

# BIASED RECOMMENDER SYSTEMS AND SUPPLIER COMPETITION

AMELIA FLETCHER, PETER ORMOSI, RAHUL SAVANI AND JACOPO CASTELLINI

**ABSTRACT.** Recommender systems are prevalent across digital platforms. They use machine learning techniques to help consumers make choices by predicting their preferred items. If RS had perfect information about consumer preferences and item attributes, they could recommend the most suitable item for each consumer. However, in practice, recommender systems have incomplete information, and their prediction models can exhibit biases. Drawing on a simplified theoretical model, this paper examines how such biases can lead to dampened competition between the suppliers selling through digital platform, arising from the fact that biased recommendations are less closely linked to true preferences. Three specific types of bias are examined and are shown to have subtly different effects. Competition remains stronger where suppliers can compete to gain the benefit of the bias, a form of competition for the market. The worst market outcomes can be avoided if consumers can reject unsuitable recommendations, since this helps to restore the competitive constraint on suppliers. A model extension considers the impact of endogenizing vertical quality. Importantly, in choosing its recommender system, the platform's preferences are not typically aligned with those of consumers.