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Graduate Study

I am a PhD student in Management Research at the MIT Sloan School of Management. My research focuses on the economics of data and artificial intelligence, empirical industrial organization, and quantitative marketing. I am currently in my third year of the PhD program.

I have taken the following courses in my PhD: Microeconomics first-year core sequence, Econometrics first-year core sequence, Industrial Organization sequence, Digital economics, Econometrics second-year sequence, Development Economics (micro), Economics of information technology.

Prior to moving into economics, I was trained in electrical and computer engineering and worked as a machine learning researcher. This background has shaped my interest in studying how AI as a general-purpose technology that is changing the economy.

Research Interests and Current Research

My research studies how firms' access to data and information shapes digital markets. I am particularly interested in the interaction between AI, privacy and data regulation, competition, and market structure.

My first-year paper was *Privacy Regulation and Ad-Tech Consolidation*. The paper studies how the California Consumer Privacy Act (CCPA) affected consolidation in the digital advertising ecosystem. Digital advertising relies on a fragmented supply chain. Different parties, such as agencies, ad intermediaries, and publishers, exchange information across firm boundaries. Privacy regulations change that structure by making third-party data transfers more costly.

The question we ask is whether privacy regulation changes firms' incentives to consolidate. If regulation makes third-party data sharing more costly, firms may have an incentive to bring data and analytics functions inside the firm.

Empirically, we study mergers and acquisitions in the U.S. ad-tech ecosystem around the implementation of CCPA. We use Crunchbase data on acquisition activity and classify firms into roles in the advertising supply chain. We then use difference-in-differences designs to show privacy regulations increase M&A acticities.

In my second paper, *Privacy Regulation and the Direction of AI: Evidence from EdTech*, we

ask whether privacy regulations written before the AI era change the direction of innovation in AI-enabled education markets. The setting is K–12 education technology, and the policy variation comes from staggered state adoption of SOPIPA-style student privacy laws. These laws were written before the current generative-AI era, but they regulate many of the same data practices that make AI-like educational products valuable.

Using a panel of K–12 technology adoption from 2010 to 2024, we find that SOPIPA-style student privacy laws are followed by a persistent decline in AI tools adoption. This is not a general decline in school software use. We do not see the same pattern for less personalized backbone technologies, such as student information systems or learning management systems. Within AI-tools, the decline comes mainly from the supply side: regulated states have fewer active adaptive-learning vendors and fewer new vendors entering. So the mechanism does not seem to be only that districts suddenly want less technology. Instead, privacy regulation appears to change the menu of products that schools can choose from.

To formalize this idea, we build a structural model of entry-demand model. First, vendors decide whether it is worthwhile to enter or remain active in a state. Second, districts choose among the products available to them. The model lets us ask what regulation does for hypothetical GenAI tools.

I also study the economics of AI more directly. In *Communicating Uncertainty Can Increase AI Adoption*, we study how communicating uncertainty about AI predictions affects users' willingness to rely on an AI system. In another early stage project I study AI capabilities in clinical-trial design and the economic importance of rework and information frictions in drug development.

The common question I want to pursue in my dissertation is how information affects competition in markets and how this changes as information is increasingly mediated by AI. AI systems can reduce search and information-processing costs, but the information available to them can be endogenous. I am interested in understanding when these choices improve market outcomes and when private incentives over data lead AI systems to operate on a distorted or incomplete view of the market.

The NBER Digital Economics and AI Tutorial is specially closely aligned with this research agenda. I would value the opportunity to learn from researchers working on these ideas and to discuss how to sharpen the economic questions and empirical approaches in my current work.

Dissertation

Dissertation theme: *Essays in Data, AI, and Competition in Digital Markets*