Eduardo Duque Rosas

Application to the NBER Digital Economics and AI Tutorial
Stanford University, January 20–21, 2027

Contact information

Email	e.g.duque@lse.ac.uk
Address	London School of Economics and Political Science
	Marshall Building (MAR 5.45), 44 Lincoln's Inn Fields, London WC2A 3LY, UK
Website	eduquerosas.github.io

Graduate study

- *PhD program.* PhD in Economics and Management (2026–present), after the MRes in Economics and Management (2024–26), Department of Management, London School of Economics. Enrolled since September 2024; now in my third year (2026–27). Supervisor: Catherine Thomas.
- *Coursework.* Two years of MRes research coursework (2024–26), completed. Second-year field courses in organizational economics (The Economics of Organisations and Institutions), industrial organization (Economics of Industry for Research Students I and II) and labor economics (Labour Economics for Research Students I). Second-year research paper: "The Organizational Channel of AI."
- *Before LSE.* MSc in Economics (2022) and BSc in Economics (2020), University of Chile. Predoctoral research fellow at Universidad de los Andes, Chile (2022–24, with Jorge Alé-Chilet).
- *During the PhD.* Research assistant at LSE for Veronica Rappoport and Catherine Thomas (2025). Participant in the AI and Economics Summer Institute 2026 (Chicago Booth, Center for Applied Artificial Intelligence).

Research interests

I study the economics of AI inside firms: how firms adopt AI tools, whether those tools change how work is organized, and how algorithmic screening shapes hiring. My fields are labor and organizational economics, with training in industrial organization. A common thread is the use of software-platform data (payroll records, organization charts, applicant tracking systems and product usage logs) to see what happens inside firms, and the measurement problems such data raise.

Through a research partnership with a leading Latin American HR and payroll software provider, I work with administrative data on about 14,000 client firms and almost two million workers in Chile, Colombia, Mexico and Peru. What makes the data unusual is that the platform records each worker's direct supervisor every month, so I can trace every reporting chain up to the CEO and observe the whole hierarchy of each firm: its layers, spans of control and the pay attached to each rung, read off the reporting chain itself rather than inferred from occupation codes or job titles. To my knowledge, no other dataset offers this across thousands of firms: studies of firm hierarchies built on administrative registers, following Caliendo, Monte and Rossi-Hansberg (2015) with French data, infer layers from occupations, and personnel records with supervisor links usually cover a single firm. The data also include monthly payroll records matched to the hierarchy, the firms' applicant tracking system (1.66 million job-seekers, whose CVs are scored by an AI model), usage logs of the provider's AI assistant, and a survey of client firms on their use of AI.

Dissertation

Working title: AI and the Reorganization of Work. *Supervisor:* Catherine Thomas (LSE, Department of Management).

The dissertation asks what AI changes inside the firm, beyond the tasks of a given occupation: who is hired, how a function is staffed, and where workers sit in the hierarchy. It has three parts.

1. The Organizational Channel of AI. Most evidence on AI and work is organized by occupation: exposure measures score tasks, and field experiments hold the reporting line fixed. When a firm adopts AI, however, it may also change the size of a function and the position of its workers in the hierarchy, a channel that occupation-level data cannot see. I study a generative-AI assistant built into the provider's HR software and launched in June 2023, which automates tasks of HR staff but not those of other departments. This gives three comparisons: the HR function against the rest of the same firm, adopting against non-adopting clients of the same vendor, and the staggered activation of individual modules, each automating a different HR task (recruiting, payroll, employee surveys), so that different occupations within the same HR department are exposed at different dates. Adoption leaves firm size and the size, pay and occupational mix of HR unchanged. What changes is the shape of the HR function (Figure 1). In firms that use the assistant, the rest of the firm keeps adding workers at the bottom of the hierarchy while HR does not; in firms that do not use it, HR and the rest of the firm fill the bottom together. This is the pattern one would expect if the assistant takes over the entry-level tasks for which firms would otherwise hire junior HR staff. The average position of HR in the hierarchy does not change, and separating this pattern from firm-wide redrawing of the organization chart is one next step. The other is to measure use directly: in December I will work on site at the provider with the AI tool's own administrative records, which log every interaction between a user and the assistant, so that adoption can be replaced by what each firm's HR staff actually ask the tool to do. Together, these results speak against large cuts in HR headcount or pay in early AI adoption and point instead to a reorganization at the bottom of the function.

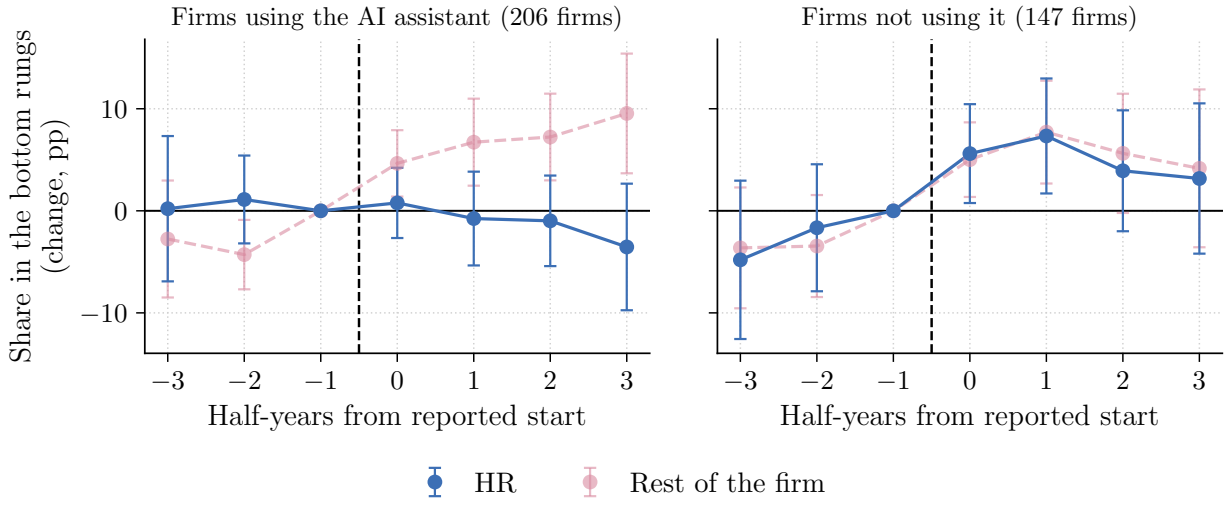


Figure 1: Share of HR workers and of the rest of the firm in the bottom rungs of the hierarchy (four or more levels below the CEO), relative to the half-year before the firm's reported start of AI use (for firms that never used the assistant: their start with general-purpose AI, or a date drawn from users' start dates). Event-study estimates with firm fixed effects; 95 percent confidence intervals clustered by firm.

The chapter's second contribution is methodological. The organization charts that HR platforms hold are rosters of current employees, and they fill in the longer a firm uses the software. On these rosters, several apparent AI effects passed standard placebo, pre-trend and permutation checks, and then disappeared on the survivor-free payroll ledger. I document these failure modes and propose a protocol for using platform data to study AI inside firms.

2. Do Employers Defer to an AI Screen? In the applicant tracking system, an AI model scores each CV. In December 2024 the vendor changed the model overnight, without announcement, for most client firms, shifting scores sharply and changing how the model weighs experience, and with it the scores of younger applicants. Applicants and vacancies did not change, so the switch is an exogenous shock to an algorithmic signal. I use it to study how much employers rely on the screen: whether the shift passes through to which candidates recruiters advance and hire, whether recruiters read the score as a level or as a rank within the vacancy, and what happens to the age and experience of the workers they hire. The chapter connects to work on algorithmic hiring and on how human decision-makers use machine predictions.

3. Information and the use of AI: an experiment (in design). Use of the AI assistant varies enormously across firms, even though it is free and built into the software they already use, and firm characteristics explain little of that variation. One explanation is information: workers and managers may not know what the tool can do for them. With the provider, I am designing a randomized experiment that sends a practical manual for the assistant to HR workers, to their bosses, or to neither (a control group). The usage logs measure the response directly; comparing the two arms shows whether use spreads from the bottom up or from the top down; and the random variation in use lets me return to the organizational questions of the first chapter.

Publications and other research

- "Local Non-Bossiness," with Juan Sebastián Pereyra and Juan Pablo Torres-Martínez. ***Journal of Economic Theory***, 236, September 2026, 106230.
- "The Strong Effects of Weak Externalities on School Choice," with Juan Pablo Torres-Martínez. Working paper.
- "Consumers' Activism Against Collusion in the Retail Market," with Jorge Alé-Chilet, Nano Barahona, Andrés González-Lira and Sebastián Otero. Work in progress.

Why this tutorial

My projects sit where digital economics meets labor and organizational economics, and I am now deciding which of them anchors the dissertation. The tutorial and the NBER Digital Economics and AI meetings would let me learn from researchers working on platforms, algorithmic decision-making and AI adoption at the point where their feedback matters most for these choices. I would travel from London and would need hotel accommodation.