lower undermatching rates for applicants without outside options compared to when the ROL length is constrained.