Research Statement

My research examines the relationship between firms and the environment. With a focus on weather and climate change, I explore how the environment affects firms as well as nonprofits and how each of these institutions can adapt to environmental conditions. My dissertation shows that weather causes significant same-store sales variation, that shopping behavior adjusts to differential weather norms across regions, and that private foundations combating climate change can reduce uncertainty in their mission outcomes through fossil fuel investments.

My job market paper titled “Blame It on the Rain: Weather Shocks and Retail Sales” estimates how retail sales respond to weather shocks. I use a major national brand’s proprietary apparel and sporting goods sales data at the daily by-store level combined with a new weather index method. I find that unfavorable weather causes permanent sales losses, with limited shifting of purchases between indoor and outdoor malls and no substitution to e-commerce. The worst 5 percent of daily weather shocks decrease sales by an average 20 percent. Thus weather is responsible for significant variation in the same-store sales metric. Failure to attribute this source of variation can result in biased demand forecasts, undue volatility in commission-based pay, suboptimal inventory management, and misinterpretation of firm-specific and macroeconomic financial indicators. The fact that shopping behavior adjusts to differential weather norms across regions strongly suggests that we should expect some adaptation to climate change.

This paper’s primary contributions are as follows. First, it measures large weather effects on sporting goods and apparel retail sales. Second, it is the first to distinguish between weather effects on sales in indoor malls, outdoor malls, and e-commerce. Third, it presents a new methodology that measures sales responses in a flexible but interpretable manner. Specifically, I utilize the lasso method to create an index based on a comprehensive set of local weather variables. This index allows for nonlinear heterogeneous responses to weather shocks. It predicts how favorable weather conditions are for shopping, net of seasonal, day of the week, holiday, brand, and store fixed effects.

My “Divest, Disregard, or Double Down?” paper addresses an endowment’s decision to invest in an “evil” firm whose activities run counter to the charitable missions funded by the endowment. I show that a foundation can maximize expected utility by shifting investments toward such a firm. Decomposing the Capital Asset Pricing Model to examine marginal changes in portfolio weights on objectionable assets shows that positive covariance between idiosyncratic firm returns and targeted objectionable activities enables a foundation to create a hedge around its mission. I also explore theoretical and empirical evidence on key trade-offs involved in this investment decision.

Going forward, I will extend my analysis of weather effects on retail activity, exploring effects of forecasted storms and estimating climate change impacts with and without adaptation. Another project examines how firm climate change disclosures affect stock price reactions to climate change-related shocks like Hurricane Sandy. My research reveals the role of environmental inputs in financial outcomes and it explores effective financial strategies for firms and nonprofits dealing with climate change and other environmental issues.