DISSERTATION ABSTRACT

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My dissertation is representative of my research along two separate lines of inquiry. The first seeks to apply existing behavioral theory to new problems in order to gain new insights. I use psychological game theory as my primary tool of analysis. This allows me to model belief-dependent motivation by endowing players with a richer preference structure than can be accommodated with standard game theory. The second area of my research investigates the diffusion of technology. In particular I study the spread of agricultural innovations during the period immediately following the rise of the experiment station and agricultural college. For both of these projects I construct county level datasets and look for an effect on measures of crop productivity.

The first half of my dissertation represents my work in applied microeconomic theory and is largely based on two papers. “Price & Quality with a Conscientious Worker” considers a three-player labor market game and illustrates how wage and price decisions may change dramatically when a worker is guilt averse in the sense of wishing not to disappoint the firm’s consumers. With this project I make two contributions. First I incorporate guilt aversion into an effort setting game and obtain predictions thereof in a way not yet considered by labor economists. Second I call attention to the fact that one must exercise caution when directly applying Battigalli & Dufwenberg (2007) simple guilt preferences. More specifically, this preference structure requires that guilt be assessed relative to players’ initial beliefs about initially expected payoffs. In the context of my game, however, it is appropriate to allow the guilt relevant beliefs to be those held at the time a player moves. I make this adjustment and then apply the solution concepts of sequential equilibrium and extensive form rationalizability. I observe that it is most appropriate to use the latter in order to use psychological forward induction reasoning that fully captures the
psychological and economic intuition in my game. The results demonstrate that a sufficiently guilt-averse worker will exert costly effort to produce a high quality good so as not to disappoint the consumer, thereby trading material value for psychological well-being.

“Sweatshops & Reciprocity” seeks to understand the conditions under which the reciprocity motivation can alleviate sweatshop conditions. My co-author Martin Dufwenberg and I apply reciprocity preferences to a simple game designed to model a sweatshop. In this project we investigate the influence of a reciprocally behaving consumer on the firm’s treatment of the worker. We vary the level of information the consumer has about how the worker has been treated and observe how this affects predictions. We show that although it is quite reasonable to expect the Dufwenberg and Kirchsteiger (2004) model of direct reciprocity preferences to be sufficient to lead to better conditions for the worker, something more is actually needed. We then demonstrate that in order to predict appropriately alleviated sweatshop conditions the model must be adapted to allow for the consumer to be motivated by indirect reciprocity, that is, a salient regard for the firm’s treatment of the worker. Under different levels of observability of working conditions we show that the consumer actually prefers not to have access to information about the treatment of the sweatshop worker.

The second half of my dissertation represents my work in economic history and comes from two papers. These both investigate the spread of technology from agricultural colleges and experiment stations to ordinary farmers. In “Experiment Associations and Agricultural Innovation” I study the role played by experiment associations comprised of scientifically literate farmers in assisting agricultural experiment station researchers in the development of technology and in facilitating the diffusion of biological and non-biological innovation. I examine two such networks of unique structure, the Ontario Agricultural and Experimental Union and the Wisconsin Agricultural Experiment Association, that to my knowledge are among the earliest examples of this sort of organization acting as a conduit of information. I construct datasets with county and district level observations covering the first decade of the work with cooperative field crop experiments for each organization. My
empirical findings suggest that these organizations had success in achieving their goal of improving the productivity of certain crops in their respective regions. I find that the seed distribution efforts of the Wisconsin Agricultural Experiment Association had an immediate statistically significant positive effect on the productivity of oats. I find that the program of experimentation of the Ontario Agricultural and Experimental Union had a delayed and statically significant positive effect on productivity of oats and peas. This effect was manifested one or two seasons after experiments had taken place. In both cases I find that diffusion was rapid and the effect was generally strongest with the crops that had received the greatest attention in terms of cooperative experiments conducted.

“All Aboard! Railways and Diffusion of Agricultural Information, 1904-1915” investigates the diffusion of agricultural knowledge directly from the Iowa College of Agriculture to farmers via railway visits. Because of a unique partnership with railway officials, researchers from the agricultural college were able to travel by train to speak directly with crowds of farmers that gathered at train platforms and stops along the railway. In particular I focus on the efforts to improve corn and dairy productivity and I trace the flow of information from the respective trains. I construct a dataset containing observations of railway stops that occurred over four years for the corn special and one year for the dairy special. As measures of productivity I collect data for corn yield, butter, and milk production at the county level. Empirical results suggest that counties that were visited by a special train saw a statistically significant increase in agricultural productivity in terms of both corn and butter.