Research Statement

My research examines various economic and societal consequences of information technology. My dissertation research theorizes that the visibility afforded by social media introduces an element of signaling and conspicuous consumption into consumer choices and information exchange. Because these subjects occur in the intersection of multiple disciplines, my research has incorporated theories and methodologies from social network analysis, econometrics, sociology, and information systems. My two journal publications empirically investigate digital access and the diffusion of democracy and examine gender bias in Wikipedia biographies.

Conformity in a social shopping network (first dissertation study)
The first study of my dissertation examines how comments affect the types of purchases made visible on a social shopping network. My dataset is gathered from Blippy, a now-defunct social network devoted to sharing consumer purchases. The analysis reveals a tension between short-term conformity and long-term differentiation to those products that receive comments. Furthermore, positive comments from social network neighbors is associated with differentiation of future purchases, suggesting that consumers may branch out after receiving sufficiently high praise from their friends.

To estimate these results, I create a Bayesian choice model across multiple product categories to see which products are co-purchased and how that changes over time. Next, I estimate the polarity of the comments, quantify the similarity among products, categorize the relationship between the consumer and the commenter, employ matched sample estimation techniques to control for the endogeneity between receiving comments and purchasing choices, and then run a regression with the matched dataset. These estimates are consistent with the theory that future purchases are more similar to purchases that previously received comments.

Preference affirmation, social norms, and networks on Pinterest (second dissertation study)
The second study of my dissertation focuses on the observers’ roles in reinforcing exogenously imposed social norms (Rhue 2013). I examine this relationship with a natural experiment on an online social space for creating digital “pinboards” with a dataset of users, their directed friendship network, and their pins, or images hyperlinked to external websites. In this natural experiment, the imposed social norm, the set of recommended behaviors listed on the website’s “social etiquette” page, shifts from deterrence to acceptance of user self-promotion. Self-promoting pins are classified in the dataset by their characteristics. The effect of the exogenous social norm on observer reactions towards self-promoting pins is shaped by social network relationships. By considering how the presence of the exogenous, global norm coincides with the local norm, as imposed by observers’ reactions, this study contributes to our understanding of the tension between global and local behavioral expectations.
Additional dissertation studies

In addition to the two dissertation studies described above, I also have two dissertation studies in progress. First, I have created a game-theoretic signaling model to consider the effects of social convergence. Second, I have been accepted as an intern with Facebook, where I will work on a visibility-related research project with a member of their Data Science team in January 2014.

Digital access, political networks, and the diffusion of democracy

Rhue and Sundararajan (2013) examine the effects of digital access on the prevalence of democracy and its diffusion via trade, geographical, migration and foreign-direct investment (FDI) networks across 189 countries between 2000 and 2010. The analysis uncovers three key mechanisms linking information technology with democratic change and highlights the importance of a country’s “susceptibility” to international influence, which is triggered by the induced visibility afforded by ready access to information technologies.

To empirically investigate this phenomenon, we use a dynamic panel model over the 10 year period to control for the endogeneity among changes in democratic and technology measures and capture the inertia of political institutions. The characteristics of various information and communication digital technologies may shape their effects on democracy, and those effects are evident via different economic and political networks. Furthermore, we employ a stochastic actor-oriented dynamic network methodology to understand the co-evolution of the trade relationships, democratic measures, and technology penetration. This empirical analysis suggests that changes in civil liberties due to digital access can be mediated by both media freedom and internal political institutions. The increased information transparency and “external” visibility afforded by digital access shapes countries’ levels of civil liberties via geopolitical and economic relationships, among other factors.

Gender bias in Wikipedia and Britannica

Reagle and Rhue (2011) explore whether gender affects whose biographies are included on Wikipedia, a crowd-sourced encyclopedia. We conclude that articles on noteworthy female figures, drawn from six independent sources of biographical subjects, are more likely to be missing from Wikipedia than Encyclopædia Britannica. Overall, Wikipedia provides better coverage of historical figures and longer articles than Britannica. For both reference works, male and female’s biographies did not significantly differ in length.

The economic content of networks

In Rhue and Sundararajan (2010), we measure the “information content” of online economic networks – sets of connected entities where links are created by realizations of shared prior outcomes. We conjecture that such electronic networks contain information about similarity in latent preferences across actors that are not captured by observable product or consumer features. The methodology for measuring this information content in a rigorous and outcome-driven manner uses matched sample estimation techniques to mimic the optimal use of all observable non-network data. The empirical analysis uses detailed transaction-level data on a leading online giving web site, and the results suggest that co-donors in an economic network have an 80-fold higher overlap in future choice than a random benchmark, that the network outperforms even matched sample alternatives based on sophisticated feature-based predictive models, and this inferred overlap in latent preferences persists with local network traversal.
Future research plans
Information technology continues to shape human behaviors, and my broad research interest is the societal and business consequences of information technology. My current interest is on the visibility afforded by technology and the influence of social media on microeconomic decisions. As technologies are increasingly encouraging individuals to “share” their activities, there are implications in a variety of arenas, e.g., privacy, social relationships, microeconomic decisions, government tracking. I plan to continue to study how the visibility of social media shapes our society and to consider the role of information technology in addressing business and societal challenges.

References


