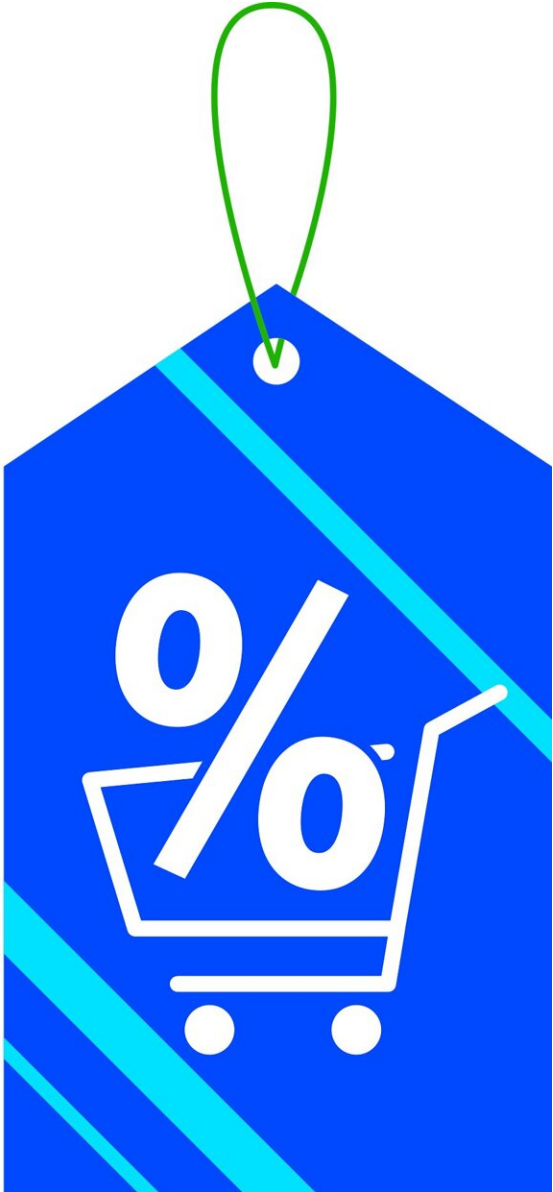


# Online consumers at risk from 'intelligent' price manipulation, say experts

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Sophisticated computer algorithms used to set prices in online marketplaces put consumers at risk of collusion among sellers, according to a study from computer scientists at the Oxford Internet Institute and Imperial College.

"Widespread use of intelligent algorithmics and [dynamic pricing](#) by online retailers, puts the public at risk of 'adversarial collusion,'" maintains Dr. Luc Rocher, lead author of the paper, "Adversarial Competition and Collusion in Algorithmic Markets."

Published in the journal *Nature Machine Intelligence*, the research explains the risks from "adversarial collusion," an anti-competitive practice whereby one dominant firm can manipulate other sellers which have weaker pricing algorithms.

Co-authored by Imperial's Dr. Arnaud J. Tournier and Professor Yves-Alexandre de Montjoye, the research highlights how such "adversarial collusion" can have [negative consequences](#) for consumers, enabling participating firms to coordinate their prices and potentially increase their profits at the expense of consumers.,

Dr. Rocher says, "Online commerce is increasingly dominated by digital marketplaces. Facilitated by [digital technologies](#), retailers now compete globally on these platforms. To keep up with the competition, sellers use sophisticated algorithms to set prices and respond in real time to competitors' prices."

He continues, "Our research highlights how intelligent machine learning algorithms could find vulnerabilities in the system. More sophisticated

algorithms can manipulate weaker algorithms and therefore collude together to increase prices for everyone."

Professor de Montjoye, senior author, adds, "Adversarial collusion raises new regulatory and enforcement questions. Our results emphasize the need for [regulatory agencies](#) in the UK, US, and European Union to consider how adversarial algorithmic pricing mechanisms could subtly undermine the competitiveness of online markets and harm consumers."

"We believe further study is needed with academics and policymakers working together to try to address these important issues for the wider benefit of society."

The researchers call for policymakers and regulatory agencies to consider adversarial manipulations of algorithmic pricing and suggest such collusion might fall outside of the scope of current competition laws or enforcement priorities.

**More information:** Luc Rocher, Adversarial competition and collusion in algorithmic markets, *Nature Machine Intelligence* (2023).  
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[www.nature.com/articles/s42256-023-00646-0](https://www.nature.com/articles/s42256-023-00646-0)

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