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Application to NBER Digitization Tutorial 2018

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Current Year: 4th
Main Fields: Industrial Organization and Microeconomic Theory
Other Interests: Market Design and Economics of Technology

Coursework:
Industrial Organization
Industrial Organization 1-3
Energy and Resource Economics

Microeconomic Theory – Market Design
Social and Economic Networks
Matching and Market Design
Contracts, Information, and Incentives
Theory of Auction Market Design

Other Courses:
Behavioral and Experimental Economics I
Machine Learning for Causal Inference
Institutions and Organizations

My research interests lie at the intersection between microeconomic theory and industrial organization, with a strong component of market design. I am mostly interested in concrete applications of economic theory with direct implications to real world markets, and in applying cutting edge empirical techniques, such as machine learning, to acquire a better understanding of markets.

The digital economy is a particularly good subject to analyze the kind of issues I would like to address. On the one hand, the fact that digital markets change at a fast pace means that there is little experience about how they work, so theoretical models are necessary to understand how agents will behave in them. On the other hand, the data it produces is so detailed that it allows very precise estimation to test theory. I also find the digital economy very interesting in itself, with its huge potential to transform society for good. Because of these reasons I am particularly interested in focusing my research on digital and online markets.

The work I've been doing clearly reflects these interests. One example is my paper "Surge Pricing Solves the Wild Goose Chase", joint with Dan Knoefle from Uber and Glen Weyl from Microsoft Research. Ride hailing apps are a more efficient technology than traditional taxis, which means they should give rise to important welfare gains. However, we show that the ride hailing equilibrium is

fragile. At times of high demand, the market is depleted of idle drivers, which forces the platform to send cars to pick up distant customers. This occupies time that drivers could instead have spent taking passengers to their destination, thus reducing the capacity of the market. The market collapses and welfare declines drastically. A simple solution to this problem is to increase prices. Surge pricing is thus a fundamental tool for Uber, since it uses it to set low prices at most times, but increase prices at times at which the market would otherwise collapse. We build a model that explains how the market collapses under certain circumstances, and then use empirical evidence to support our model and to show that Uber uses surge pricing as a tool to manage this market failure.

Another example is my work with Susan Athey, "Service Quality in the Gig Economy: Empirical Evidence about Driver Safety at Uber". Traditional industries rely on ex ante screening of employees to ensure high quality. The new business model of the gig economy needs to give flexibility to workers, and it thus cannot follow the traditional model. Instead, it relies on technology, using ratings and real time monitoring in order to incentivize workers to provide high quality. It is an open question whether the shift to new quality assurance methods leads to an increase in quality. We focus on the case of Uber, using telematics data on accelerations, breaks, and speed to measure quality objectively, and we find that UberX trips perform substantially better than UberTaxi trips, which do not follow the normal ratings system but have to pass city licensing processes. We find that a portion of this difference can be attributed to the ratings system and to behavioral nudges such as reports on drivers' past behavior relative to other drivers.

I have also worked as a research assistant for Matthew Gentzkow doing some empirically focused work. I was part of a project that uses machine learning techniques to analyze political speech data and measure how polarized it has been at different times. This allowed me to understand the potential of new statistical techniques and how it can lead to a better understanding of people and society.

I recently started working on a new project, "An Empirical Analysis of Surge Pricing". Despite the efficiency gains that dynamic pricing could theoretically achieve, very few markets have implemented prices that respond to market conditions in real time. Uber is a pioneer of real-time pricing, and it thus provides a great setting to study how people respond to it and understand how it affects market outcomes. I intend to build a model of supply and demand in the Uber market which will allow me to understand the ways in which agents respond to dynamic prices. I will also be able to compute market equilibria under different circumstances. Based on this model, I will measure the size of the welfare gains that arise from surge pricing compared to more limited forms of pricing.

Given my interests, I would be able to profit a lot from attending the NBER Digitization Tutorial. It would be very useful to hear about the newest research on these topics by the best economists, and I would be glad to meet the people working on them.