NBER Digital Economics and AI Tutorial

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Program and research description

I am a 4th-year Ph.D. student in Harvard's Business Economics program, primarily working in labor and personnel economics. My research examines how firm policies affect productivity, behavior, and employment. My committee includes Professors Raj Chetty, Lawrence Katz, Amanda Pallais, and Jesse Shapiro.

My primary research project (co-authored with James Stratton, Harvard Ph.D. candidate in economics) examines the effects of AI technologies on productivity, task assignment, employment, and other labor outcomes. Specifically, we study the adoption of GitHub Copilot, a generative AI coding assistance tool co-developed by GitHub and OpenAI. We leverage a novel proprietary dataset from Jellyfish ("JF"), a firm that produces software for companies to track the activity of their software engineering teams. JF integrates data on 90 million work events across 50,000 engineers at 300 firms, from the following sources: (1) HR information on wages and job titles, (2) Jira, a project management and task assignment platform, (3) GitHub, a code management platform, and (4) Google Calendar. Critically, JF allows us to observe firm-level adoption of Copilot Business licenses and individual-level usage of Copilot. Using this data, we apply a difference-in-differences approach, exploiting variation in the timing of Copilot adoption. Our preliminary analysis explores its effects on (1) productivity, as measured by coding activity and completed tasks, (2) task complexity, using an NLP-based measure derived from task descriptions, (3) team structure, and (4) employment. Finally, we develop a task allocation model to explain these results, showing that Copilot adoption increases junior workers' comparative advantage in less complex tasks.

In a second research project, we use the same dataset to study the effects of task assignment on workers' career advancement. We first document the effects of task assignment on promotions, using an instrumental variables approach that exploits quasi-random fluctuations in team task compositions. We find that a 1 p.p. increase in a worker's share of senior tasks during their first quarter at a firm leads to a 1.8 p.p. increase in their likelihood of promotion. We then turn to disentangling the mechanisms for why task assignment may matter for workers: task assignment may affect workers' opportunities to (1) accumulate human capital on the job, and (2) signal their abilities to managers.

In a final project (co-authored with Professors Zoë Cullen, Nina Roussille, and Christopher Stanton), we study the prevalence and implications of outsourcing high-wage occupations. Using administrative data from the Bureau of Labor Statistics' Occupational Employment and Wage Statistics program, Lightcast, and a new dataset from Staffing Industry Analysts, we document trends in outsourcing, its wage effects, and firms' motivations for using outsourced workers. Our findings are threefold: First, the outsourced share of the workforce has grown over the past twenty years, with particularly strong growth among high-wage workers. Second, while low-wage occupations experience an outsourcing wage penalty, high-wage occupations exhibit an outsourcing wage premium. Finally, access to specialized talent is a key driver of firms' outsourcing decisions, particularly in high-wage occupations.