Research Statement - Wesley Blundell

I am an environmental economist who uses methods from both the industrial organization and microeconometrics literatures to examine policy relevant questions. My current focus is on enforcement policy for U.S. environmental regulation and the resulting economic and environmental outcomes. Other research interests include topics in industrial organization, particularly firms’ incentives to innovate, as well as the study of the health impacts from industrial activity. The goal of my research is to contribute to the discussion of how to properly model the actions and outcomes of economic agents in different policy environments.

In my dissertation, I use Clean Air Act enforcement data to study the effect of various regulatory enforcement policies on firm behavior. I examine the impact of different enforcement strategies on both the emission of harmful pollutants and investment in abatement technology at the plant-level. Outside of my dissertation, my current research focuses on a number of important topics concerning oil and natural gas extraction, as well as non-environmental innovation responses by firms to regulation. The topics I address are often motivated by their policy relevance, with the goal that my results be based on either reduced-form empirical evidence or the use of empirical methodologies from the industrial organization literature in conjunction with economic theory.

Working Papers:

In a number of settings, including Clean Water Act enforcement, Clean Air Act enforcement, and oil spill enforcement in North Dakota, regulators use state-dependent enforcement policy to minimize environmental damages. The policy is characterized by increasing penalties according to the previous noncompliance history of the regulated entity, with the goal of maximized overall compliance given a fixed enforcement budget. However, understanding the effectiveness of state-dependent enforcement is empirically difficult, as any response to a regulator’s penalizing action can be attributed to both the current cost of that action, as well as an update of the expectation of future penalties for noncompliance. Formally referred to as a difficulty of “measuring perceptions,” (Gray and Shimshack, 2011) I address this concern by using a natural experiment in my first
dissertation chapter and by specifying a dynamic structural model in the second chapter, while answering two outstanding questions related to the use of state-dependent enforcement.

In a completed working paper, “When Threats Become Credible: A Natural Experiment of Environmental Enforcement in Florida,” I examine whether U.S. manufacturing plants responded to changes in the expected penalty for being classified as a “priority violator.” Using detailed panel data on plant-level characteristics, regulatory activity, and compliance in a difference-in-differences setting, I find that noncompliant Florida plants not yet classified as “priority violators” increased their responsiveness to regulatory warnings across a number of environmental performance measures after the penalties increased for plants classified as “priority violators.” This result is robust to the use of various control groups, including noncompliant but non-priority plants in the South, as well as a control group selected using a matching estimation similar to the one used in Cicala (2015).

In my next chapter and job market paper, “The Escalation of Scrutiny: The Clean Air Act and U.S. Manufacturing,” I supplement the plant-level data used in the first chapter with data on plant investment and state regulatory budgets, in order to estimate the effect of state-dependent enforcement on compliance. I estimate a dynamic model of firm investment decisions following repeated interactions with environmental regulators that is based on the theory of state-dependent enforcement outlined in a seminal paper by Harrington (1988). A distinguishing feature of my estimation is that I allow for persistent time varying unobserved heterogeneity in the compliance costs of plants by using a procedure developed in Connault (2016) that improves upon Rust (1987). The parameter estimates of the model allow me to simulate overall compliance and aggregate emissions from manufacturing under different regulatory enforcement strategies. My main result is that if regulators were no longer allowed to increase penalties according to a plant’s previous noncompliance history, thereby eliminating the policy of state-dependent enforcement, then overall noncompliance with the Clean Air Act would increase by more than 20% over the 8-year timeframe of my sample.

**Works in Progress:**

For the third and final chapter of my dissertation, “Do Firms Learn from Others’
Mistakes: Evidence from the Bakken Oil Shale,” (with coauthor Anatolii Kokoza) we assemble a unique dataset of firm mineral rights for wells on public oil leases across the Bakken region in North Dakota. We merge this dataset with environmental incidents or spills as well as other data including oil production, natural gas production, and flaring to capture relevant well-site characteristics. The relationship we investigate is the occurrence of environmental accidents at wells in which a firm is the primary operator, following environmental incidents at wells that the firm in question is not the primary operator but has a significant financial interest. This examination of learning and environmental performance helps to identify the mechanisms through which firms learn about the costs of environmental accidents as well as the potential for environmental risk mitigation, in a sector where learning has been demonstrated for production itself (Covert, 2015).

In "Assessing the Effectiveness of Microfinance Programs While Allowing for Selection on Unobservables," I examine the effect of microfinance programs on the labor participation decision of women in Bangladesh. I use a method originally developed by Altonji, Elder, and Taber (2004), that allows for selection on unobservables, in order to estimate the magnitude of the omitted variable bias necessary to negate the estimated treatment effect from enrollment in a microfinance program. Applying this method to a 1991-1992 survey of rural households in Bangladesh, my results indicate strong evidence of a treatment effect from microfinance programs on hours worked, which is consistent with prior findings in the literature.

Future Research:

In addition to these works, I will continue to pursue policy relevant questions that fall into both the environmental economics and industrial organization literature. Thanks to a grant from the Graduate and Professional Student Council (GPSC) at the University of Arizona, my colleague Anatolii Kokoza and I have purchased extremely detailed data on patient-level hospital outcomes in the state of North Dakota between 2004 and 2014, that identifies the patient’s 5-digit zip code and repeated medical history. Using this data, along with the comprehensive well production, well flaring, air monitor, and wind data in the state of North Dakota, we will investigate the health effects associated with oil and
natural gas production. In particular, we look to examine the short-term health effects from flaring, as well as fracturing at a well-site.

I would also like to extend my work on estimating empirical models grounded in economic theory to other sectors that use state-dependent enforcement. In particular, the use of watch lists for plants under the Resource Conservation and Recovery Act, as well as the Clean Water Act, provide settings of significant policy relevance. Finally, I plan to utilize the extensive data that I have collected related to oil and natural gas extraction to investigate the ramifications and outcomes associated with the new flaring rules adopted in the state of North Dakota.

In my career, I would like to continue studying how different policy environments alter the behavior of economic agents and measuring the associated outcomes from that behavior. Environmental policy is an exciting context to continue this work as the long-term dynamics behind both firm activity and environmental damages require innovative empirical approaches for study. For future research, I will continue to pursue questions of a similar scope using both reduced-form and structural methods that are grounded in economic theory.

References:


