Research Statement

Andrew L. Steck*

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I conduct empirical research in the areas of industrial organization and energy economics, using both structural and reduced-form methods. My research has three major themes: understanding the implications of uncertainty, learning, and innovation in dynamic and strategic settings; characterizing regulatory tradeoffs in those same settings; and the broad economic consequences of the ongoing shale oil and gas boom.

I explore the dynamic implications of uncertainty and learning in three separate papers. First, my job market paper builds a structural model of the problem faced by hydraulic fracturing firms in North Dakota. The model accounts for social learning about the new technology, and how this information externality can affect the timing of drilling decisions. That is, when a firm is deciding whether to drill a well or wait, it considers that it may learn from other firms by waiting. This model allows me to characterize an industry equilibrium with endogenous learning, and consider how the industry’s learning trajectory would be affected by different informational policies. The second paper studies the effect of disclosure regulations on firm learning about hydraulic fracturing chemicals in Pennsylvania. It takes advantage of Pennsylvania’s unique regulatory history, which provides the opportunity to observe chemicals used before disclosure laws came into effect. These data allow the econometrician to conduct a pre vs. post analysis of disclosure’s effects. The third paper uses a structural approach to study the entry problem faced by medical device makers with quality testing regulations: it considers how testing differs under private incentives and public regulation, and characterizes the equilibrium effects on market structure and welfare.

The above research agenda has regulatory implications for dynamic markets featuring uncertainty. The counterfactual scenarios studied in my job market paper demonstrate that the possibility of social learning can lead to dynamic free-riding in certain knowledge states; but also the scope for regulators to counteract this force. The importance of information regulation is reinforced by the paper on learning about hydraulic fracturing chemicals. Its results suggest that information disclosure can have benefits for less-productive firms who are able to copy their more productive rivals. In the longer-term, disclosure may act as a drag on the industry’s productivity growth if this copying discourages innovation. The paper on medical device entry characterizes the equilibrium effects of FDA testing policies on medical devices available in the market. The method developed has

*E-mail: andrew.steck@duke.edu; website: https://sites.duke.edu/asteck/
implications for optimal testing regulations, and could be applied to similar settings that feature regulatory testing of new products with uncertain quality.

In addition to the above studies, I have worked on a few other papers related to the oil and gas sector. The first examines the effect of the shale boom on rental housing prices in Pennsylvania, complementing existing studies of the effects on house prices. With coauthors, I extend a quantile regression - matching estimator, and use census data to find that large effects on rents are restricted to a limited portion of the conditional rent distribution. A second paper studies oil and gas executive compensation schemes. We study incentives for drilling and production, which may be misaligned with shareholder goals in periods of low prices. Finally, I have a preliminary project examining the effect of shale oil’s new role as a swing producer on global prices and price volatility.

I look forward to continuing these lines of research in the next stage of my career. I am especially excited about empirical projects that will take advantage of my experience in structural modeling and quantitative methods.