



UNIVERSITY OF DELAWARE
**LERNER BUSINESS
& ECONOMICS**

Institute for Financial Services Analytics
and the Department of Economics
Distinguished Speaker Series

Dr. Paul Goldsmith-Pinkham
Assistant Professor of Finance
Yale School of Management
Tuesday, October 22
11:00 a.m. – 12:30 p.m.
One South Main, Room 120

**Predictably Unequal? The Effects of Machine Learning on
Credit Markets**



Recent innovations in statistical technology, including in evaluating creditworthiness, have sparked concerns about impacts on the fairness of outcomes across categories such as race and gender. We build a simple equilibrium model of credit provision in which to evaluate such impacts. We find that as statistical technology changes, the effects on disparity depend on a combination of the changes in the functional form used to evaluate creditworthiness using underlying borrower characteristics and the cross-category distribution of these characteristics. Employing detailed data on US mortgages and applications, we predict default using a number of popular machine learning techniques, and embed these techniques in our equilibrium model to analyze both extensive margin (exclusion) and intensive margin (rates) impacts on disparity. We propose a basic measure of cross-category disparity, and find that the machine learning models perform worse on this measure than logit models, especially on the intensive margin. We discuss the implications of our findings for mortgage policy.

Paul Goldsmith-Pinkham's research interests include consumer & corporate finance, econometrics, and social networks. His current work focuses on assessing the costs and benefits of debtor protection policies and understanding the role that consumer debt plays in the macroeconomy. Paul's research also studies machine learning techniques applied to economics questions. Before joining Yale, Paul was a Research Economist at the Federal Reserve Bank of New York. He earned a bachelor's degree in economics from the Swarthmore College, and a PhD in economics from the Harvard University.