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## When Should a Platform Give People Fewer Choices and Charge More for Them?

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Existing economic wisdom offers unequivocal advice to managers seeking to establish new platform businesses: Invest to acquire users as quickly as possible and make sure that they have unrestricted access to each other. Since the value of participating in a platform often depends on the number of choices offered, a platform offering unrestricted access should quickly displace a platform that restricts choice. After all, Facebook would not stay around for very long if it amassed a large number of users, but would then only let them interact with a small number of others. It would be equally counterproductive for a game console to build a large user base, and ensure that a large selection of games exists, only to announce that every user can choose at most five games. In both cases, a less restrictive platform would quickly eclipse the one limiting choice.

However, in some markets we observe that unrestricted-choice platforms do not win over restricted-choice ones. If anything, platforms restricting choice perform better in that they are able to charge higher prices than the unrestricted-choice platforms. This is very salient, for example, in the on-line dating market, where most sites give its members unrestricted access to all members. However, some sites, such as eHarmony, give its members no more than 7 potential dating candidates at a time. And despite offering limited choice, eHarmony charges up to a 25 percent premium over its closest competitor, Match.

Similarly, labor markets feature platforms, such as Monster, that offer unrestricted access to everyone. However, these platforms have not eliminated headhunting firms. The latter offer very few candidates to firms, and expose candidates to only a limited number of firms, and yet charge more than the unrestricted-choice platforms do. Finally, in the housing market, buyers and sellers have the choice of using the For Sale By Owner database (“FSBO”) or broker’s services. Even though FSBO could give people broader exposure to everyone on the platform, it has not displaced brokers, who show only a few houses to a buyer, and expose every house to a limited number of clients. Academic studies have shown that broker-mediated transactions and FSBO transactions result in similar house sale prices.<sup>2</sup> Given that brokers do not generate higher sale prices, but charge a 6 percent commission, they are the more expensive market option.

These examples present a puzzle for us to solve: How can some platforms offer less choice and yet charge more to participate? Economists will be interested in the answer to this question as it will illuminate the conditions under which negative network effects set in. Managers will want to know when they will be better off setting up a restricted-choice platform that will be immune from competition with an unrestricted-choice platform. Finally, regulators would like to understand when to expect restricted-choice platforms to emerge alongside unrestricted-choice

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<sup>2</sup> See Nevo Hendel & Ortalo-Magne, *The relative performance of real estate marketing platforms: MLS versus FSBO* *Madisson.com*, working paper, (2007).

ones. Using this information, they can, for example, interpret the lack of restricted-choice platforms as a sign of unfair competition.

A moment's thought will reveal a number of straightforward explanations for our puzzle. For example, it is possible that the observed outcomes are not a market equilibrium, implying that in the future the market will tip towards the platform providing more choice. Furthermore, an argument could be made that the restricted-choice platforms provide other services. For example, brokers may have superior knowledge of who should get matched with whom, which could explain why only a few people are exposed to each other and the price is higher. Finally, psychologists might suggest that people dislike excessive choice and thus are willing to pay to participate in restricted-choice platforms. Although these arguments can explain the phenomenon, we argue that restricted-choice platforms will exist in equilibrium, and charge higher prices, even if they do not have any superior matching skills and people are not averse to having numerous choices. Our paper provides an account for how this can take place.

We proceed in two steps. First, we argue that when successful restricted-choice platforms limit choice, they do so on both sides of the market. Thus, they constrain the access of one side of the market to the other, but they also reduce competition between participants on the same side of the market. Put simply, on a restricted-choice platform, a participant sees fewer candidates, but these candidates also get to see fewer other platform participants. Consequently, these candidates are more likely to agree to match with the platform participant.

Second, we argue that the value of being accepted varies across different types of people. Those with a low outside option care about being accepted quickly, and so they will be attracted to the more expensive platform offering fewer choices. In contrast, agents with a high outside option care about finding the best match possible, and do not care much about rejection. These agents will be attracted to platforms providing unrestricted choice. Since different types of people will be attracted to different platforms, the two types of platforms can co-exist, even though one of them will restrict choice and charge more money.

To derive these results we need to significantly depart from previous literature on indirect network effects and competition between platforms. That literature usually assumes that access to another potential match increases the utility accruing to platform participants, and so the network effects are positive.<sup>3</sup> In our paper, we do not assume the existence of network effects. Instead, we formulate a framework, where we derive the network effects. We show that within this framework network effects can be sometimes positive and sometimes negative.

To show how the positive network effect can arise, we concur with existing literature and show that being exposed to an additional match improves the probability that the additional match is a better fit than the previously available matches. To show how the negative effect can arise, we depart from previous work, and consider an environment in which increasing the number of potential matches available to platform participants also increases the number of platform participants available to the matches. This increased competition implies that a platform participant is more likely to be rejected by the match, because the match will find a more suitable platform participant. In consequence, access to another match can potentially reduce the utility of market participants leading to negative network effects.

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<sup>3</sup> See Armstrong, *Competition in two-sided markets*, 37(3) RAND J. ECON. 668-691 (Autumn 2006); Rochet & Tirole (2003), *Platform Competition in Two-Sided Markets*, 1(4) J. EUR. ECON. ASSOC., 990-1029 (June 2003); and Rochet & Tirole, *Two-sided markets: A progress report*, 37(3) RAND J. ECON. 645-667 (2006).

In reality, the two effects operate at the same time, each in the opposite direction. On the one hand, an increase in the number of available candidates increases the expected payoff of a successful match (choice effect). On the other hand, it decreases the probability that the match occurs (competition effect). Our model shows that the relative magnitudes of these two effects change as platform participants meet more people. With little choice, there is little competition, and so the choice effect is stronger than the competition effect. This generates the positive network effect documented in previous literature. But as choice and competition increase, the competitive effect becomes larger than the choice effect. This generates a negative network effect.

Having established a framework that generates both positive and negative network effects, we further depart from existing literature, and examine how different types of agents may experience them. We show that those with a low outside option are more concerned with higher competition, because it increases the likelihood that they will not match with anyone, in which case they obtain their unattractive outside option. Such agents will experience negative network effects quickly, and so will prefer to participate in platforms that offer more restricted choice. Conversely, agents with a high outside option are not very concerned about competition, so for them the negative network effects will not arise quickly. These agents will opt for platforms that offer unrestricted choice.

We then use these results to depart from and extend the literature on competition between platforms. Specifically, we show that a platform offering fewer candidates on both sides of the market attracts agents with a low outside option, who are willing to pay to participate in such a platform. Such a platform will remain profitable even if there exists another platform that offers more candidates and does not require any fee to participate. We use this result to account for our puzzle of co-existing types of platforms: one set that limits choice and charges a higher fee, and another set that offers unrestricted choice and charges a lower fee.

To our knowledge, this is the first theoretical paper to explain why platforms actively limit the number of candidates, instead of providing access to all available ones. We hope that future work in economics will extend our insights and will further explore conditions under which restricted-choice platforms will not succumb to competitive pressures from unrestricted-choice platforms. However, we also hope that the model presented in the paper will have broader utility both for managers and regulators. Specifically, we hope that managers seeking to enter into or already competing in industries with strong indirect network effects will actively consider developing a restricted-choice platform. Our model gives managers two critical dimensions to consider before building a platform like this. Specifically, these platforms are likely to be successful when people differ substantially in their utility of being unmatched, and when their preferences are highly subjective. If either of these conditions is not met, however, managers are well advised not to develop restricted-choice platforms.

Finally, we hope that regulators will be intrigued by the model and results presented here. Equipped with these results, regulators can predict when to expect restricted-choice platforms to emerge and flourish. They can then use this knowledge to examine markets in which they observe a single platform that accounts for the entire market. In some cases, when assumptions of our model do not apply, the existence of such single platform can be completely justified. However, when the two conditions outlined above are present, but the restricted-choice are not present, the regulators should closely examine why this is the case, paying close attention to potential anticompetitive practices.