TEACHING STATEMENT

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During my time as a PhD student at MIT, I served as a teaching assistant (TA) for three courses. Through these experiences, I found a passion for teaching at both the undergraduate and graduate levels. With their distinct challenges—guiding undergraduates through fundamental concepts and working through challenging questions with graduate students—, I found both to be very fulfilling. In these courses, I also displayed an aptitude for teaching; in all three courses, my evaluations were stellar, with the average evaluations for the three courses ranging from 6.4/7 to 7/7.

Teaching Experience

1. 14.271: *Graduate Industrial Organization I* (Fall 2020). This course is the first semester of MIT's graduate Industrial Organization sequence. My primary responsibility was teaching a weekly 90-minute recitation, in which I led problem-solving sessions, reviewed the concepts covered in lecture, and presented relevant empirical papers. In my final recitation of the semester, I led a workshop on the research process and acquiring data for IO research projects. My other responsibilities included grading problem sets and holding twice-weekly office hours, in which I answered questions and discussed research ideas. I received very positive feedback on my teaching: My average evaluations across three categories ranged from 6.4/7 to 7/7.
2. 14.272: *Graduate Industrial Organization II* (Spring 2021). This course is the second semester of MIT's graduate Industrial Organization sequence. My primary responsibility was teaching recitations, in which I supplemented material covered in class by presenting recent research papers. My other responsibilities included grading problem sets and holding twice-weekly office hours. I received perfect evaluations (7/7) across three categories.
3. 14.20/14.200: *Industrial Organization: Competitive Strategy and Public Policy* (Spring 2021). This course is an elective course open to both undergraduates and Master's students. The heterogeneous composition of the class (including undergraduates—both economics and non-economics majors—and Master's students enrolled in various programs) made this course a great learning experience for me. I adapted my weekly recitations to the students' range of interests and experiences, leading problem-solving sessions, giving students a taste of economics research, and facilitating discussions about concepts discussed in lecture. Other responsibilities included writing and grading problem sets and holding twice-weekly office hours to answer questions and support students' growth. I received very positive feedback on my teaching: My average evaluations across three categories ranged from 6.7/7 to 7/7.

Mentoring experience

My approach to teaching and advising as an assistant professor will also be informed by my experiences as a mentor. First, I have volunteered for the past two years as part of the Harvard-MIT Application Assistance and Mentoring Program (AAMP). Through this program, I have mentored an undergraduate student from an underrepresented background interested in applying to Economics PhD programs. Second, as a postdoc at the NBER, I have served as an informal mentor to several predocs. Encouraging these students' interest in economics, helping them to develop their research ideas, and guiding them on their academic journeys has been deeply fulfilling and has made me excited to continue advising students in the future.

Future Courses

As I transition from PhD student to faculty member, I will be eager also to transition from the role of TA to the role of lead instructor. I look forward both to taking over as the instructor for existing courses and to developing my own courses. Below is a non-exhaustive list of courses I am prepared to teach.

1. *Industrial Organization.* I am prepared to teach courses in industrial organization at the undergraduate and graduate levels. These courses would provide a strong foundation in IO theory, with topics including models of monopoly—pricing, quality selection, advertising, durable goods, and price discrimination—and oligopoly—Bertrand and Cournot competition, dynamic price competition and tacit collusion, product differentiation, entry, and price discrimination. In addition, the graduate version of the course would cover reduced-form empirical work on each of these topics. The undergraduate version of the course would make use of case studies, draw connections to current events, and discuss competition policy.
2. *Structural methods*. I am prepared to teach a graduate-level course preparing second-year PhD students to use structural methods in their research. This course, modeled on MIT's 14.273 course, would be designed for both IO students and students from other fields (e.g., labor, public, health, spatial) for whom structural methods might be relevant to their future research. The primary topics covered would be demand estimation, production function estimation, entry, product choice, moment inequality methods, single-agent dynamics, dynamic games, auctions, and search. In addition, the course would introduce students to computational and mathematical tools common in structural estimation (e.g., interpolation, quadrature, simulation estimators, Gibbs sampling, and the EM algorithm). To reinforce material presented in lecture, problem sets would ask students to write code to carry out structural estimation methods (e.g., Berry, Levinsohn, and Pakes (1995)).
3. *Microeconomics*. I am prepared to teach microeconomics at the introductory, intermediate, or advanced levels.
4. *Econometrics*. I am prepared to teach a course in econometrics at the undergraduate level or a course in applied econometrics at the graduate level. The latter would cover standard tools for both causal inference and descriptive analysis in empirical research, including regression, randomized experiments, instrumental variables, difference-in-differences, and regression discontinuity. In addition, the course would provide an introduction to machine learning methods.
5. *Applied Machine Learning for Economists*. I am prepared to teach a graduate-level course introducing students to machine learning methods relevant to economics research. The course would begin with an introduction to fundamental concepts: the bias-variance tradeoff; regularization; supervised, unsupervised, and reinforcement learning; and universal function approximator theorems. Building on this foundation, the course would introduce students to a wide range of methods: supervised regression methods (e.g., Ridge, LASSO, and k-nearest neighbors), supervised classification methods (e.g., decision trees, random forests, and neural networks), ensemble methods (e.g., bagging and boosting), unsupervised methods (e.g., k-means clustering, PCA, and t-SNE), reinforcement learning methods (e.g., Q-learning), generative methods (e.g. Generative Adversarial Networks), and ML methods for causal inference (e.g., double machine learning). As students will already be familiar with classical statistical methods, the course would place particular emphasis on practical considerations specific to using ML in research (e.g., model

selection, feature selection/engineering, validation and evaluation). Throughout the course, we would discuss examples of methods' use in recent economics papers.

6. *The Economics of Artificial Intelligence*. I am prepared to teach either a graduate- or undergraduate-level course on the economics of artificial intelligence. At the undergraduate level, the course would cover topics including automation, labor markets, distributional consequences, innovation, market dynamics, and algorithmic fairness. In addition to highlighting recent developments in AI, the course would reflect on other disruptive technologies throughout history, comparing and contrasting current innovations with those of the past. The course would mix lecture-style meetings and open class discussions. Readings would include *Prediction Machines* by Agrawal, Gans, and Goldfarb. At the graduate level, the course would focus on recent research on AI from economics and related fields.
7. *Transportation economics*. I am prepared to teach either a graduate- or undergraduate-level course on transportation economics. The course would include modules on passenger transportation (including personal cars, rideshare, ride hail, and aviation), freight transportation (including the trucking industry—both truckload and less-than-truckload; the railroad industry; container shipper; and bulk shipping), public infrastructure, and environmental impacts. Each module would cover the institutions, market structure, and fundamental economic forces. In addition, with an eye toward policy discussions, each would touch on three key themes: technological change (e.g., electrification and automation), adaptation to shocks (e.g., pandemics and geopolitical conflicts), and environmental impact (e.g., greenhouse gasses and local pollutants). A graduate version of the course would take a deeper dive into recent research papers on each of these topics. The graduate course would also draw connections with other spatial fields, including international trade and urban economics.