The Personalization Paradox: Welfare Effects of Personalized Recommendations in Two-Sided Digital Markets[*]

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October 27, 2023

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Abstract

In many online markets, platforms engage in platform design by choosing product recommendation systems and selectively emphasizing certain product characteristics. I analyze the welfare effects of personalized recommendations in the context of the online market for hotel rooms using clickstream data from Expedia Group. This paper highlights a tradeoff between match quality and price competition. Personalized recommendations can improve consumer welfare through the "long-tail effect," where consumers find products that better match their tastes. However, sellers may then have an incentive to increase prices. To understand the welfare effects of personalized recommendations, I develop a structural model of consumer demand, product recommendation systems, and hotel pricing behavior. The structural model accounts for the fact that prices impact demand directly through consumers' disutility of price and indirectly through positioning by the recommendation system. I find that ignoring seller price adjustments would cause considerable differences in the estimated impact of personalization. Without price adjustments, personalization would increase consumer surplus by 2.3% of total booking revenue (∼$0.9 billion). However, once sellers update prices, personalization would lead to a welfare loss, with consumer surplus decreasing by 5% of booking revenue (∼$2 billion).

JEL: D12, D83, L10, L13, L83, L86
Keywords: platform design, two-sided markets, e-commerce, consumer search