

AGCO Seminar

Speaker: Gabriel Weintraub, Stanford Graduate School of Business.

Title: Experimentation in Two-Sided Marketplaces: The Impact of Interference.

Abstract: Marketplace platforms use experiments (also known as “A/B tests”) as a method for making data-driven decisions about which changes to make on the platform. When platforms consider introducing a new feature, they often first run an experiment to test the feature on a subset of users and then use this data to decide whether to launch the feature platform-wide. However, it is well documented that estimates of the treatment effect arising from these experiments may be biased due to the presence of interference driven by the substitution effects on the demand and supply sides of the market.

In this work, we develop an analytical framework to study experimental design in two-sided marketplaces. We develop a stochastic market model and associated mean field limit to capture dynamics in such experiments. Notably, we use our model to show how the bias of commonly used experimental designs and associated estimators depend on market balance. We also propose novel experimental designs that reduce bias for a wide range of market balance regimes. We also discuss a simpler model to study the bias-variance trade-off among different experimental choices. Finally, we present results on calibrated models and live implementations on two real-world platforms. Overall, our work shows the potential of structural modeling to yield insight on experimental design for practitioners.

Based on joint work with Ramesh Johari, Hannah Li, Inessa Liskovich, and Geng Zhao.

When: December 15 **15:00 hrs.**

Where: Sala de Seminario John Von Neuman, CMM, Beauchef 851, Torre Norte, Piso 7.

