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**Application for NBER Project on the Economics of Digitization**

# 1 Information

## 1.1 Fields

Labor and Econometrics

## 1.2 Coursework

Labor Sequence: Theory, Methods, and Applications
Econometrics Sequence: Theory, Applications, Time Series, Bayesian
Public Finance, Behavioral

## 1.3 Year of Advance

Expected December 2015

## 1.4 Committee

Peter Kuhn (Co-Chair)
Doug Steigerwald (Co-Chair)
Dick Startz

# 2 Research Interests

My research interests span my two fields of study: labor economics and econometrics. I study online labor markets and how technology has changed the process by which people find jobs. I am also interested in the estimation of peer effects in network settings.

## 2.1 Information in Online Labor Networks

The internet has the potential to greatly reduce asymmetric information. Online product reviews connect consumers from all around the world. Another type of review, public worker performance reviews, could potentially provide a significant amount of information to other employers and reduce the problems of asymmetric information in the labor market. However, the nature of these reviews generates an incentive for firms to misreport. Why would a firm provide its private information to competitors about the ability of a worker? This paper tests the information contained in the public performance reviews using data from a large online labor market. I find that other employers do

learn from the reviews and that reviews provide substantial information about the quality of the workers. I also find that the workers themselves learn from the reviews that they have received and this affects their decision to participate in the labor market.

## 2.2 Misspecification in Network Peer Effects Models

There is a large literature that attempts to define peer effects and estimate their impact on decision-making. Bramoulle et al. (2009) show that if we know the network structure–who interacts with whom–and there is enough sparsity of the network, peer effects are identified. There have been a number of empirical studies using the National Longitudinal Study of Adolescent to Adult Health (Add Health) data to look at the effects of peer effects on everything from educational outcomes to sexual behavior. There have also been a number of refinements to the estimation strategy of Bramoulle et al. (2009) as well as some other alternatives proposed. However, none of the strategies do an adequate job of dealing with the possibility of misspecification of the peer effects model. In particular, they all make strong assumptions about the distribution and correlations of the error terms. Given that the linear-in-means model includes a spatially-lagged dependent variable (and spatially-lagged observable characteristics), we might worry that the unobserved characteristics also exhibit some spatial dependence, and modeling them as independent and identically distributed will result in inaccurate estimation. This paper aims to test the implications of misspecification of the peer effects model by using Monte Carlo simulations. I simulate data under multiple error regimes and show how the peer effects estimators behave. I find that the standard peer effects estimation strategies perform poorly when the error covariance matrix is misspecified. I propose an alternate estimator that takes into account arbitrary error correlations and show that it provides more accurate estimates.

## 2.3 Trends in Library Downloads

Using data on the number of downloads of individual journals, we investigate the life cycle of research. In particular, we show how downloads from a journal change over time depending on the field of research and the ranking of the journal. Our research provides new insight into the usage of individual journals and will allow campus librarians to make more informed decisions about acquisitions. We provide a data-driven approach to classification that will complement the more subjective reasoning of many librarians.

## 2.4 Characteristics of Job Competition

Using application data from an online labor market, I model the hiring outcome of individual workers as a function of their characteristics and the characteristics of their competition: everyone else who applied to the same job. Since there are potentially infinite ways to specify how other characteristics matter, I take a Bayesian model selection approach to determine which characteristics are important.