Collum Freedman

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Education

University of Pennsylvania, Philadelphia, PA
PhD Candidate, Economics, June 2017 - Present
Advisor: Harold Cole

First-year Coursework - Standard sequence in microeconomics, macroeconomics, and econometrics
Second-year Coursework - Advanced Microeconometrics, Empirical Industrial Organization, Macro Financial Frictions, Non-parametric and Machine Learning Approaches to Structural Estimation, Advanced Time Series Econometrics, International Macroeconomics with Incomplete Markets and Financial Frictions

Yale University, New Haven, CT
Bachelor of Arts, Economics and Mathematics, May 2017

Research Experience

Graduate Research Assistant
Philadelphia, PA, 2018-2019

- Worked for Professor Harold Cole and Professor Guillermo Ordoñez in the UPenn Economics Department
- Cleaned and compiled data from sovereign Mexican bond auctions
- Coded numerical Walrasian auction model and calibrated it against relevant data
- Provided editorial assistance in publication of *Monetary and Fiscal Policy through a DSGE Lens* (2020)

Tobin Research Assistant
New Haven, CT, 2016-2017

- Worked under Professor Edward Vytlacil in the Yale Economics Department
- Contributed to two preliminary papers on identification of treatment effects
- Set up computational linear programming problem for determining relevant treatment parameters in instrumental variable models
- Produced graphical demonstrations for visualizing the identification of marginal treatment effect (MTE) in instrumental variable models

Research Assistant for Yale Program on Financial Stability
New Haven, CT, 2016-2017

- Researched governmental financial interventions in the global financial crisis of 2007-2008 for the purpose of establishing a comprehensive catalogue of case studies covering past approaches to dealing with systemic financial problems
- Researched the Irish National Asset Management Agency, a "bad bank" tasked with absorbing toxic property-based assets
- Researched the Bank of England's Extended Collateral Long-Term Repo open market operations

Conferences & Talks

Stanford GSB Rising Scholars (2020), University of Pennsylvania (2020)

Technical Skills

Languages: MATLAB, R, Python, LaTeX.
Other Software: Stata, Minitab, Microsoft Office Suite

Summary of interest in AI:

My research interest in AI centers around how increasing expertise in data analytics and the use of AI allows economic agents to compensate in settings with asymmetric information. An immediate example is large retailers such as Amazon using their high technical proficiency and AI technologies to extract private information about consumers using demographic data, purchasing histories, and other online browsing data. In doing so, they can construct more targeted and potentially profitable offers to consumers. This adoption of AI for its predictive and classification power is widespread in financial and goods markets. Incorporating data analytics and AI into firm decision-making is economically meaningful exactly because it can potentially reduce frictions in settings traditionally affected by asymmetric information and because their usage is heterogeneous across firms.

I study such issues in a paper with Juan Sagredo (UPenn) where we present a tractable model of seller expertise, expressed in our setting as the accuracy of seller about buyers. The natural interpretation is that sellers with higher expertise have access to more advanced analytics and AI technologies to predict the private valuations of buyers. We embed our sellers with heterogeneous expertise into a search theoretic framework with asymmetric information in the spirit of Burdett Judd (1983). In this setting, we fully characterize the equilibria and consider the effects of expertise on aggregate outcomes in the market. We find that expertise is efficiency improving and promotes greater social welfare, however it is inherently redistributive by benefiting low valuation consumers but harming those with high valuations.