Comment on the NRMP's "Supplemental Offer and Acceptance Program" Proposed to Replace the Post-Match Scramble

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Executive Summary

Historic precedent and economic principles suggest that the Supplemental Offer and Acceptance Program (SOAP) proposed for the NRMP Scramble will lead to unsatisfactory outcomes by forcing participants to make unnecessarily difficult decisions and giving them strong incentives to break the rules laid out in the SOAP proposal. We suggest, as an alternative Scramble mechanism, that the NRMP run a "Second Match" for the Scramble participants using rules similar to those of the Main Match.

The SOAP Proposal

The SOAP proposal calls for up to eight rounds in which programs may make take-it-or-leave-it offers to applicants. During each round, programs send offers to applicants at the beginning of the round; no further offers may be made until the round is completed. At the end of each round, all current offers expire; hence applicants must decide whether to accept an offer without knowledge of which offers may be received in later rounds. In short, SOAP institutionalizes so-called *exploding offers*, that is, offers which are only valid for a fixed period, after which they "explode."

Implementing the current SOAP plan would create an orderly channel for exploding offers, thereby limiting the split-second decision-making faced in an unregulated scramble. However, we believe the use of even organized exploding offers will cause participants to have to make needlessly difficult decisions, and will give them incentives to try to circumvent some of the SOAP guidelines.

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We believe this may prevent Scramble participants from achieving job market outcomes as favorable as those they could receive under a differently-organized aftermarket.

Problems with the Use of Exploding Offers

In the proposed SOAP mechanism, applicants who receive an offer will have to make an accept/reject decision without knowing if better offers will come in future rounds. Since applicants will be unaware of the future offers they might receive, an applicant may, for example, accept an offer from her fifth-ranked residency in the first round, even if her favorite program would have made her an offer in a subsequent round. Hence, in this example, although the applicant and her favorite program share a mutual desire to match with each other, this match will never be made.

In the terminology of economics, the example above implies that the SOAP will lead to outcomes that are *unstable* (Gale and Shapley, 1962). In a study of the various mechanisms used to place applicants into residency programs, Roth (1991) showed that those mechanisms which systematically produced unstable outcomes often did not survive. In particular, in regions that used mechanisms that produced unstable outcomes, a critical mass of participants chose to circumvent the mechanism, opting instead to be matched outside of the official system.

Just like applicants, programs too will have insufficient information to make good decisions. In particular, a program will likely hesitate to simply make an offer to its most-preferred applicant. If it did, and that applicant rejected the offer, the program may be harshly punished: many good candidates will have accepted first-round exploding offers and hence will be unavailable by the second round. This will lead programs to strategically guess (and, as we describe below, solicit information about) which applicants are likely to accept offers made in the first round. If a program guesses too optimistically, that program faces the same problem as a program that makes any overly optimistic first round offer: its most preferred willing applicants may no longer be available by the second round. Importantly, some of the passed-over applicants may well have preferred to match with the program, but instead will have locked in first-round offers (since they faced difficult take-it-or-leave decisions). These mutually beneficial matches will never be made. Moreover, when some programs strategically make offers to applicants who are likely to accept in the first round, this creates further incentives for other programs to do the same (Roth and Xing, 1997), exacerbating the problem described.

Additional Strategic Concerns

Because of this urgency of matching in the first SOAP period, we anticipate strategic and potentially harmful applicant-program communications during the "time-out period." We expect programs to solicit information about whether applicants are likely to accept offers, and may furthermore attempt to extract promises that a first round offer will be accepted. In turn, applicants will try to persuade programs that they will indeed accept first round offers. Both theoretical (Coles et al., 2010) and historic (Roth and Xing, 1997) evidence predict this behavior.

Misrepresentation by both programs and applicants may lead programs to make poor offer choices. For instance, programs may make offers to applicants who have indicated interest (possibly in response to inquiries from the program) but end up selecting another offer. Once again, poor strategic decisions by programs may lead to bad outcomes.

Out of fear that applicants will not accept first-round offers as promised, programs will have an incentive to try to coerce applicants into accepting *early* offers during the time-out period. One way to do this would be to make verbal contracts, with tacit or explicit threats that applicants not accept other offers during SOAP. Programs may also be able to work "within the system" to effectively make coercive offers during the time-out period. For example, they might instruct an applicant to withdraw from SOAP, verify that she has indeed done so, and then offer the applicant an "unfilled" position in the aftermarket.

An Alternative Proposal for the Scramble

The process used in the NRMP Main Match has been largely successful. We suggest that a similar process should be used in the NRMP Scramble as well. Using a "Second Match" to place residency applicants who were not placed during the Main Match would have many advantages. Just as in the Main Match, a Second Match would produce stable outcomes, be strategically simple for applicants, and ensure an efficient match of the Scramble participants. Furthermore, as the procedures of the Second Match would be analogous to those of the Main Match, participants would already be familiar with the process.

One possible concern with any Scramble matching mechanism is preference discovery: Can programs and applicants learn about each other in a limited time span? Many programs may be hesitant to hire residents without at least a phone interview in addition to the (easily gathered) information such as grades and letters of recommendation. The SOAP mechanism currently under

consideration exacerbates this concern, as a flurry of early offers may preclude opportunities to solicit information. However, if a Second Match is implemented, the programs will have an incentive to use the time to interview a large number of applicants, without necessarily seeking binding commitments—just as in the Main Match.

Another concern in adopting a Second Match is that it could inadvertently undermine the already successful Main Match by encouraging riskier rank-order-listing in the first match. That is, the existence of a successful Scramble mechanism may create incentives for programs and applicants to strategize in the Main Match by not listing low-ranked partners they would nevertheless find acceptable. Widespread submission of short lists could lead to fewer matches in the Main Match. Note first that if this were indeed a serious concern, it would be a concern for any successful Scramble mechanism. Fortunately, we have good reason to think that this concern is not relevant. Theoretical results by Kojima and Pathak (2009) and Coles (2009), and experimental results by Featherstone and Mayefsky (2010) suggest that programs and applicants are unlikely to "truncate" their Main Match rank-order lists.

A final concern with adopting a Second Match is that there may still be unmatched positions after the match is run. However, the number of such positions is likely to be very low for several reasons. With an updated list of available participants, each side will be better able to construct preference lists that reflect realistic possibilities for an eventual match. The experience of not matching will further encourage participants to conduct more interviews and create longer lists. Finally, since program positions have been in historically extremely short supply at this stage (9:1 ratio of applicants to positions), almost all programs will be able to fill their positions. As an extremely small number of unmatched programs should remain after a Second Match, it should be reasonable to allow those programs to match to applicants in an unregulated manner.

Conclusion

In our opinion, the proposed SOAP mechanism will tempt participants to try to employ coercive and strategic behavior, which will inhibit satisfactory outcomes. By contrast, we believe that a Second Match conducted among the Scramble participants will ensure an orderly and efficient matching of Scramble participants.

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