The Race between Academia and Industry for AI Researchers*

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Abstract

The advances of artificial intelligence (AI) are built on the substantial groundwork laid by researchers. In this paper, we study the labor market competition between academia and industry for AI researchers. Consistent with academia and industry rewarding the same talent, we find that publications in AI-related conferences are more predictive of employment in industry vis-à-vis academia. We also provide causal evidence via a (reweighted) difference-in-differences design, exploiting data from a leading AI conference that publicly releases submissions and referee reports. On average, a publication increases the chance of moving to a top firm by 2-6 percentage points in the next 1-3 years. Transitions into top firms are driven by male researchers, whereas female students and postdocs are more likely to get tenure-track positions following a successful publication. Researchers who move to top firms subsequently publish less than those who get on tenure track, suggesting that an increasing concentration of talent in industry could compromise the efficiency of research production.

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1 Introduction

The advances of technology rely heavily on academic research. Traditionally, most research works are produced in academia, but in one of the most important areas today — artificial intelligence (AI) — over 45 percent of the publications at academic conferences involve researchers from industry, driven by scientists hired by the largest tech firms.[1] Despite the large and growing literature on the economic consequences of AI (Acemoglu 2024; Furman and Seamans 2019), less is known about the researchers who produce the original ideas that advance these technologies. Given the different incentives in academia versus the private sector (Aghion, Dewatripont, and Stein 2008), the allocation of these researchers across employers could influence the private versus social value of AI research.

This paper aims to examine the labor market competition for AI researchers between academia and industry, study how researchers are rewarded for their publications, and investigate the consequences of the allocation of talent on research productivity. By building a longitudinal dataset on the career trajectories of about 150,000 researchers who publish at computer science (CS) conferences, we analyze the initial sorting of graduates into different types of employers, and the role of publications in driving this sorting and subsequent job movements. We find that AI publications are more predictive of job movements to top firms than to academia. We then corroborate this finding by leveraging data from a leading AI conference that has publicly released all submissions and referee reports since 2017. Using a difference-in-differences design, we find an accepted paper increases sorting into top firms, especially among students and postdocs. The reallocation of researchers from academia to industry has consequences on future research: those who move to top firms publish fewer papers thereafter.

Starting with publications data from 89 major CS conferences, we matched individual authors with professional profiles collected by Revelio Labs by name and affiliations. We constructed the education and job history for 150,000 CS authors who published at least one paper between 2000 and 2023 and reported at least a college degree.[2] We begin by showing trends in the job placement of these authors within three years of obtaining their highest degrees. At the PhD level, the share working in academia three years after graduation declined from 55 percent to 42 percent between 2005 and 2020. Meanwhile, the share of PhD graduates joining one of the top tech firms, defined as the six big tech firms {Alphabet, Meta, Amazon, Apple, Microsoft, IBM}, doubled from 6 percent to 12 percent. These opposing trends highlight a substantial reallocation of CS research talent

[1] The share of publications with industry researchers is computed from the publication and author affiliation data from Scopus. We plot the trend in Appendix Figure A.1.

[2] The supply of computer scientists has been increasing over time. Every year about 4,000 individuals graduate with a PhD degree in Computer Science or Electrical Engineering in the U.S. alone——about three times the number of economics PhD graduates (Appendix Figure A.2).

from academia toward industry. These trends are driven by graduates who are from top schools or are positively selected in research productivity prior to graduation, suggesting that top tech firms successfully recruit research talent in the beginning of their careers.

How do industry and academic employers identify research talent? We show that publications play an important role in the initial sorting of workers in both sectors, with AI publications mattering more for employment in industry. Publications carry information about the research ability of authors. We estimate the relationship between publications before graduation and the characteristics of a person's first primary job post highest degree, conditional on observable characteristics such as demographics and school and cohort fixed effects. Publications at AI conferences are strongly predictive of being placed in industry. Every additional AI paper before graduation increases the chance of working in industry by 0.2 percentage points (p.p.) and increases the chance of working for a top firm by 0.5 p.p., which is a 7 percent increase relative to the mean. The correlation between AI publications and employment at top firms is the strongest among PhD graduates, consistent with the sorting patterns among CS PhD graduates in Wu (2025). In contrast, AI papers are less predictive of being placed in academia relative to papers published in other CS areas. In fact, publishing in AI conferences is negatively predictive of working in academia for PhDs.

We show that AI publications also matter for subsequent sorting in the labor market. AI publications are predictive of transitions into top firms from both academia and other (nontop) firms in industry. We complement these results with an event study around the researchers' first AI publication after graduating, finding a persistent increase in employment by top firms in the next 3-5 years.

These results suggest that top tech firms attract researchers who publish at AI conferences and are able to hire from both industry and academia. However, publications may simply proxy for underlying ability and need not, by themselves, lead to a job at top firms. To address this endogeneity concern, we exploit the International Conference on Learning Representations (ICLR), one of the leading AI conferences that publicly releases all submitted papers, referee reports, and editor decisions. The availability of all submissions allows us to observe a control group comprised of rejected authors. There is substantial uncertainty about whether a paper is accepted (and therefore published) by ICLR, especially for papers that receive referee ratings on the margin of acceptance. We therefore use a difference-in-differences design to estimate the causal impacts of a publication on the career outcomes of researchers, such as moving to a top firm or getting a tenure-track job.

We focus on authors who submit to ICLR for the first time between 2017 and 2020. By matching the ICLR authors with Revelio, we build a balanced panel in which we observe the career paths of authors from five years prior to their first submission to ICLR to three years afterwards. Our identifying assumption is that absent the ICLR decision, accepted authors would have followed parallel career trajectories as rejected authors. On average, accepted authors look very different

from rejected authors: they submit papers of higher quality (according to referee ratings), are slightly younger, more likely to be white, and more likely to be in academia before submitting to ICLR. Given the lack of balance in pre-treatment characteristics between accepted and rejected authors in the full sample, we follow Abadie (2005) and assume parallel trends conditional on observables, which include paper ratings, demographics, and job history before the event. We use inverse propensity weighting and matching methods to compare accepted authors with rejected authors who (on average) look more similar in the quality of their submissions and characteristics before submitting to ICLR.

In the original sample without reweighting, the acceptance by ICLR is estimated to increase movements into top firms from other places by 2.4 p.p. in the next three years after the conference. By reweighting rejected authors to achieve covariate balancing, we eliminate differential pre-trend in sorting to top firms and estimate that the publication increases the mobility to top firms by 3 p.p. one year after the conference, and by 4.5-6.7 p.p. in the following two years. We further estimate separate event studies based on the original employer of the authors in the year before the ICLR conference. We find that the largest estimated effect of an ICLR publication on sorting to top firms is observed among students and postdocs, suggesting that top firms use AI publications to identify research talent early in their careers – precisely before or near when researchers are likely to reach peak productivity (Jones et al., 2014).

We then show that initial placements into top firms are driven primarily by men. Among authors who are students/postdocs before their first ICLR conference, we estimate the dynamic difference-in-differences models separately by gender. An ICLR publication significantly increases the probability that female students secure tenure-track jobs in academia but does not increase their moves to top firms. For male students, the pattern reverses: acceptance increases mobility to top firms, with no corresponding boost into tenure-track academia. Insofar as men and women differ in the type of research they produce, the gender differences in sorting into top firms vs. tenure-track jobs could have implications on the direction of AI research in industry vs. academia.

Lastly, we study the consequences of the growing competition between academia and industry for top AI researchers. Using the Scopus-Revelio linked job and publication data, we track publication trajectories of computer scientists who move to top firms versus tenure-track academic positions. Before moving, researchers who later join top firms exhibit steeper increases in publication output, especially in AI-related work, consistent with either firms selecting highly productive AI researchers or scholars increasing AI output in anticipation of recruitment. After the move, publication activity diverges sharply: output among authors moving to tenure-track jobs stabilizes and resumes growth, while that of researchers joining top firms falls and remains well below pre-move levels. A staggered difference-in-differences analysis confirms these patterns: in the five years fol-

lowing the move, total publications decline by roughly 52 percent and AI-related publications by about 40 percent among authors moving to top firms, relative to researchers entering tenure-track positions. Building on this evidence, we plan to examine how such transitions affect the direction and quality of AI research.

This paper contributes to several strands of the literature. First, we contribute to the literature that examines the career progression of scientists or researchers, especially the role of publications in driving promotions and sorting between employers. Publications are arguably the most important measure of research ability. Research focusing on the economics profession has shown the value of publications in getting tenured (Sarsons 2017) and being awarded as a fellow of the Econometrics Society (Card, DellaVigna, Funk, and Iriberri 2022). We expand this area of research by looking at a richer set of career outcomes in both academia and industry. Job placements in industry have become more common in computer science and economics; yet there has been little research on whether and how much industry employers value academic publications. We fill in this gap by showing that in the field of computer science, not only does industry value publications, but top firms are more successful in recruiting researchers publishing in AI than academia.

Second, in the context of computer science, we contribute to a growing area of research on the brain drain of professors in AI fields from academia. Although professors may continue to produce high-quality research when collaborating with industry (Yue 2024), the poaching of AI professors by tech firms has negative spillover on students, reducing students' startup formation (Gofman and Jin 2022). We document that the race between academia and industry not only affects senior researchers but junior researchers such as students and postdocs. AI publications are more predictive of an initial job placement in top firms than of a placement in academia among PhD graduates. This finding is robust in the quasi-experiment based on a leading AI conference. This result indicates that the competition for talent begins at the very start of researchers' careers, thus potentially amplifying its impact on research production.

More broadly, our results also speak to the literature on industry–academia research trade-offs (Aghion, Dewatripont, and Stein 2008). Liang et al. (2024) find that in the context of AI, academic researchers are more likely to produce novel work, while industry researchers produce work with higher impact (as measured by citations). These findings are echoed in Färber and Tampakis (2023), who also find that AI research produced by industry coauthors receive more online attention. Jurowetzki et al. (2021) finds that researchers who move to industry only experience a temporary increase in citations. In the long term, both the direction and the quality could differ between research produced in academia and industry. Privately funded research may also lead to inefficiently low creative destruction, as evidenced by high-tech entrepreneurship arising from universities (Babina, He, Howell, Perlman, and Staudt 2020).

Section 2 describes the data we use in our analysis. Section 3 provides descriptive evidence

on the relationship between job placement or mobility and paper publications. Section 4 presents our difference-in-difference analysis on submissions to ICLR. We analyze how researchers' output changes after a move to industry in Section 5. We conclude by discussing future directions for this project.

2 Data

We collected data on the career trajectories of computer science researchers who published at 89 CS conferences.[3] Our data has three main sources: (1) Scopus for CS publications, (2) Revelio individual profiles for education and job history, and (3) OpenReview for submissions to the International Conference on Learning Representations (ICLR), a top AI conference that makes public referee reports for accepted and rejected papers.

Publications. The most prestigious publication venues in computer science are often conferences rather than journals. We collected conference proceedings on Scopus, a large-scale publication database produced by Elsevier.[4] Each paper comes with a complete list of authors and their affiliations, which indicate the academic affiliation or the employer of an author at the time of publication. Between 2000 and 2023, there are almost 900,000 unique authors (full names) across the globe, and 36.3% of them have at least one publication at an AI-related conference.[5] Figure A.3 shows the trends in topics of AI research in the past 25 years. Most AI publications in our data predate the rise of large language models (LLM), and focus more broadly on machine learning, neural networks, and applied areas such as natural language processing and computer vision.

Education and Job Histories. We used individual-level data collected by Revelio Labs to obtain education and employment histories self-reported on the largest online professional network. We matched computer science authors with individual profiles by full name and affiliations, and ranked potential matches based on the number of affiliations in common. We established over 276,600 one-to-one matches between CS authors on Scopus and Revelio individual profiles, and focused on roughly 150,000 matches that report at least one post-secondary degree, and at least one job on their profiles. 56% of the matched individuals report a PhD, and 31% report a master's as the person's highest degree. About 45% of the CS authors report living or having worked in the US,

[3] We include all conferences that are used to rank computer science departments by CSRankings. The conferences listed on CSRankings were developed in consultation with faculty across a range of institutions, including via community surveys.

[4] We are especially grateful to Anna Sun for her help with the Scopus Search API.

[5] AI-related conferences include 24 conferences in AI, machine learning, computer vision, natural language processing, and information retrieval on the web.

and the fraction with a PhD degree is 61%. Outside the US, Germany, India, the UK, China, and Canada each account for 3-6% of the matched CS authors.

We build a person× year panel for matched authors across the globe. The panel is balanced: for each person, it includes all years between max{2000, year of graduation} and 2023. The primary affiliation at person× year level is a person's university if she is still a student and otherwise is her main employer as reported in her job history. Section 3 will present our findings on the initial job placement of CS authors, and the predictive relationship between publications and career outcomes in industry or academia based on this panel (henceforth "Scopus-Revelio").

International Conference on Learning Representations (ICLR) Based on the h5-index on Google Scholar, ICLR is ranked as the second most impactful conference in artificial intelligence.[6] ICLR is also one of the few major conferences that makes public both their accepted and rejected submissions using a double-blind, open peer-review process on the OpenReview platform. This allows us to observe detailed review materials, including referee scores, written reports, and editorial decisions. We scraped such information on the universe of ICLR submissions between 2017 and 2023 on OpenReview.

Similar to "Scopus-Revelio", we also matched ICLR authors with their education and job histories in the Revelio data by full name and affiliations. We established over 20,000 one-to-one matches between ICLR authors and Revelio individual profiles. 91% of the matches report at least one job on their online professional profiles. We further merged the ICLR-Revelio sample with publications from Scopus and Web of Science to keep track of individual research productivity before and after an ICLR submission.

3 Descriptive Analysis: Job Placements and The Role of Publications

3.1 Job Placement of CS Graduates in Industry versus Academia

Using data spanning the past 15 years, we document that an increasing fraction of new graduates have sorted into industry jobs – specifically positions at top technology firms – rather than pursuing academic careers. We begin by documenting the trend within the least restrictive sample, which includes all CS graduates (bachelor's, master's, PhD) and all industry or academic positions. Fig-

[6]We used conference ranking on Google Scholar based on h-index: https://scholar.google.com/citations?view_op=top_venues&hl=en&vq=eng_artificialintelligence. The three most impactful conferences in AI are: Conference on Neural Information Processing Systems (NeurIPS), International Conference on Learning Representations (ICLR), and International Conference on Machine Learning (ICML).

ure 1 Panel (a) plots the share of graduates employed in industry (left y-axis) and in academic positions (right y-axis) three years after degree completion by graduation cohort. The share of CS researchers in 2005 whose initial placement is a job in industry rises from roughly 57% to 67% between 2005 and 2019; the share in academic positions shows a commensurate decline over the same period.[7]

To further assess whether industry and academic positions compete for the same pool of talent, we disaggregate these trends by graduate type and position in Panels (b)-(d) of Figure 1. Academic positions are primarily comprised of postdocs and tenure-track positions and, therefore, require a PhD. Panel (b) replicates the same upward trend among PhD recipients, suggesting that the shift toward industry employment is not driven by growth in the number of bachelor's or master's graduates.

Panels (c) and (d) of Figure 1 then examine these trends when focusing on the roles that would be considered the most prestigious or competitive within each sector, again for the full sample and the PhD subsample. Among academics, we focus on tenure track roles, and among industry positions, we focus on positions at the top six tech firms.[8] In 2005, roughly 6 percent of CS PhDs were employed by top firms within three years, compared to 30 percent in academia. Since then, top industry placements have risen to about 11 percent in 2020 (a 83 percent increase), while academic placements have declined to 17 percent (an 57 percent decrease). These opposing trends underscore a major shift of CS research talent from academia to industry, where top roles now compete for the same talent.

A natural question is whether the shift toward employment in top tech firms is driven by graduates with high research potential – implying greater competition between academia and industry for research talent – or instead by those with lower research potential or a weaker interest in academic careers, as was more typical of earlier cohorts. To explore this, we examine these trends separately for CS graduates with high research potential, as proxied by graduation from a top school. Figure 2 replicates the earlier trends for graduates from top schools and from other institutions. Both the increase in top-firm placements (left panel) and the decline in academic placements (right panel) are evident across all graduates but are especially pronounced among those from top schools—consistent with growing competition between academia and industry for top research talent. We also examine the pattern using an alternative proxy for CS graduates with high research potential – those with at least one publication prior to graduation. The results are similar using this measure and are reported in Appendix Figure A.5.

[7] These shares will not add exactly to one because individuals may be unemployed, and thus neither in industry or academia.

[8] Throughout the paper, we define top firms as the six largest tech firms (before the more recent rise of Nvidia): {Alphabet, Meta, Amazon, Apple, Microsoft, IBM}.

3.2 Publications Predict Initial Placement and Job Mobility

How do industry and academic employers identify research talent? Conference publications carry information about the research ability of authors, and they are often mentioned as preferred qualifications in research scientist jobs in industry (see Appendix Figure A.6 for example). To understand the role of publications in the initial sorting of workers between industry and academia, we estimate a regression of first job post highest degree on publications before graduation as follows:

$$y_i = \beta_0 + \beta_1 \text{ AI-Pub}_i + \beta_2 \text{ Oth-Pub}_i + X_i'\Theta + u_i \tag{1}$$

We estimate (1) for a series of outcomes (y_i's) that characterize a person's job in the year after obtaining her highest degree (bachelor/master/PhD), such as indicators for whether the job is in industry or academia. Among those placed in industry, we further ask whether the person is employed by one of the top tech firms and whether she works as a research scientist or engineer according to her job title. For graduates who start working in academia, we look at whether she gets a postdoc or tenure-track position. We count the number of publications at AI conferences before graduation year (AI-Pub$_i$), and the number of publications at other CS conferences before graduation (Oth-Pub$_i$).[9] We also control for observable characteristics such as gender, race, cohort, and school fixed effects.

Table 1 shows the OLS estimates for the main coefficients of interest: (β_1, β_2) on the publication counts before graduation. Publications at AI conferences are strongly predictive of being placed in industry. Every additional AI paper before graduation increases the chance of working in industry by 0.2 p.p. (column 1) and increases the chance of working for a top firm by 0.5 p.p. (column 2), which is roughly a 7% increase relative to the mean. AI papers are also positively correlated with becoming a research scientist (column 3), which often describes publishing at CS conferences as part of the job (Appendix Figure A.6). In contrast, AI papers before graduation are negatively correlated with becoming an engineer (column 4), a role that does not emphasize research.

The number of publications at other CS conferences before graduation is positively related to getting a job in academia, as shown in columns 5-7 of Table 1. AI papers, in comparison with papers in other CS areas, are not predictive of initial placement in academia such as tenure-track positions but are predictive of postdoc jobs.

Most academic jobs presumably require a PhD degree. We estimate the same regressions (1) by the level of the highest degree, and show the estimates in Figure 3. Among PhD graduates, each additional publication in a non-AI conference before graduation predicts a 0.2 p.p. increase

[9] We coded 24 conferences on AI, machine learning, computer vision, NLP, information retrieval on the web as AI conferences.

in the probability of being on the tenure track, which is a 1.4% increase relative to the mean. Any AI paper predicts a 0.1 p.p. lower chance of a tenure-track job (column 7 of Table A.1). Not surprisingly, for authors who do not report a PhD degree, publications before graduation matter little for getting a tenure-track job (Figure 3b).

Figure 3(a) shows a significantly positive relationship between AI papers before graduation and getting initially placed in top firms among researchers with a PhD or Master's degree. This relationship is the strongest for PhD graduates who are the most likely to take research-intensive positions in industry: every AI paper before PhD increases the probability of initial placement at top firms by 0.7 p.p., a 9% increase relative to the mean.

Do publications after graduation matter for sorting in the labor market between academia and industry, and between nontop and top firms? We answer this question by estimating OLS regressions of job mobility (after graduation from each person's highest degree) on indicators for publications at person×year level:

$$y_{it} = b_0 + b_1 \,\text{AI-Pub}_{it} + b_2 \,\text{Oth-Pub}_{it} + X_{it}'\theta + \varepsilon_{it} \tag{2}$$

$(\text{AI-Pub}_{it}, \text{Oth-Pub}_{it})$ are indicators for any publication at an AI-related conference by worker i in calendar year t, and any publication at other CS (but non-AI) conferences. In addition to demographics, the controls X_{it} also include a cubic polynomial in experience since graduation, position characteristics, and a Heckit correction for reporting any job (Heckman 1974).[10] We compare the employer next year, $j(i,t+1)$, with the current employer $j(i,t)$, and examine three outcomes: (1) whether the worker is employed by industry next year, (2) whether the next-year employer $j(i,t+1)$ is a top tech firm, and (3) whether the worker is employed by academia next year. We estimate the OLS regression (2) separately based on the current employer, taking into account that workers at top firms may sort differently from those at other firms in the industry and from those in academia.

The estimates of (b_1, b_2) on indicators of publications are presented in Table 2. For workers already employed by industry (nontop or top firms), having any publication is negatively correlated with staying in industry (column 1 or 4) but positively correlated with moving to academia (column 3 or 6). Academics who publish a paper in AI or other areas also experience a 1.1 p.p. or almost 18% increase in movement to industry. Workers in academia include postdocs or non-tenure-track researchers. We will carefully differentiate between them in the causal analysis among authors who submit to ICLR in Section 4.

Publishing any AI paper strongly predicts moving to a top firm from other "nontop" firms or academia (columns 2 and 8). Among workers at nontop firms, any AI publication this year is

[10] See Table A.2 for the full set of controls.

estimated to increase the probability of moving to top firms by 1.5 p.p., doubling the likelihood that workers move up the job ladder in industry (column 2). In comparison with the outcome in column 3 — moving to academia, AI papers are more predictive of moving to top firms than of moving to academia. Any AI paper also predicts a 0.8 p.p. increase in movements from academia to top firms, a 118% increase relative to the mean (column 11). Figure 3(c)-(d) break down the estimates by the level of the highest degree reported. AI papers are positively correlated with movements to top firms for workers without a PhD degree as well.

Having established that AI publications predict one's placement or mobility into top tech firms, we estimate a descriptive event study around AI publications. We focus on the first AI publication after (or in the year of) graduation. We estimate the following two-way fixed effects event study:

$$y_{it} = \beta_0 + \sum_{\forall l \neq -1} \beta_l D_{it}^{(l)} + \delta_t + \alpha_i + \varepsilon_{it} \tag{3}$$

where i indexes person and t indexes calendar year. Letting τ_i denote the year in which person i publishes her first AI paper after graduation, we define the event dummy $D_{it}^{(l)} = 1$ if it has been l years since the first AI paper, where $l \in [-23, 23]$. We include individual and year fixed effects (α_i and δ_t), and standard errors are robust and clustered at the person level. Only individuals who publish at least one AI paper after graduating are included in the sample.

Panel (a) of Figure 4 shows the event study estimates. In the year of the first AI publication ($l = 0$), authors are 4.1 p.p. more likely to work in a top firm relative to the year before. The increase could be driven by (1) workers who move into top firms and publish in the same year, (2) workers who publish first and then get poached by top firms, and (3) incumbents who publish and are retained by top firms. Given that we do not find a correlation between publications and retention at top firms based on year-to-year transitions (column 5 of Table 2), we estimate the same event study with the sample restriction that authors who are not employed by top firms at -1, in order to focus on the impacts of the publication on moving to top firms from *other* places. Panel (b) of Figure 4 shows the estimates under this sample restriction. The similar increases in employment by top firms suggest most of the effects are driven by movers into top firms rather than stayers.

We then compare the estimates $(\beta_1 - \beta_0)$ to ensure that we are focusing on workers who first publish and are subsequently poached. One year after the publication, we find an additional 1.8 p.p. increase in the employment at top firms that represents an inflow of publishing authors to top firms. This estimate is very close to the 1.5 p.p. predictive effect of any AI publication for moving to top firms from nontop firms shown earlier (column 2 of Table 2). The probability of working at top firms continues to rise for two years and stabilizes around 7 p.p. three to five years after the publication.

In comparison, the increase in sorting to tenure-track positions following an AI publication is muted — relative to the year before publication, authors are 1.1 p.p. more likely to work in a tenure-track position at 0 (in the year of the publication). In the year after the publication, there is an additional 1.5 p.p. increase. This estimate of $(\beta_1 - \beta_0)$ is similar to that of top firms, perhaps indicating that AI publications are no more likely to lead to mobility into top firms relative to tenure-track positions. However, assuming that the propensity for AI publications to occur in the same calendar year as a move (at 0) is the same across top firms and tenure-track positions, the differential increase in employment at top firms between event time -1 and 0 could indeed be indicative of greater interest from top firms in such researchers. In the analysis presented in the next section, we are able to identify the timing of publication relative to the move, since we know when the ICLR conference takes place.

Together these results suggest that top tech firms attract researchers who publish at AI conferences and are able to hire from both industry and academia. The observed correlations between publications and favorable job outcomes may reflect positive selection of publishing authors rather than employers using publications to screen for talent. To address this endogeneity concern, in the next section we will present causal evidence that publications increase movements into top firms from one of the leading AI conferences, ICLR.

4 Causal Impacts of Publications on Career Trajectories

The International Conference on Learning Representations (ICLR), one of the top three AI conferences, has publicly released all submissions, referee reports, and editorial decisions since 2017. We exploit this "open review" feature to estimate the causal impacts of AI publications on the career outcomes of researchers using a difference-in-differences design. This section presents our empirical strategy and estimates of an accepted paper (publication) on sorting into top tech firms from other employers in academia and industry. We also analyze the gender differences in the impacts of a publication on getting a tenure-track job versus a job at top firms.

4.1 Empirical Strategy

The open-review process of ICLR allows us to observe the numeric ratings and comments by referees, based on which editors decide whether a paper can be accepted (published).[11] On average, each submission gets 3-4 referees, who rate the paper on a discrete scale from 1 to 10, with 5

[11] Accepted articles are published as ICLR conference proceedings. There are papers that are accepted into poster sessions but not oral presentations at the conference. We will look into whether the papers with a presentation matter more than papers with a poster.

suggesting marginally reject and 6 suggesting marginally accept.[12] More than 80% of the papers with an average rating above 6.5 were accepted by the editor, and most papers with an average rating below 5 were rejected. There is substantial uncertainty, however, for submissions with average ratings in the middle (Appendix Figure A.7). This uncertainty suggests that the editorial decision among papers that receive similar ratings could be very arbitrary.[13]

We use a difference-in-differences design to estimate the impacts of an accepted publication on career outcomes, such as sorting to top firms or getting a tenure-track job. The underlying assumption is that, absent the ICLR decision, accepted and rejected authors would have followed parallel career trajectories. Focusing on the first time an author submits to ICLR, we consider the following difference-in-differences regression:

$$Y_{it} = b_0 + b_1 Post_{it} + b_2 Accepted_i + b_3 Post_{it} \times Accepted_i + \delta_t + \alpha_i + \nu_{it} \tag{4}$$

where $Post_{it} = 1[t > \tau_i]$ indicates years after the author i submits to an ICLR conference for the first time (τ_i is the event year for i). $Accepted_i$ indicates if her first submission is accepted. We also control for calendar year fixed effects to absorb common trends and person fixed effects α_i to account for time-invariant unobserved heterogeneity between individuals. The coefficient of interest is b_3, which represents the average treatment effect of an accepted paper on the treated (ATT) under the parallel trend assumption. We also estimate a dynamic difference-in-differences or event study model:

$$Y_{it} = \beta_0 + \sum_{l=-5, l\neq -1}^{3} \beta_l D_{it}^{(l)} + \zeta Accepted_i + \sum_{l=-5, l\neq -1}^{3} \gamma_l D_{it}^{(l)} \times Accepted_i + \delta_t + \alpha_i + \varepsilon_{it} \tag{5}$$

$D_{it}^{(l)} = 1[t - \tau_i = l]$ is an event dummy that indicates l years relative to the event. The coefficients of interest are $\{\gamma_l\}$, which represent diff-in-diff estimates for an accepted paper on career outcomes at l. The coefficient b_3 in regression (4) can be viewed as an average of $\{\gamma_l : l > 0\}$, pooling the post periods.

4.1.1 Identifying Assumptions

The identification of ATT in the equations (4) and (5) hinges on the parallel trend assumption that, given any periods $s \neq t$, $E[Y_{is}(0) - Y_{it}(0)|Accepted_i = 1] = E[Y_{is}(0) - Y_{it}(0)|Accepted_i = 0]$, in

[12] The rating scale changed in 2020, but the margin of acceptance remained the same at 6. We take this change into account when estimating the weights in the covariate balancing and construction of propensity score of acceptance described later in this section.

[13] NeurIPS, the highest-ranked AI conference, conducted a consistency experiment in 2014 and found that 60% of accepted papers were rejected in the 2nd round if they were reviewed a second time (Cortes and Lawrence 2021).

which $Y_{it}(0)$ represents the counterfactual career outcome of an author absent the ICLR acceptance. As pointed out in Abadie 2005, this assumption may be implausible if pre-treatment characteristics that are thought to be associated with the career trajectories of authors are unbalanced between the accepted and rejected authors.

Table A.3 provides a comparison between accepted and rejected authors who submit to the ICLR for the first time. On average, the submissions by accepted authors have a mode of rating above 6 (the margin of acceptance), whereas the papers by rejected authors have a mode around 4. The minimum rating received by a paper represents the most negative review. Accepted authors on average get a minimum around 5.5 while rejected authors get a minimum around 3.3. The two groups also look different in demographics and educational background: accepted authors are 0.35 years younger, more likely to be male, white, and US-based, and more likely to report a PhD degree on their Revelio profiles. Almost 14% of accepted authors are employed by a top firm in the year before the ICLR conference, 6% higher than the rate among rejected authors.

We are most interested in estimating the impacts of an ICLR publication on sorting to top firms from other places. Among authors who are not employed at top firms in the year prior to their first ICLR conference, accepted and rejected authors show different pre-trends (Appendix Figure A.8).[14] Accepted authors are more likely to have worked for top firms two to five years prior to the ICLR event. The gap only becomes zero by the sample restriction at -1. The lack of balance in pre-treatment characteristics in Table A.3 and the pre-trend in Figure A.8 suggest we have to act with caution when implementing the difference-in-differences design.

To address this concern, we make alternative assumptions as in Abadie (2005), and adopt a two-step strategy.

Assumption 1 (Parallel Trends Conditional on Observables) *Let τ_i denote the event year of an author, and X_i represent pre-treatment observable characteristics of the author and the quality of the paper. Given any periods $s \neq t$,*

$$E[Y_{is}(0) - Y_{it}(0) | Accepted_i = 1, X_i] = E[Y_{is}(0) - Y_{it}(0) | Accepted_i = 0, X_i] \tag{6}$$

Assumption 2 (Common Support) *Given pre-treatment observable characteristics X_i,*

$$Pr(Accepted_i = 1 \,|\, X_i) < 1 \tag{7}$$

Under Assumptions 1 and 2, we can identify ATT by estimating regressions (4) and (5) if the non-parallel career trajectories are caused by the observed compositional differences between accepted

[14] The sample is restricted to authors who are not employed by top firms at -1, so there is no difference between accepted and rejected authors at -1. Figure A.8 shows that accepted authors are 1 p.p. more likely to be employed by top firms at -3 than (unweighted) rejected authors, suggesting that they may have been more positively selected or recognized by top employers even before the result of the ICLR event is known.

and rejected authors. We include in X_i the mode and the min rating received by the author's submission, the number of authors on the paper, demographic characteristics such as age, gender, and education level of an author, publication history, and job history in each year between [-3,-1] years relative to the ICLR conference (see Table 3 for the complete list). Other than the referee ratings and team size, every control in X_i is either time-invariant or a pre-treatment characteristic. Controlling for the mode and the minimum referee ratings allows us to compare authors who submit papers of similar quality.

4.1.2 Weighting and Matching Procedures

Our two-step strategy involves first estimating a propensity score of acceptance based on observable characteristics of the authors and their paper quality, then estimating difference-in-differences models with inverse propensity weights.

First, following Rosenbaum and Rubin (1983), Hirano, Imbens, and Ridder (2003), and Imbens (2004), we fit a logistic regression of paper acceptance on X_i, record the propensity score $\hat{p}_i$ from maximum likelihood estimation, and assign weight $\frac{\hat{p}_i}{1-\hat{p}_i}$ to rejected authors and 1 to accepted authors. The inverse propensity weighting (IPW) allows us to compare accepted authors with rejected authors who have a similar likelihood of having their papers accepted on average, and then we interpret the difference-in-difference estimates as ATT under the identifying assumptions.

Second, we adopt inverse propensity tilting (IPT) in Graham, De Xavier Pinto, and Egel (2012) and estimate the propensity scores by balancing the covariates between accepted and rejected authors:

$$E[X_i] = E[\frac{1-Accepted_i}{1-p(X_i'\theta)} \times X_i]. \tag{8}$$

in which the propensity score is logit $p(X_i'\theta) = Pr(Accepted_i|X_i) = \frac{exp(X_i'\theta)}{1+exp(X_i'\theta)}$. We estimate the parameters θ by solving the moment conditions (8) and assign weight $\frac{p(X_i'\hat{\theta})}{1-p(X_i'\hat{\theta})}$ on each rejected author. Given the IPT weights, the means of pre-treatment X among reweighted rejected authors equal the means among treated or accepted authors, allowing us to make causal comparisons between groups with identical mean observables. Słoczyński, Uysal, and Wooldridge (2025) shows that in difference-in-differences settings, the doubly robust estimator proposed by Sant'Anna and Zhao (2020) is numerically equivalent to the IPW estimator of Abadie (2005) with IPT weights. The covariate balancing estimator with a logistic propensity score model is also equivalent to entropy balancing proposed by Hainmueller (2012) (Zhao and Percival 2017; Tan 2019).

Given our interest in the impact of a publication on sorting to top firms from other places, we focus on authors who were not employed by top firms in the year before their first ICLR confer-

ence.[15] We estimate the IPT weights by solving (8) under this sample restriction. Table 3 shows the differences between accepted and rejected authors, before and after reweighting. Relative to the full sample shown in Table A.3, we drop 15% of the accepted authors and 10% of the rejected authors, but the (unweighted) mean characteristics remain largely unchanged as shown in the first 2 columns of Table 3.[16] The mode of referee rating for an accepted author is 6.31, which is 2.31 points higher than the rating received by a rejected author. After the reweighting via IPT, rejected authors also on average have a mode rating of 6.31, which is by construction, given that the mode is included in X and we solve the moment equations in (8). The only variable summarized in Table 3 that is not included in X is mean rating. The reweighted average among rejected authors is 6.16, which is 0.38 points lower than the average among accepted authors. This reweighted difference is much smaller than the 2-point gap without reweighting. Since X includes indicators for whether a worker is employed by top firms -3, -2, -1 years relative to her first ICLR conference, Figure A.8 shows that after reweighting, there is no differential pre-trend in employment by top firms during the window $[-3,-1]$.

In addition to the propensity score weighting (likelihood or covariate balancing), we also apply coarsened exact matching to select a matched control group for accepted authors (Iacus et al. 2012; Jäger and Heining 2022; Sarsons 2017). We match authors based on the quality of the papers, demographic characteristics, and publication and job histories before they submit to the ICLR for the first time. The matching procedure is detailed in Appendix A1. If we draw without replacement, we can match 1,263 accepted authors to 1,263 rejected authors, who look more similar to each other than in the original sample (without reweighting). However, since authors are first put in the bins based on observable characteristics, the covariates are not perfectly balanced as in the IPT procedure. Relative to reweighting techniques, establishing 1-1 matches also drops a large number of accepted and rejected authors, reducing the power in our analysis. We use the matching method mainly as a robustness check.

The reweighting and matching methods above allow us to compare accepted authors with rejected authors who submit papers of similar quality and are observably similar. In the second step, we estimate the difference-in-differences model (4) and the event study (**??**) in the reweighted or matched sample. Our preferred approach is to use IPT weights that achieve balance in covariates (unlike likelihood-based IPW) and do not throw away any observation (unlike matching).[17] We

[15] ICLR conferences are typically held in April or May. The submission deadline is often in Q4 (Oct/Nov) of the previous year. We are most interested in the causal impact of publishing an ICLR paper on moving to top firms from other places, and therefore exclude authors who were at top firms at -1, and those who moved to top firms before the conference even happened.

[16] Under the sample restriction that authors were not employed by a top firm at -1 (the year before the person's first ICLR submission), the variable "Employed by Top at -1" always equals 0 as shown in Table 3.

[17] Table A.3 compares accepted authors with rejected authors who are reweighted by likelihood-based propensity scores. IPW also improves balance in covariates but in contrast with IPT, it doesn't ensure the means would be matched

present estimates from every method below to show robustness, but we will focus more on the results with IPT weights, which we interpret as ATT under identifying assumptions 1 and 2.

4.2 Main Results - Impacts of Publications on Sorting into Top Firms

We estimate both model (4) and model (5) in the event window $l \in [-5, 3]$. We present the results for employment by a top firm, which could either indicate poaching by top firms from academia or poaching from other firms in the industry. The estimation sample comprises authors who are not at a top firm right before submitting to ICLR ($l = -1$).

Table 4 presents estimates of the difference-in-differences regression (4) in the original sample without reweighting. Conditional on being outside the top firms at -1, accepted authors are 2.5 p.p. more likely to move to top firms following the ICLR conference than rejected authors, which is 53% higher than the mobility rate among rejected authors. We then estimate (4) separately based on the author's employment in the year before their first ICLR conference: industry (nontop firms), academia, or students/postdocs. Among students and postdocs, a successful ICLR publication increases the probability that they work at top firms by 3 p.p., suggesting that early publication success is important for getting a good job in the industry. We also present the difference-in-differences estimates in the reweighted sample, where the rejected authors are (after the reweighting) more comparable to accepted authors and therefore are more likely to be on parallel trajectories. Table 5 shows the acceptances of a person's initial submission increases the probability of moving to a top firm by 4.4 p.p., driven by higher estimates for authors from nontop firms in the industry (column 2), and for students and postdocs (column 4). Before reweighting, rejected authors are more likely to come from industry and less likely to be students/postdocs prior to the event (Table 3). The IPT procedure would assign a lower weight on rejected authors from industry who are not comparable to accepted authors, and a higher weight on rejected students. The estimates after reweighting are closer to ATT by comparing accepted authors with similar rejected authors.

Moving on to the event study regression (5), Figure 5(a) shows that among authors not at top firms at -1, an accepted ICLR paper increases mobility to top firms by 2 p.p., and this effect appears to kick in as soon as the year after the conference. Given the concerns about the parallel trend assumption in the unweighted sample discussed before, we estimate the same model on the reweighted samples in which each rejected author is weighted by the $\frac{\hat{p}_i}{1-\hat{p}_i}$. The propensity score is estimated by maximum likelihood or by solving the moment equations (8). Under reweighting by likelihood-based propensity scores (IPW), the estimates are slightly larger than the estimates without weighting, as shown in Figure 5(b). Under reweighting that achieves covariate balancing

exactly.

(IPT), an accepted paper is estimated to increase the mobility rate to top firms from other places by 2.9 p.p. in the year after the conference, and by 4.5-6.7 p.p. two to three years after. In comparison with reweighted samples, the matched sample excludes a large number of accepted and rejected authors and generates noisier estimates. That being said, the magnitude of the estimates is similar across methods in the immediate year after the conference —around 2 p.p., comparable to the predictive effect of an AI paper on moving to top firms next year in the Scopus-Revelio data (column 2 of Table 2 and Figure 4). In three years, the matched difference-in-differences estimate is close to 5 percentage points, which is also higher than the estimate in the original unweighted sample.

In summary, the finding that publishing a paper at ICLR increases the probability of moving to top firms from other places is robust across the four approaches. Our most conservative estimate is 2 p.p. without any manipulation on the control group. Given the importance of comparing the accepted authors with rejected authors who are more likely to be on parallel career trajectories absent the ICLR decision, our preferred approach is to ensure covariate balancing (before event) via inverse propensity tilting. We focus on the IPT approach in the results below, but we include the estimates from other approaches in the appendix to show the main findings are robust across methods.

4.3 Heterogeneity by the Origin of Authors

As evidenced by the difference-in-differences estimates of regression (4) in Tables 4-5, the strongest effect of publication on movements to top firms comes from students and postdocs early in their careers. We further show the estimates of the dynamic difference-in-differences (5) in the IPT-reweighted sample separately by the origin of authors at -1 (the year before each person's first ICLR conference). Figure 6 shows that having a student/postdoc's initial submission accepted boosts her chance of getting a job at top firms in the same year as the ICLR conference by 1.8 percentage points. Since we have excluded authors who get hired by top firms at 0 before the ICLR conference takes place (in May), this immediate effect is driven by students who move to top firms *after* the conference. In the following three years, the estimated effects of the publication on being employed by top firms continue to increase from 4.3 p.p. to 9.4 p.p., suggesting a persistent effect of the early publication success on the sorting to top firms.

The effects for authors who are employed by academia (not students/postdocs) remain statistically significant at around 2 p.p. in the three years following the ICLR conference. We interpret the effects among academics as evidence that top firms are poaching productive researchers from academia, not just among early career researchers but also among experienced faculty. The estimates for authors from nontop firms in the industry are positive but noisier than authors from

the other groups. In three years, accepted authors from nontop firms are 6 p.p. more likely to be working at a top firm than rejected authors with similar job histories before submitting to ICLR.[18] The matched difference-in-differences in Figure A.10 also shows a 5 p.p. increase in employment by top firms among accepted authors initially employed in nontop firms.

The positive effect of the ICLR publication on upward mobility to top firms could be driven by a reporting bias. Accepted authors may be more likely to update their résumé given an additional publication, and therefore show a higher employment rate by top firms in the data. We test for this alternative explanation by replacing the outcome in the event study regression (5) with an indicator for reporting any full-time job on LinkedIn each year. Figure A.11 shows no evidence that accepted authors are more likely to report a full-time job than rejected authors after the conference.[19] We therefore argue that the positive effects of a publication on sorting to top firms are unlikely to be driven by reporting bias.

4.4 Gender Differences

Both industry and academia have publicized their commitments to reduce the under-representation of women in STEM.[20] What does the industry–academia race imply for gender differences among CS researchers? While a full answer is beyond the scope of this paper, we examine whether the labor market return to an ICLR publication differs by gender.

Given the large impacts of an ICLR acceptance on the sorting of students and postdocs to top firms, we focus on the gender differences in this group of early career researchers. We estimate the event study regression (5) (with IPT weights) separately for 728 female authors versus 2,354 male authors who are students/postdocs in the year before their first ICLR conference. Male authors, comprising 76% of students/postdocs, are 1.8 p.p. more likely to work full-time for a top firm immediately after the acceptance into ICLR, and are 9.4 p.p. more likely to work for top firms 3 years after (7a). These estimates are closer to the estimates for all students/postdocs shown in Figure 6. An accepted paper at ICLR also increases the probability that female students/postdocs get hired by top firms by 2.8 p.p. immediately after the conference. However, this effect is not persistent. We find dynamic effects fluctuating between -3 p.p. and 2 p.p. in the next three years among female authors. Taken together, the large impact of an ICLR publication on employment

[18] The estimates in the unweighted sample are shown in Appendix Figure A.9. Note among authors from nontop firms, accepted authors are 2-4 p.p. significantly more likely to have worked for one of the top firms at some point four or three years before the ICLR conference. This pre-trend disappears when we include job history as covariates in the moment equations 8 for IPT.

[19] Appendix Figure A.12 further shows that there is no evidence of differential reporting by accepted authors in the original unweighted sample or in other reweighted/matched samples.

[20] Following the MeToo movement, tech companies invested in Diversity, Equity, and Inclusion (DEI) to recruit underrepresented minorities in their workforce. Our data cover years up to 2023, before most tech firms halted their DEI.

by top firms in the next three years is driven primarily by male students and postdocs.

Are the academic returns to a publication different by gender? We use the position titles in individual job histories to identify tenure-track jobs in academia, and we provide difference-in-differences estimates of the impact of ICLR acceptance on sorting to such jobs via regression (5) with IPT reweighting. Relative to rejected authors, female accepted authors are 4 p.p. significantly more likely to get a tenure-track job in the year of the ICLR conference and are 7 p.p. more likely to be on tenure-track 1-2 years after the conference (7b). The large and persistent estimates suggest that a successful AI publication benefits the academic placement of female students and postdocs. In contrast, we do not find a positive or statistically significant impact of the acceptance by ICLR on the academic placement of male students/postdocs. Given that the earliest year in the estimation sample is 2012, this finding could reflect the commitment of academia to increase gender diversity, which also appears in other disciplines such as economics (e.g., Card, DellaVigna, Funk, and Iriberri 2022).

These patterns hold in the original sample without reweighting (Figure A.13). Female accepted authors are 7 p.p. more likely to be on tenure-track than female rejected authors in three years post event, whereas male accepted authors are 3 p.p. more likely to work for top tech firms than their counterparts. These findings suggest that an ICLR publication facilitates transitions into top firms for men and into tenure-track academia for women. Mechanisms may operate on either the supply or demand side. On the supply side, women may prefer the stability and schedule control offered by academic careers (e.g., Goldin and Katz 2011; Noray 2025). On the demand side, male-dominated industry environments may feature evaluation practices or biases that negatively impact women. Regardless of the mechanism, because industry roles tend to pay more on average than academic jobs, this divergence in sectoral returns to a publication could exacerbate gender earnings gaps among computer scientists.

5 Implications of the Academia-Industry Race on Future Research

Next, we study the consequences of the growing competition between academia and industry for top AI researchers. As a first step, we conduct descriptive event-study analyses of research output around moves to top firms and tenure-track academic positions, using the full sample of computer science researchers with linked job histories. The sample includes all authors in the Scopus–Revelio dataset who moved either to a top firm or to a tenure-track position. Treated authors are those who moved to top firms, while the comparison group consists of authors who moved to tenure-track positions but not to top firms. In cases of multiple moves, we consider each author's

first move as the event.

Figure 8 plots publication trajectories around career transitions for authors who move to top firms versus tenure track, focusing on publications of any papers (Panel a and c) and of AI papers (Panel b and d). Prior to the move, researchers who later transition to top firms seem to experience a steeper trend of publications (panel a), which is driven by more AI publications (b), consistent with researchers trying to attract the interest of top firms anticipating a possible move, or top firms selecting authors particularly productive in AI research. Authors who later move to top firms have similar pre-trends of non-AI publications, as shown in Figure A.14 in the Appendix. Following the move, publication output declines modestly among researchers entering tenure-track positions but resumes an upward trajectory in subsequent years. In contrast, research output drops sharply and persistently among those moving to top firms and does not return to its pre-move trend. The decline is most pronounced for non-AI publications (Appendix Figure A.14) but is also present for AI-related output. These patterns are confirmed in Figure A.15, which reports coefficients from a staggered difference-in-differences analysis with individual and time fixed effects comparing movers to top firms and tenure-track positions. In the five years following the move, the number of total publications declined by about 52 percent for authors moving to top firms, relative to researchers who moved to tenure-track positions, and the number of AI publications decreased by around 40 percent.

In the next stage of our analysis, we will examine the impact of transitioning into top firms versus tenure-track positions on two additional dimensions: research influence (measured by citations) and research direction. Because industry researchers may align their work with firm priorities, we will test whether transitions to top firms shift focus away from topics such as algorithmic bias toward more applied areas. To move closer to causal identification, we will conduct event-study analyses comparing researchers who transition to top firms with a matched control group of similar researchers who remain outside of industry, using coarsened exact matching to construct the matched control group.

6 Conclusion

In this paper, we document that AI researchers are increasingly concentrating in industry – especially at top-tier firms – relative to academia. To test whether academia and industry compete for the same talent, we study how publications — a canonical signal of research ability — are related to initial job placements and subsequent job mobility of researchers. We find that AI publications are strongly predictive of getting a job at top tech firms, but less so for getting a job in academia. We provide supportive causal evidence by leveraging variation in the acceptance of a paper at a top-tier AI conference. Using a difference-in-differences design, we compare accepted authors

with similar rejected authors and find a top AI publication increases the probability of moving to top firms by 2-6 p.p. in the next three years. The impact is the largest among students and postdocs at the beginnings of their careers. The casual evidence is consistent with industry placing high returns on research ability that was historically rewarded mainly in academia.

Having established that a "race for AI talent" is underway – and that academia is losing relative to top firms in industry – we examine the implications for the research landscape. After researchers move from academia to top firms, their publication output declines. Because we cannot observe proprietary work, total research output is unknown. However, this evidence suggests that increased industry poaching reduces the volume of *public* AI research.

While these results speak to the quantity of AI research, we hope to also explore various measures of the quality or content of AI research in future work. For example, we will begin by documenting whether AI researchers in industry produce (public) research that is categorically different from academics. Our hypothesis is that AI topics that serve a public-interest (e.g., bias mitigation and algorithmic fairness) or that have long-term or uncertain commercial gains (e.g., theory behind black-box models) are at risk of being under-produced as a consequence of this race. On the other hand, topics that require large amounts of computing power or data (e.g., large language models) may be more readily produced in industry, which typically has more resources to accommodate this type of research. Moreover, we will examine how citations – a measure of research influence – change with a transition into industry from academia.

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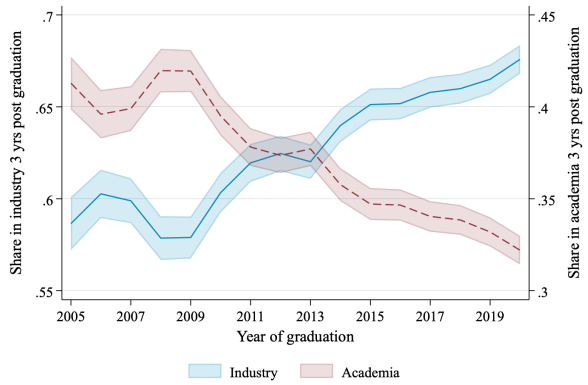
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7 Main Figures and Tables

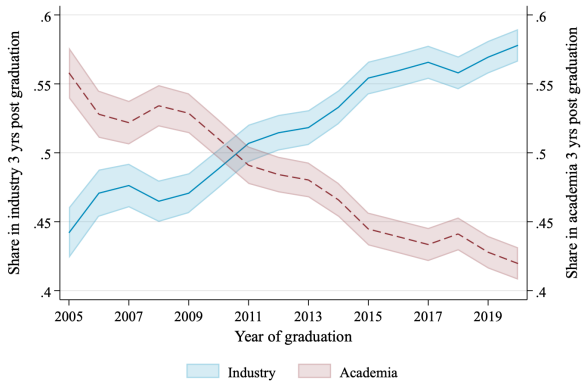
Figures

FIGURE 1. Share of Early-Career CS Researchers in Industry versus Academia over time

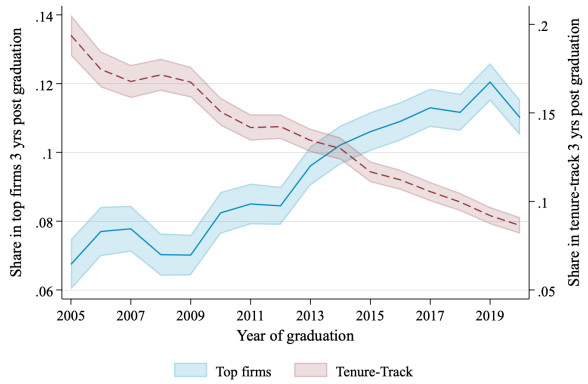
(a) All: Industry vs. Academia



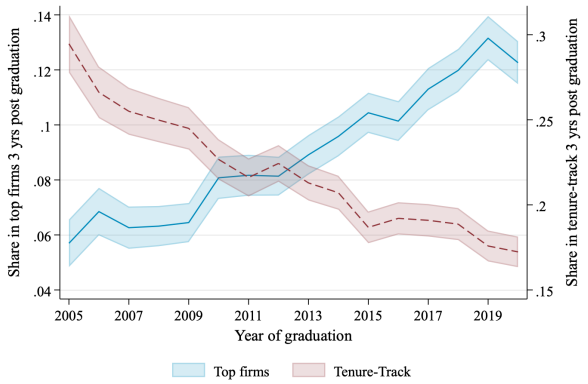
(b) PhDs: Industry vs. Academia



(c) All: Top Firms vs. Tenure-track



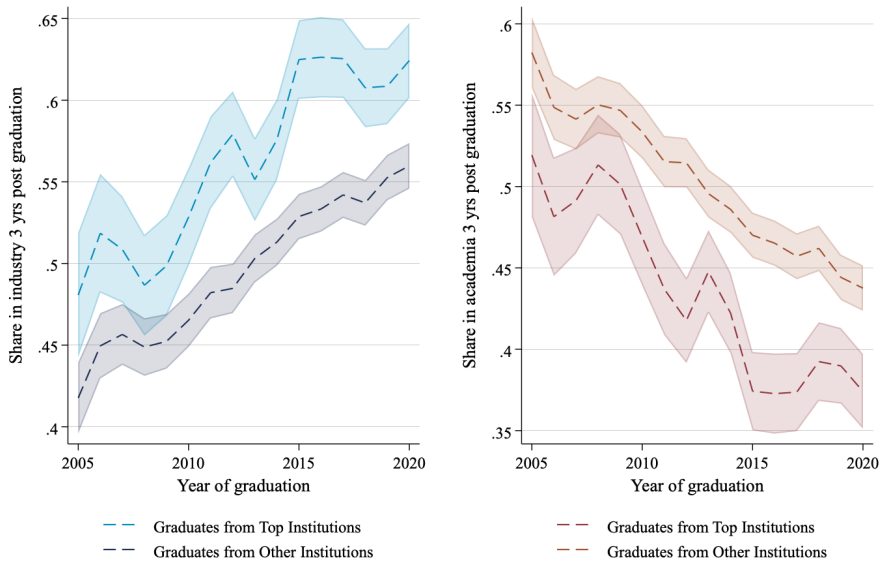
(d) PhDs: Top Firms vs. Tenure-track



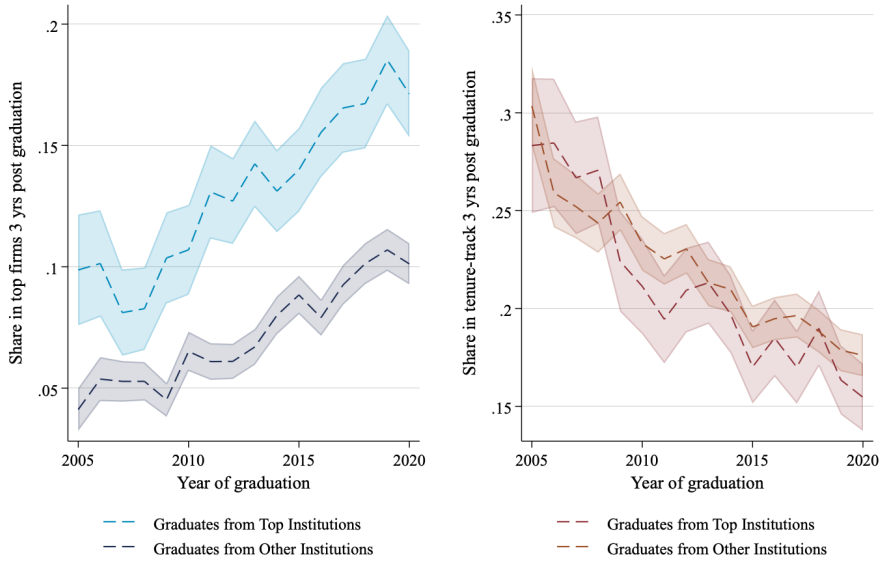
Notes: This figure shows the share of computer science researchers working in industry versus academia three years after completing their highest degree, conditional on reporting any job that year on LinkedIn. Panels (a) and (b) show the share employed in industry and academia, respectively, while panels (c) and (d) show the share employed at top technology firms and in tenure-track academic positions. Panels (a) and (c) include all CS graduates (bachelor's, master's, or PhD), whereas panels (b) and (d) restrict the sample to PhD holders, for whom tenure-track positions are more relevant.

FIGURE 2. Share of Early-Career Researchers in Industry: Heterogeneity by PhD Institutions

(a) Outcome: Industry vs. Academia



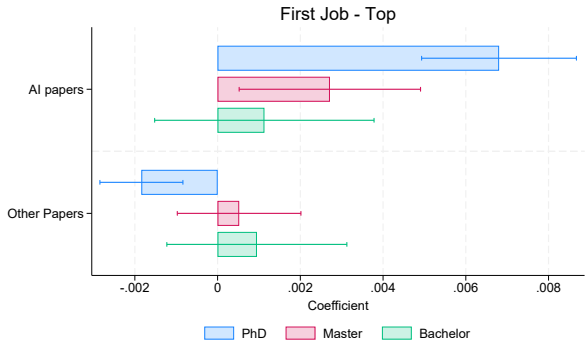
(b) Outcome: Top Firms vs. Tenure-track



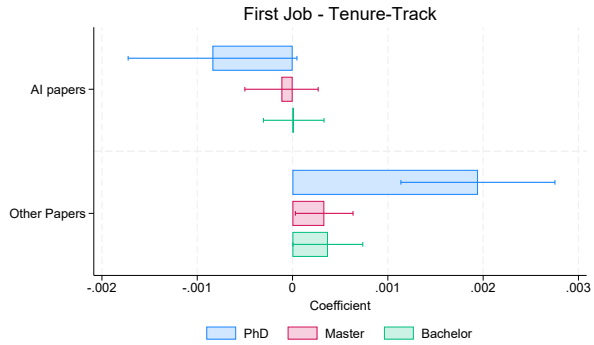
Notes: This figure shows the share of CS authors working in (a) industry vs. academia, and (b) top firms vs. on tenure track, 3 years post PhD, conditional on reporting any job that year on LinkedIn. We show the shares separately for PhD graduates from the top 50 institutions (based on CSRankings, QS 2025, and THE 2025 in AI/CS).

FIGURE 3. First Job in the Year After a Person's Highest Degree

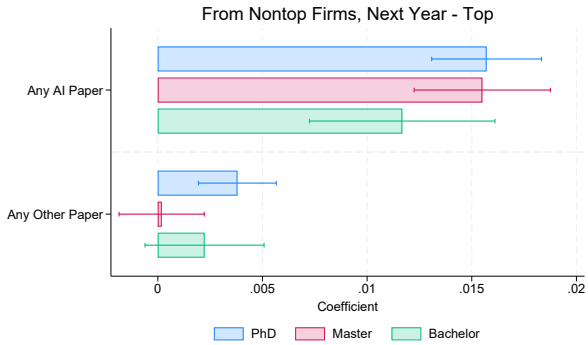
(a) First Job - Top



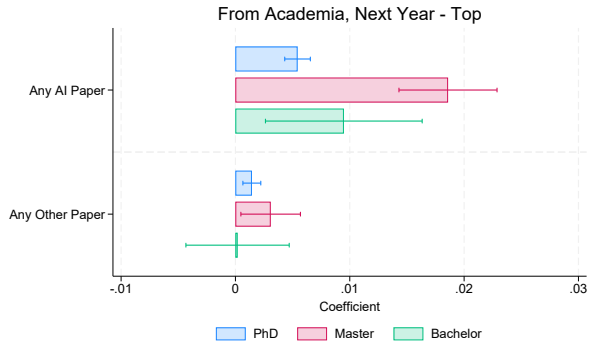
(b) First Job - Tenure-track



(c) From Nontop Firms to Top



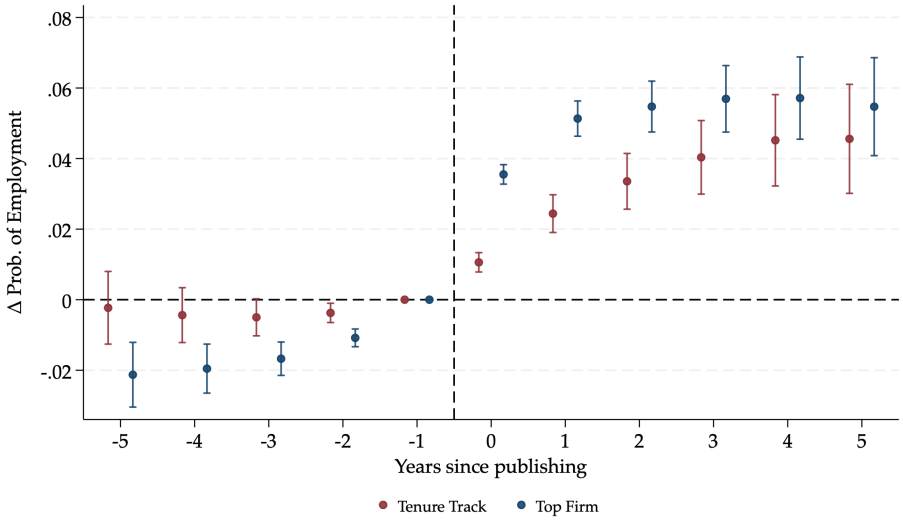
(d) From Academia to Top



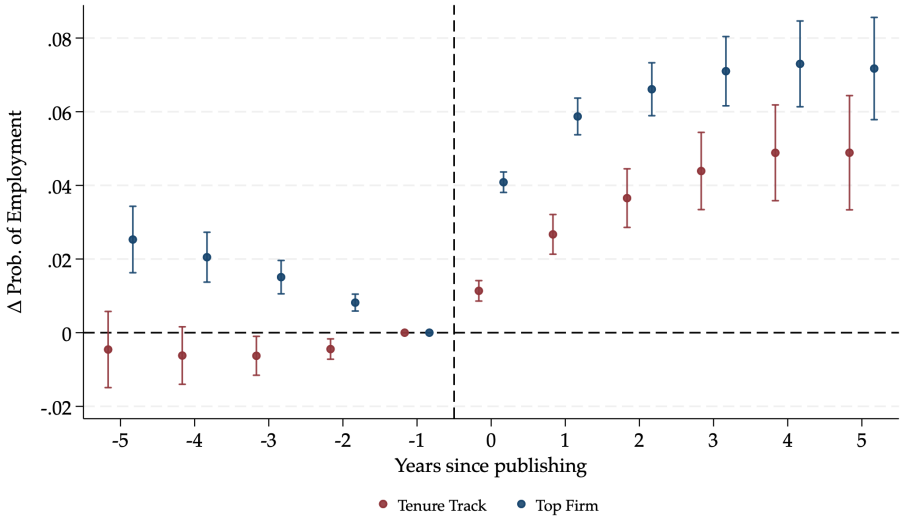
Notes: The top panel of this figure show the OLS estimates of regression (1) of a person's initial job placement on publications before graduation, separately by the level of highest degree. There are two initial placement outcomes: (a) first job at top firms, and (b) first job on the tenure track. Table 1 shows the estimates for these outcomes in the pooled sample (college or master or PhD) in columns 2 and 7, respectively. The bottom panel shows the estimates of regression (2) of (post-graduation) job mobility on indicators for publications at person×year level, separately by the level of highest degree. (c) corresponds to the outcome of moving from other firms in the industry ("nontop") to top firms, and (d) shows the estimates for moving from academia to top firms. Table 2 shows the estimates for these outcomes in the pooled sample (college or master or PhD) in columns 2 and 8, respectively. Standard errors are robust.

FIGURE 4. Event study around a person's first AI publication

(a) All AI Authors



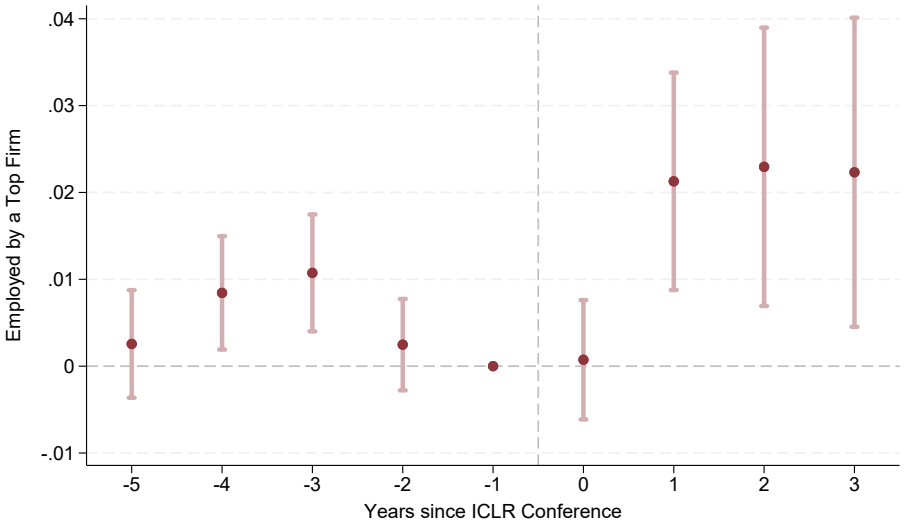
(b) Authors outside top firms at -1



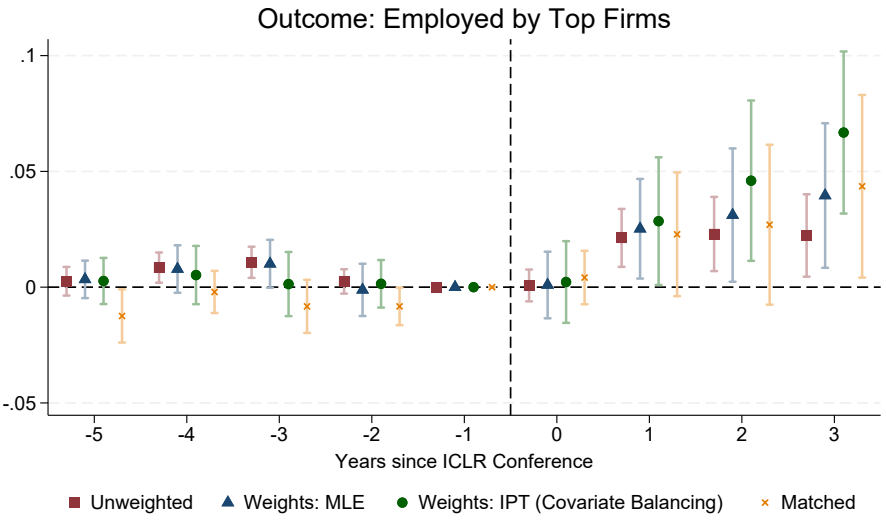
Notes: This figure presents estimates of the event study regression (3) for two outcomes around the event defined as a person's first AI publication post graduation from her highest degree. The red markers represent results where the outcome is employment in a tenure-track position, while the blue markers correspond to employment in a top firm. Panel (a) reports results for the full sample, and Panel (b) restricts to AI authors not employed at a top firm in the year prior to the event. All regressions include person and year fixed effects. Standard errors are robust and clustered at the person level. Data are from the Scopus-Revelio person-year panel.

FIGURE 5. Employment by Top Firms among Authors From Other Places

(a) Original Sample (Unweighted)

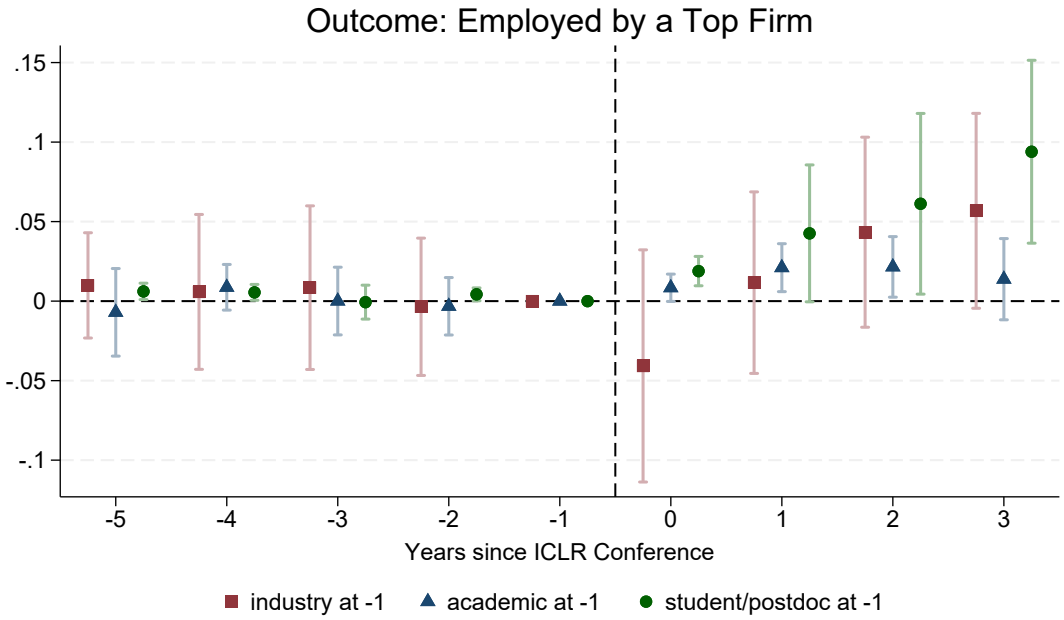


(b) Estimates By Method



Notes: This figure shows the estimated impacts of an ICLR publication on moving to top firms from employers outside the top firms, which are represented by the coefficients $\{\gamma_l\}$ in the dynamic difference-in-differences model (5). The estimation sample comprises ICLR-Revelio matched authors who submitted to an ICLR conference for the first time between 2017 and 2020, and who were not employed by top firms at -1, the year before their first ICLR conference (event). Standard errors are robust and clustered at the person level. (a) presents the estimates in the original unweighted sample, whereas (b) presents the estimates using different weighting and matching methods. "Weights: MLE" or "IPT" refers to the estimates after we weight each rejected author by $\frac{\hat{p}_i}{1-\hat{p}_i}$ (accpeted authors are weighted by 1). The propensity score $\hat{p}_i$ is estimated by maximum likelihood under "Weights: MLE", and by method of moments under "Weights: IPT" to achieve covariate balancing. "Matched" refers to estimates among 1-1 matches between accepted and rejected authors. The methods are discussed in detail in Section 4.1.2.

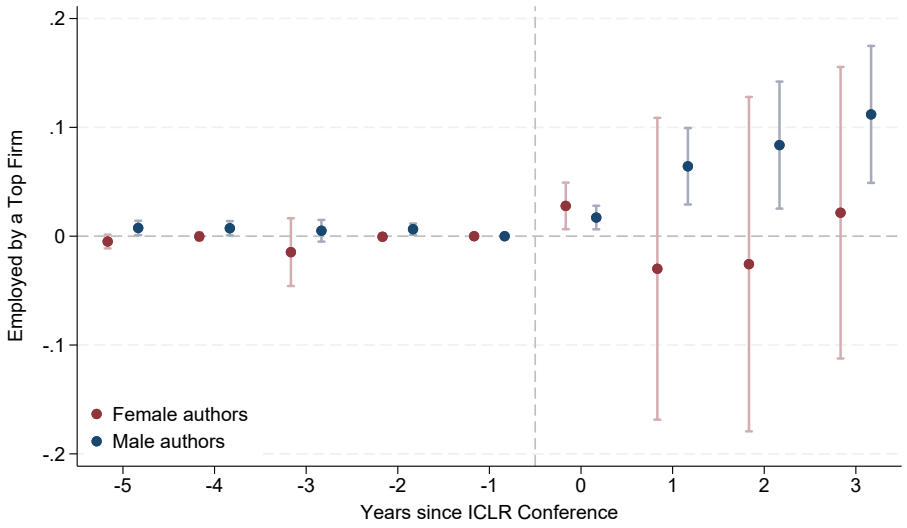
FIGURE 6. Employment by Top Firms among Authors From Other Places (Reweighted via IPT)



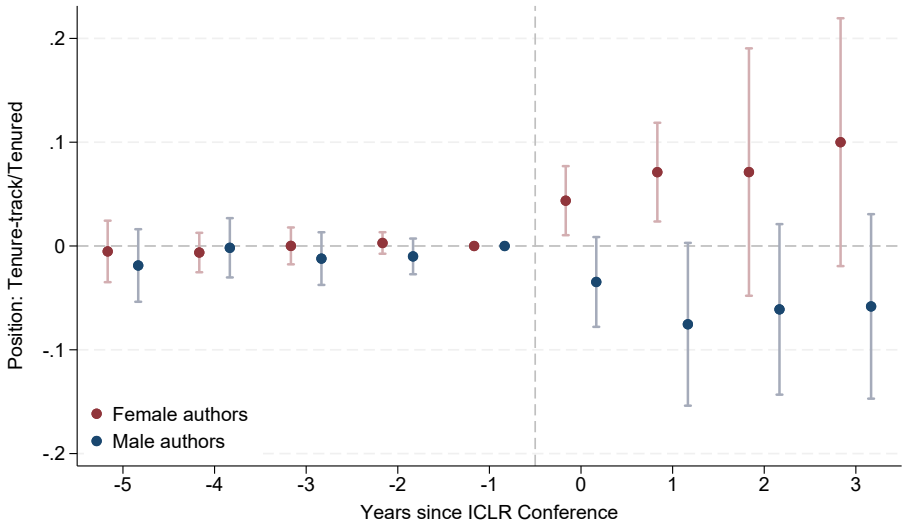
Notes: This figure shows the estimated impacts of an ICLR publication on moving to top firms from different types of employers outside the top firms, which are represented by the coefficients $\{\gamma_l\}$ in the dynamic difference-in-differences model (5). The model is estimated on authors who are outside the top firms at -1, separately by whether the author was employed by nontop firms in industry at -1 (red), employed by academia (blue), or were students or postdocs (green). Rejected authors are reweighted by $\frac{\hat{p}_i}{1-\hat{p}_i}$, where the propensity score $\hat{p}_i$ is estimated by GMM (8) to achieve covariate balancing. Standard errors are robust and clustered at the author level.

FIGURE 7. Gender Differences in Employment Outcomes Among Students and Postdocs (Reweighted via IPT)

(a) Top Firms



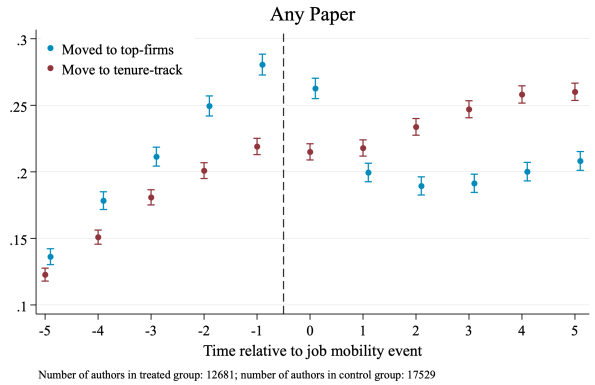
(b) Tenure-track Jobs



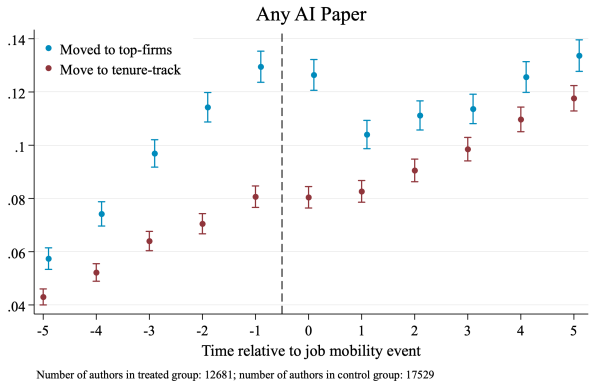
Notes: This figure shows the estimated impacts of an ICLR publication on employment at (a) top firms, and (b) tenure-track/tenured positions, separately by gender of the authors. We estimate the dynamic difference-in-differences model (5) separately for female and male authors who are students/postdocs at -1 (the year prior to the event). Rejected authors are reweighted by $\frac{\hat{p}_i}{1-\hat{p}_i}$, where the propensity score $\hat{p}_i$ is estimated by GMM (8) to achieve covariate balancing. Standard errors are robust and clustered at the person level.

FIGURE 8. Publication Productivity - Movers to Top firms vs. Tenure-track

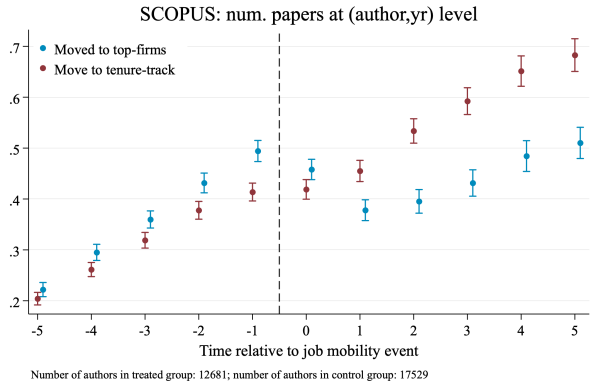
(a) Any Paper



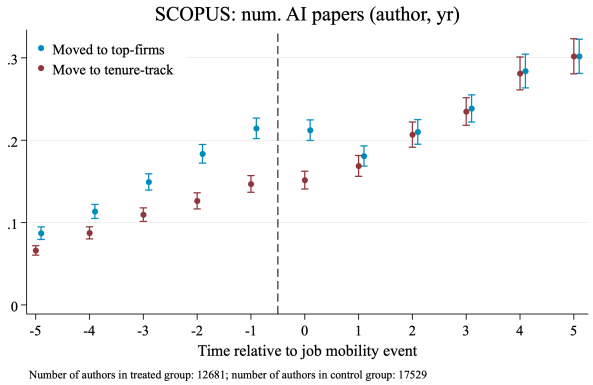
(b) AI Papers



(c) Num. Papers



(d) Num. AI Papers



Notes: The figure plots average publication productivity around career transitions for computer science (CS) authors who move to top firms and for those who move to tenure-track positions (and not to top firms) for the first time. The x-axis is centered on the year of the first move, where zero denotes the transition year to a top firm (blue) or to a tenure-track job (red). Panels (a) and (b) show the extensive margin, measured by the probability of publishing any CS paper or any AI paper. Panels (c) and (d) show the intensive margin, measured by the number of CS or AI publications. The estimation sample includes all researchers in the Scopus–Revelio matched dataset with observed job transitions and complete event windows. For researchers with multiple moves, only the first move is considered.

Tables

TABLE 1. First Job in the Year After a Person's Highest Degree

	Industry				Academia		
	(1) Industry	(2) Top	(3) Re-Scientist	(4) Engineer	(5) Academia	(6) Postdoc	(7) Tenure-Track
AI papers	.001638	.005313	.007901	-.006523	-.0005383	.001164	-.0001045
	(.0005854)	(.0006793)	(.0007935)	(.0007865)	(.0005795)	(.0004056)	(.0003302)
Other Papers	-.001432	-.000968	-.002891	.0003503	.002499	.0009579	.002169
	(.0004486)	(.0003914)	(.000406)	(.000434)	(.0004597)	(.0003235)	(.0003082)
N	148,080	148,080	148,080	148,080	148,080	148,080	148,080
Adj. R2	.0491	.0535	.02351	.04566	.0493	.02853	.05392
Mean of y	.5435	.07686	.07703	.2703	.3435	.1123	.07862
AI Papers|y=1	.5316	1.128	1.159	.3668	.4793	.6172	.5264
Other Papers	.9464	1.456	1.166	.8694	.9164	1.076	1.127

Notes: This table shows the OLS estimates of regression (1) of the initial job placement on publications before graduation, for 148,080 authors in the Scopus-Revelio matched sample — who have published a CS paper according to Scopus database, and have matched to a Revelio individual profile with self-reported education and job history. The sample is restricted to authors who report at least a college degree. Each person's first job is characterized based on her primary employer in the year after obtaining her highest degree. The first four columns are outcomes related to employment in industry, whereas the next three columns are related to employment in academia.

TABLE 2. Job Mobility After Graduation (Year-to-Year Transitions between Employers)

	At Nontop Firms			At Top Firms			In Academia		
	(1) Industry	(2) Top	(3) Academia	(4) Industry	(5) Top	(6) Academia	(7) Industry	(8) Top	(9) Academia
Any AI Paper	-.02011	.01534	.005264	-.003424	.000722	.003424	.003937	.007566	-.008393
	(.001341)	(.0009414)	(.0008524)	(.001373)	(.002473)	(.0009959)	(.001213)	(.0005738)	(.001684)
Any Other Paper	-.007237	.002425	.002431	-.005195	-.004703	.005306	.006731	.001513	-.01021
	(.001025)	(.0006295)	(.0006874)	(.00141)	(.002597)	(.001093)	(.001014)	(.0003839)	(.001384)
N	651,567	651,567	651,567	108,822	108,822	108,822	469,132	469,132	469,132
Adj. R2	.04756	.01143	.02758	.01844	.01361	.0335	.05582	.009738	.3093
Mean	.9567	.01478	.01731	.9856	.9366	.005587	.05902	.006422	.8005

Notes: This table shows the OLS estimates of regression (2) of job mobility on indicators for publications, for authors in the Scopus-Revelio matched sample (same restrictions as noted under Table 1). The estimation sample is at person×year level, including for each person the years between graduation from her highest degree and 2023. There are three outcomes that represent the employer in the next year (denoted by $j(i,t+1)$): (1) whether next year the person is employed in industry, (2) whether she is employed by top firms, and (3) whether she is employed by academia as opposed to industry. We estimated separate regressions for those who are currently employed by nontop firms (denoted by $j(i,t) \in$ Nontop), by top firms, or by academia. Standard errors are robust.

TABLE 3. Balance Table: Accepted vs. Rejected Authors in the Original Sample and in the Reweighted Sample (IPT)

	Original Sample			Reweighted Sample (IPT)	
Variable	Accepted	Rejected	Diff.	Rejected	Diff.
Mode of Referee Rating	6.306	3.997	2.309***	6.306	0.000
	(1.207)	(1.423)	(0.020)	(0.786)	(0.085)
Min Rating	5.463	3.273	2.190***	5.463	0.000
	(1.242)	(1.237)	(0.020)	(0.935)	(0.053)
Mean Rating	6.539	4.433	2.105***	6.159	0.380***
	(0.726)	(1.089)	(0.014)	(0.602)	(0.065)
Num. Authors	5.158	4.686	0.472***	5.158	-0.000
	(2.409)	(2.077)	(0.037)	(2.378)	(0.131)
Age	30.571	30.924	-0.353***	30.571	-0.000
	(5.426)	(5.603)	(0.088)	(5.197)	(0.367)
Female	0.244	0.255	-0.011*	0.244	-0.000
	(0.430)	(0.436)	(0.007)	(0.430)	(0.023)
Foreign	0.490	0.550	-0.060***	0.490	0.000
	(0.500)	(0.498)	(0.008)	(0.500)	(0.035)
White	0.375	0.349	0.026***	0.375	0.000
	(0.484)	(0.477)	(0.008)	(0.484)	(0.032)
Asian	0.580	0.602	-0.022***	0.580	0.000
	(0.494)	(0.490)	(0.008)	(0.494)	(0.033)
Minority (Not White/Asian)	0.045	0.050	-0.004	0.045	-0.000
	(0.208)	(0.217)	(0.003)	(0.208)	(0.009)
Any PhD	0.482	0.458	0.024***	0.482	0.000
	(0.500)	(0.498)	(0.008)	(0.500)	(0.035)
Any Master	0.630	0.620	0.010	0.630	0.000
	(0.483)	(0.485)	(0.008)	(0.483)	(0.029)
Employed by Industry at -1	0.217	0.233	-0.016**	0.217	-0.000
	(0.412)	(0.423)	(0.007)	(0.412)	(0.025)
Employed by Top at -1	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employed by Academia at -1	0.184	0.205	-0.021***	0.184	-0.000
	(0.388)	(0.404)	(0.006)	(0.388)	(0.025)
Student/Postdoc at -1	0.490	0.446	0.044***	0.490	0.000
	(0.500)	(0.497)	(0.008)	(0.500)	(0.035)
Observations	5,826	11,963	17,789	11,963	17,789

Notes: This table displays average paper and author characteristics for rejected versus accepted authors in both the full sample (Columns 1-2) and the reweighted sample (Columns 4-5). In the original or unweighted sample, there are 5,826 accepted authors and 11,963 rejected authors who are not employed by top firms in the year prior to submitting to an ICLR conference for the first time. In the reweighted sample, accepted authors are weighted by 1, while rejected authors are weighted by $\omega_i^{IPT} = \frac{\hat{p}_i}{1-\hat{p}_i}$. The propensity score $\hat{p}_i$ of acceptance based on observable characteristics are estimated by solving the moment equations (8). As shown in column 5 - the weighted average among rejected authors equal the average among accepted authors, except for the variable: mean rating, which is not included in the estimation of propensity scores. Standard errors for the differences between accepted and rejected authors are shown in parentheses.

TABLE 4. Diff-in-diff estimates for Employment by Top Firms

	Employed by a Top Firm			
	(1) Pooled	(2) From Industry	(3) From Academia	(4) From Student/Postdoc
Post event=1	0.0455	0.0396	0.0116	0.0646
	(0.0049)	(0.0112)	(0.0048)	(0.0074)
Post event=1 × Accepted	0.0244	0.0079	0.0126	0.0307
	(0.0071)	(0.0146)	(0.0075)	(0.0107)
Constant	0.0165	0.0225	0.0032	0.0195
	(0.0015)	(0.0033)	(0.0017)	(0.0023)
Observations	50994.0000	11439.0000	11817.0000	27738.0000
Adj. R^2	0.2175	0.2192	0.1941	0.2353

Notes: This table shows the estimates of difference-in-differences regression (4) in the original sample without reweighting. We focus on events ≤ 2020 so the panel at person-year level is balanced during the event window [-5,3] years relative to the first ICLR conference of an author. The sample is limited to authors who are not employed by a top firm in the year prior to the event. Column (1) pools everyone in this sample, whereas columns (2)-(4) estimate the regression (4) separately by the type of origin — employer of an author in the year before the ICLR conference. Standard errors are robust and clustered at the author level.

TABLE 5. Diff-in-diff estimates for Employment by Top Firms (Reweighted)

	Employed by a Top Firm			
	(1) Pooled	(2) From Industry	(3) From Academia	(4) From Student/Postdoc
Post event=1	0.0353	-0.0246	0.0119	0.0597
	(0.0146)	(0.0248)	(0.0050)	(0.0252)
Post event=1 × Accepted	0.0439	0.0417	0.0170	0.0573
	(0.0145)	(0.0293)	(0.0095)	(0.0231)
Constant	0.0147	0.0430	0.0043	0.0101
	(0.0036)	(0.0074)	(0.0022)	(0.0059)
Observations	50994.0000	11439.0000	11817.0000	27738.0000
Adj. R^2	0.2137	0.2367	0.1781	0.2283

Notes: This table shows the estimates of difference-in-differences regression (4) in the reweighted sample where accepted authors are weighted by 1, while rejected authors are weighted by $\omega_i^{IPT} = \frac{\hat{p}_i}{1-\hat{p}_i}$. The propensity score $\hat{p}_i$ of acceptance based on observable characteristics are estimated by solving the moment equations (8). We focus on events ≤ 2020 so the panel at person-year level is balanced during the event window [-5,3] years relative to the first ICLR conference of an author. Column (1) include every author who is not employed by a top firm at -1, whereas columns (2)-(4) estimate the regression (4) separately by the type of origin — employer of an author in the year before the ICLR conference. Standard errors are robust and clustered at the author level.

A Appendix

A1. Matched Difference-in-Differences

Matching Procedure

We match each author on an accepted paper with a comparable author on a rejected paper. Our matching procedure is a combination of coarsened exact matching (Iacus et al. 2012; Sarsons 2022, Jäger and Heining (2022)) and blocking on the propensity score (Rosenbaum and Rubin 1983).

To have a well-defined event at the person level, we focus on the first ICLR submission of each author, and refer to the calendar year of the corresponding ICLR conference as the event year henceforth.[21] We match authors based on the quality of their submissions, the propensity score of acceptance conditional on observable characteristics, and their original jobs in the two years before their first submissions.[22] Specifically, we consider three types of "jobs": employed by industry, employed by academia, or still in school.

First, we group the authors based on (1) the year of the ICLR conference, (2) terciles of the mean rating, the minimum rating, and the predicted probability of acceptance on their submissions, and (3) the type of job in the year prior to submission. There are 290 mutually exclusive groups that have at least one accepted author and at least one rejected author.

Within each of these 290 groups, for every accepted author, we sort the potential matches (rejected authors) by (1) whether both are at nontop firms or both at top firms one year before the event year, (2) whether both are in academia or both in industry two years before the event year, (3) whether both are at nontop firms or both at top firms two years before the event year, and (4) the difference in the propensity score of being an accepted author. We fit a logistic regression of acceptance on an author's demographics, job characteristics, and publication history before their first submission to ICLR, and use the fitted probability as the person's propensity score of success. (4) — the difference in p-score between each pair, as a continuous measure, helps break ties if there are multiple rejected authors from the same type of employers in the two years before their first submissions. The matching variables are summarized in Appendix Table A.4.

We then select the highest-ranked rejected author as the best matched unit to each accepted author. If we allow a rejected author to be matched with multiple accepted authors, we could

[21] ICLR conferences are typically held in April or May. The submission deadline is often in Q4 (Oct/Nov) of the previous year.

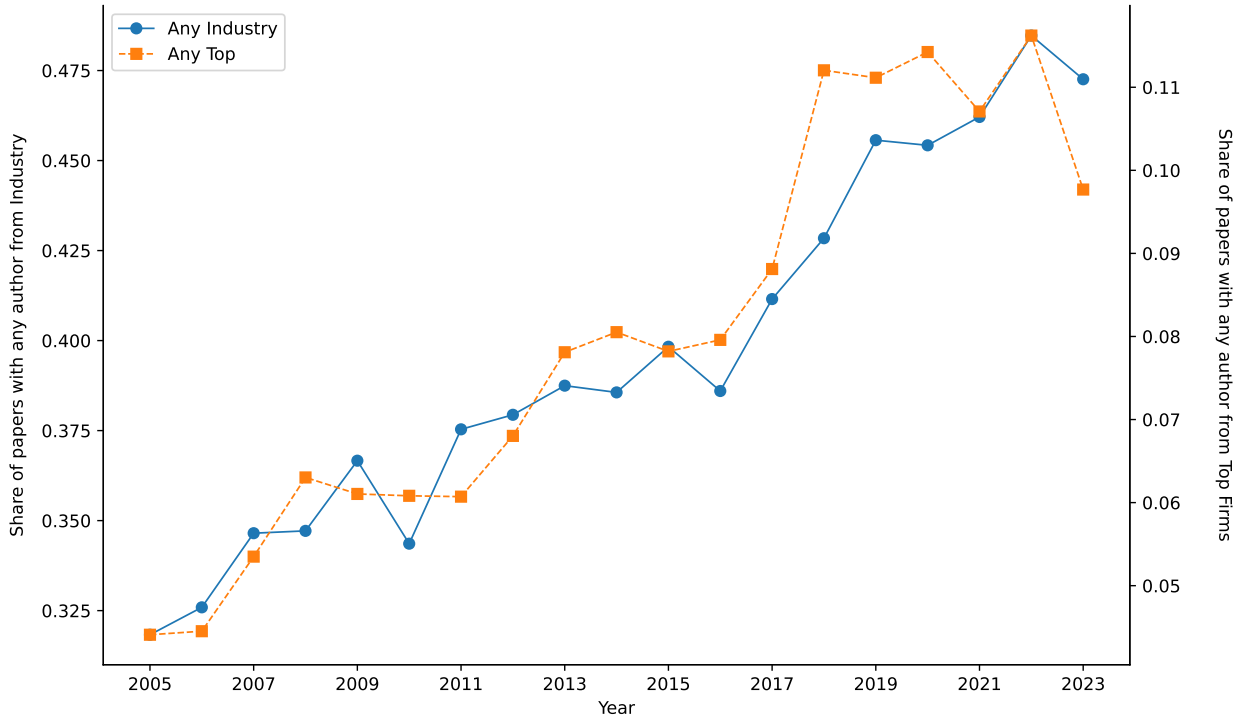
[22] FTo measure the quality of papers, we use both the numeric ratings and the content of the referee comments. We converted the text of each referee report to a numeric 1536-by-1 vector (embeddings), using large language models developed by OpenAI. We then estimated a Lasso-logit model of whether the paper is accepted by the editor on embeddings, and obtained the average predicted probability of acceptance across referee comments on each paper. On average the rejected submissions have a predicted probability of acceptance around 0.15, while accepted submissions have a predicted probability around 0.68.

match 4,424 accepted authors to 942 rejected authors. If we draw without replacement (consistent with Jäger and Heining 2022 and Sarsons 2022), we could match 1,263 accepted authors to 1,263 rejected authors. Despite the fact we have to drop 70% of the accepted authors to establish a 1-1 match without replacement, the main event study result is very close to what we have seen in the full sample or the reweighted sample (see Figure 5).

The gap in the mean rating of papers between accepted and rejected authors shrinks from 2.085 in the full sample to 0.377 in the matched sample (comparing Table A.3 with Table A.4). The mean rating received by matched rejected authors is 6.089, above the margin of acceptance. In addition, the gap in the probability of acceptance based on the text of referee reports also shrinks from 0.517 to 0.146. Although the difference in the matched sample remains statistically significant, the rejected authors on average have a 0.503 predicted probability of acceptance, representing a control group that is much more similar to accepted papers than the vast majority of rejected manuscripts. With an average predicted score around 0.5, whether a paper is accepted by an editor is as good as random — anecdotally, computer scientists often complain about the arbitrariness of editors.

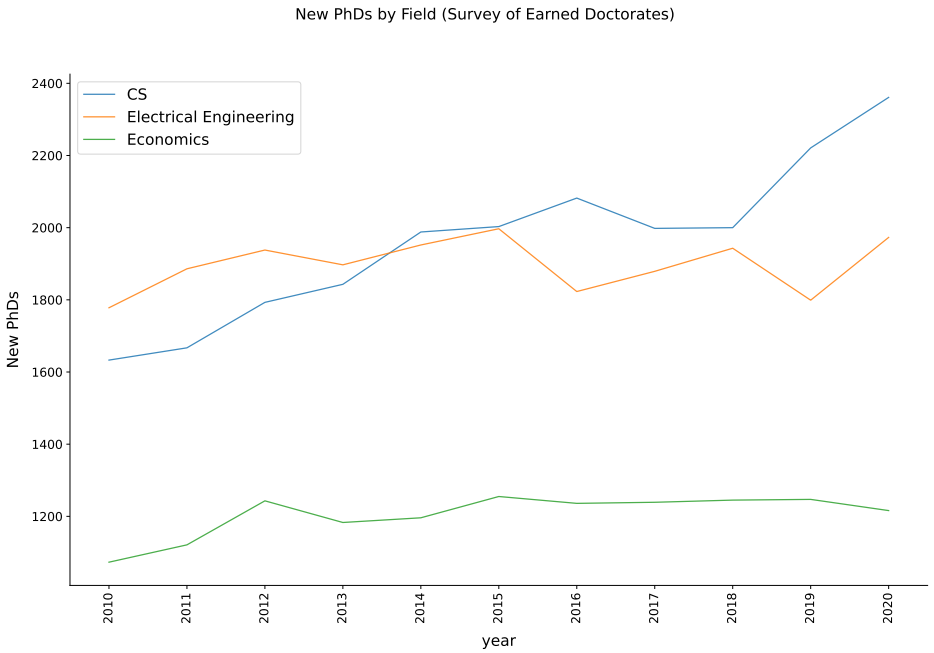
A2. Appendix Figures

FIGURE A.1. Trend in Industry Involvement in CS Research



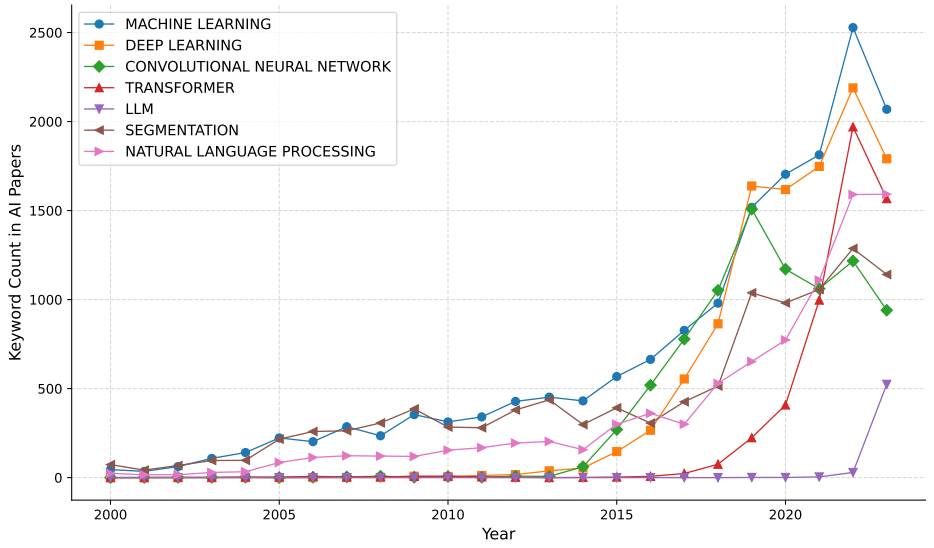
Note: This figure shows the trend in the share of conference proceedings with at least one author from industry (left y-axis), and the share with at least one author from top tech firms (right y-axis). We use records of CS conference proceedings on Scopus (see Section 2).

FIGURE A.2. Trend in CS/EE/Econ PhD Graduates in the U.S.



Note: This figure comes from Wu (2025). The PhD cohort size is measured based on the Survey of Earned Doctorates by the National Science Foundation.

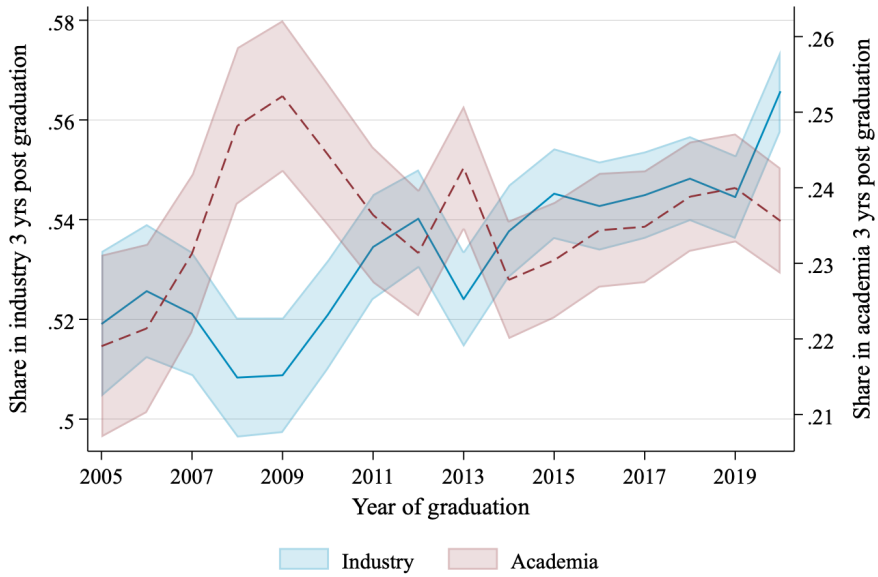
FIGURE A.3. Trend in AI Research by Keyword



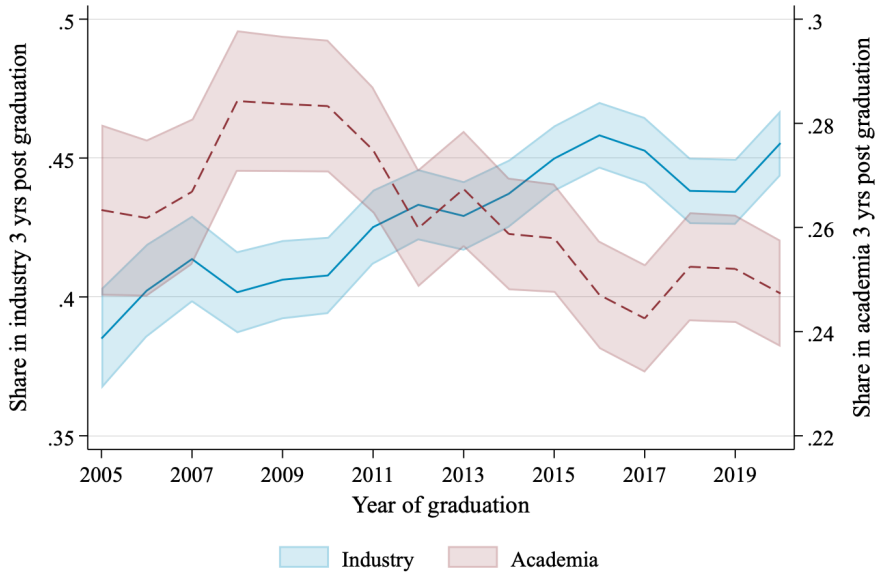
Note: This figure shows the count of top 5 AI keywords plus "transfomers" and "large language models" ("LLM") that show up in the titles or abstracts of publications at 24 AI conferences by year of publication. "LLM" did not show up until 2022. Most AI publications in our sample period concern machine learning, neural networks, and applications in computer vision or natural language processing.

FIGURE A.4. Share of researchers in Industry (non-top) vs Academia (non-tenure) over time

(a) All

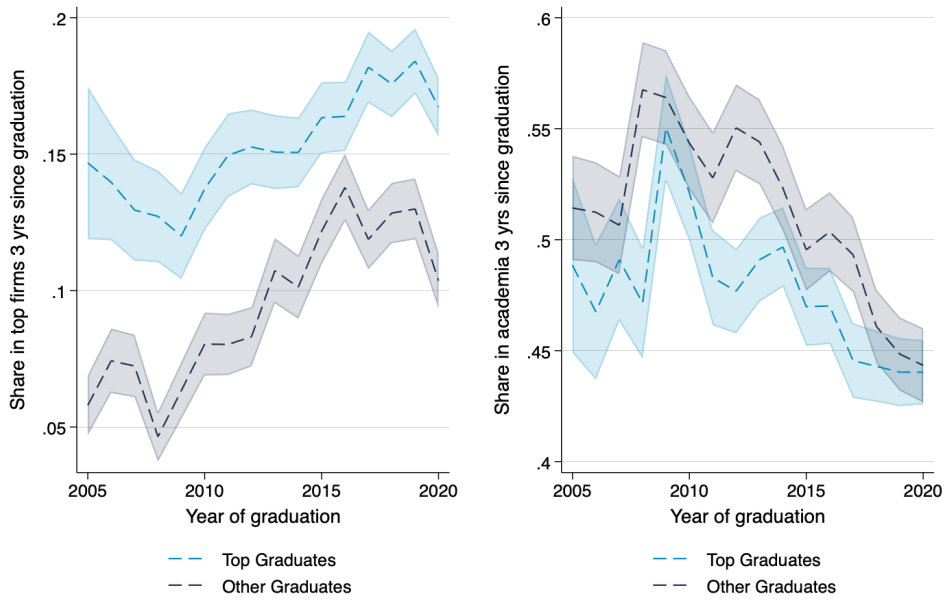


(b) PhD Graduates



Note: This figure replicates Figure 1, but it shows the trend in the share of graduates who enter non-tenure-track jobs in academia, and the share of graduates who enter non-top firms in industry, three years after graduation. The divergence appears muted relative to the patterns shown in Figure 1(c)-(d) — the share of graduates entering top firms vs. tenure-track jobs.

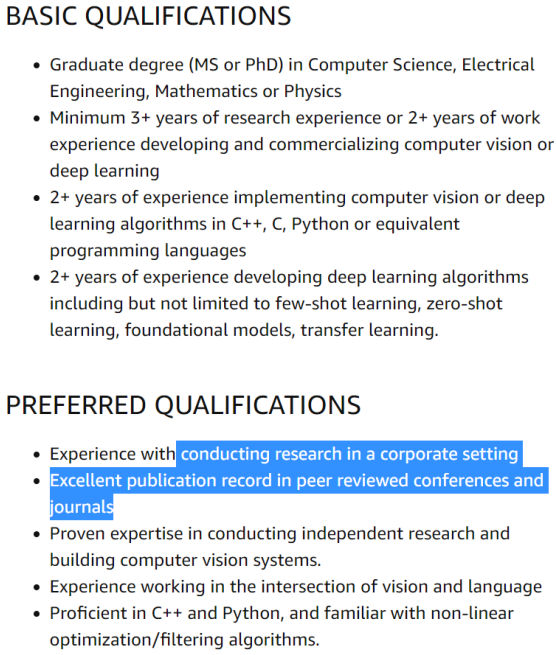
FIGURE A.5. Share of AI researchers working in top firms and in academia within 3 years of graduation, by top graduate.



Notes: This figure replicates Figure 2 to show the share of graduates entering top firms (left) vs. academia (right), separately by whether they have any publication before graduation. Top graduates refer to graduates with at least one publication before graduating from their highest degrees.

FIGURE A.6. Job Postings for Research Scientists

(a) Amazon Science



BASIC QUALIFICATIONS

- Graduate degree (MS or PhD) in Computer Science, Electrical Engineering, Mathematics or Physics
- Minimum 3+ years of research experience or 2+ years of work experience developing and commercializing computer vision or deep learning
- 2+ years of experience implementing computer vision or deep learning algorithms in C++, C, Python or equivalent programming languages
- 2+ years of experience developing deep learning algorithms including but not limited to few-shot learning, zero-shot learning, foundational models, transfer learning.

PREFERRED QUALIFICATIONS

- Experience with conducting research in a corporate setting
- Excellent publication record in peer reviewed conferences and journals
- Proven expertise in conducting independent research and building computer vision systems.
- Experience working in the intersection of vision and language
- Proficient in C++ and Python, and familiar with non-linear optimization/filtering algorithms.

(b) Google Research



Minimum qualifications:

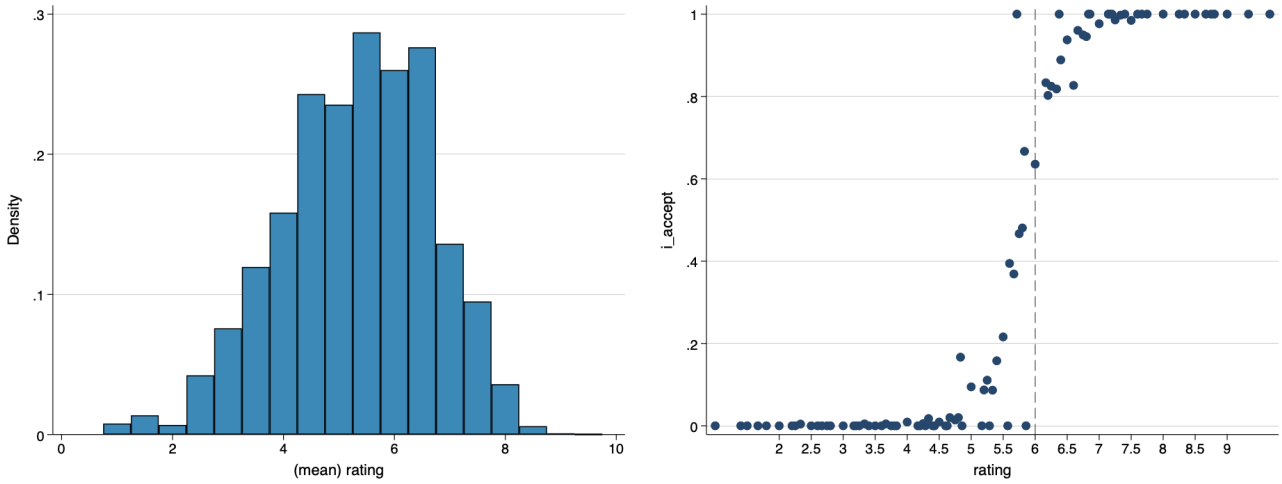
- PhD in Computer Science, related technical field or equivalent practical exp
- Experience in Natural Language Understanding, Computer Vision, Machine Optimization, Data Mining or Machine Intelligence (Artificial Intelligence).
- Programming experience in C, C++, Python.
- Contributions to research communities/efforts, including publishing papers NeurIPS, ICML, ACL, CVPR).

Preferred qualifications:

- Relevant work experience, including full time industry experience or as a re
- Strong publication record
- Ability to design and execute on research agenda.

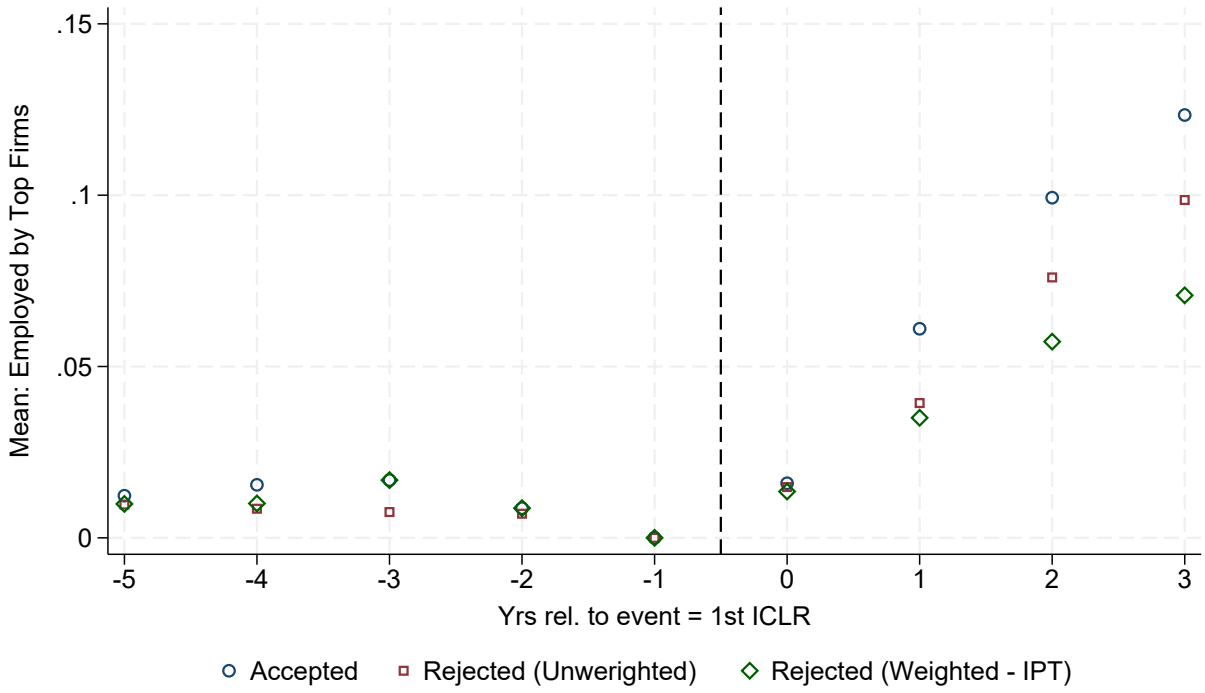
Notes: This figure shows recent postings of research scientist jobs at Amazon and Google. Both ads explicitly indicate a graduate degree in computer science as a basic qualification for this type of jobs, and list "publication records" as preferred qualifications.

FIGURE A.7. Referee Ratings and Acceptance by ICLR



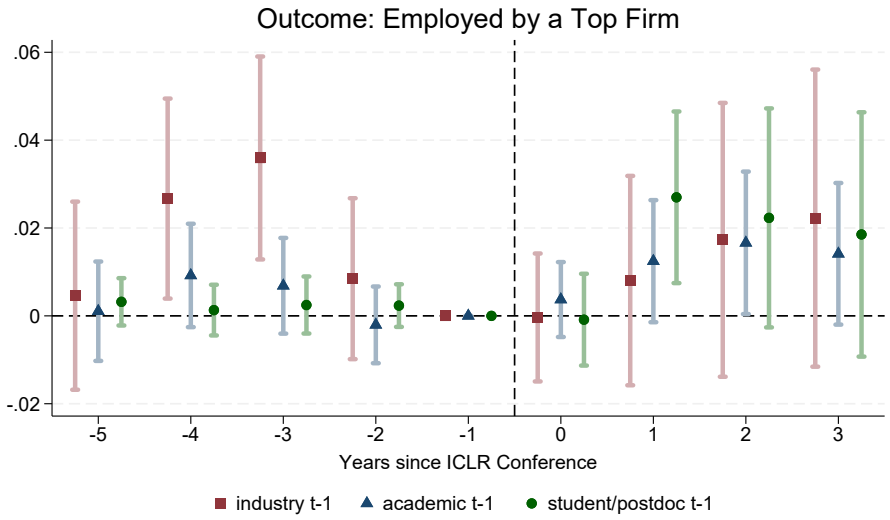
Notes: This figure shows the distribution of the average referee ratings received by ICLR submissions, and how the average rating relates to the likelihood of acceptance. Each paper is evaluated by 3–4 referees, who provide an overall assessment on a numeric scale. The scale was changed in 2020, but a score of 6 has consistently represented the "Marginally Accept". The left panel shows the distribution of average ratings per paper, while the right panel plots the relationship between the average rating and the probability of acceptance. Papers with an average rating below 5 are unlikely to be accepted, whereas most papers with an average above 7 are accepted.

FIGURE A.8. Parallel Trends in Employment by Top Firms



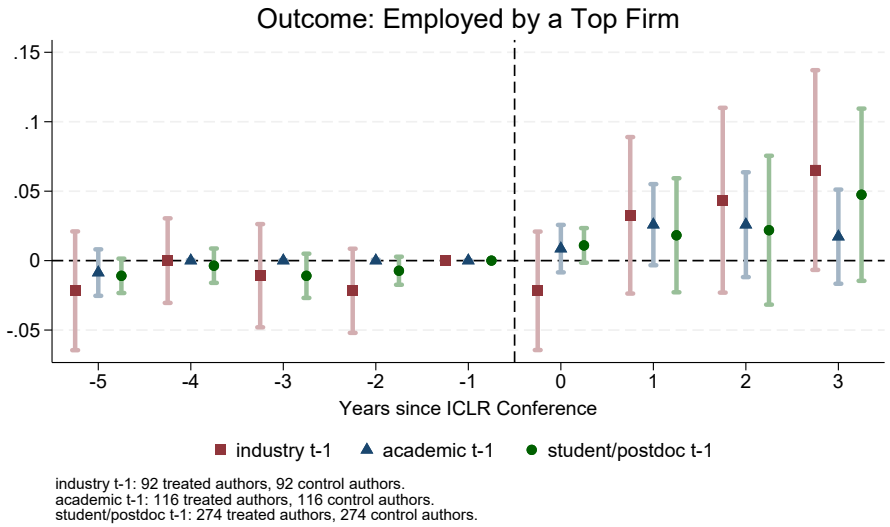
Notes: This figure shows the share of authors employed by top firms by the number of years relative to each person's ICLR event (first ICLR conference). The sample is restricted to authors who are not working at top firms one year before the ICLR conference. We show the trends in three groups: (1) accepted authors, (2) rejected authors (unweighted), and (3) rejected authors reweighted by $\hat{p}_i/(1-\hat{p}_i)$. The propensity score in (3) is estimated by solving the moment equations (8) to achieve covariate balancing. Accepted authors are weighted by 1 in the IPT-reweighted sample. See Section 4.1.2 for details.

FIGURE A.9. Employment by Top Firms among Authors from Other Places



Notes: This figure shows the estimated impacts of an ICLR publication on moving to top firms from different types of employers outside the top firms, which are represented by the coefficients $\{\gamma_l\}$ in the dynamic difference-in-differences model (5). The model is estimated on authors who are outside the top firms at -1, separately by whether the author was employed by nontop firms in industry at -1 (red), employed by academia (blue), or were students or postdocs (green). In contrast with Figure 6, the estimation sample is unweighted. Standard errors are robust and clustered at the author level.

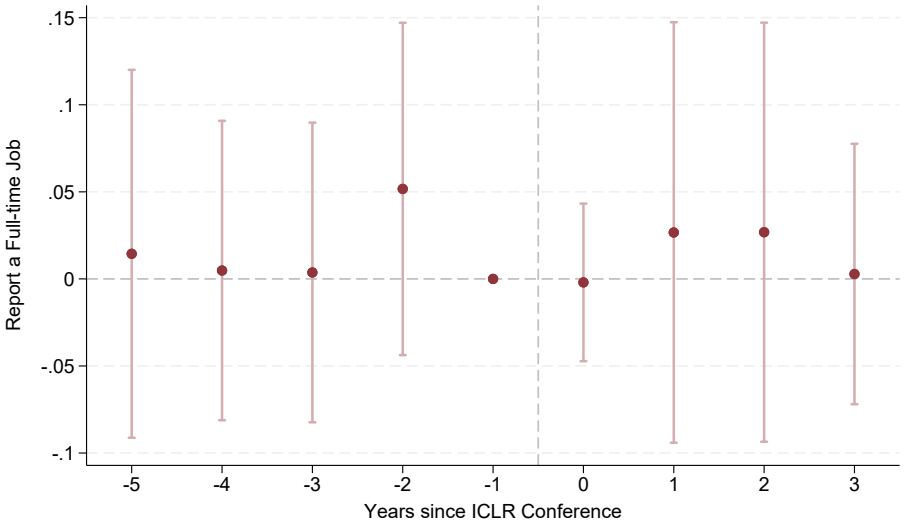
FIGURE A.10. Mobility outcome: Top | $j(i,-1) \notin$ Top (Matched Sample)



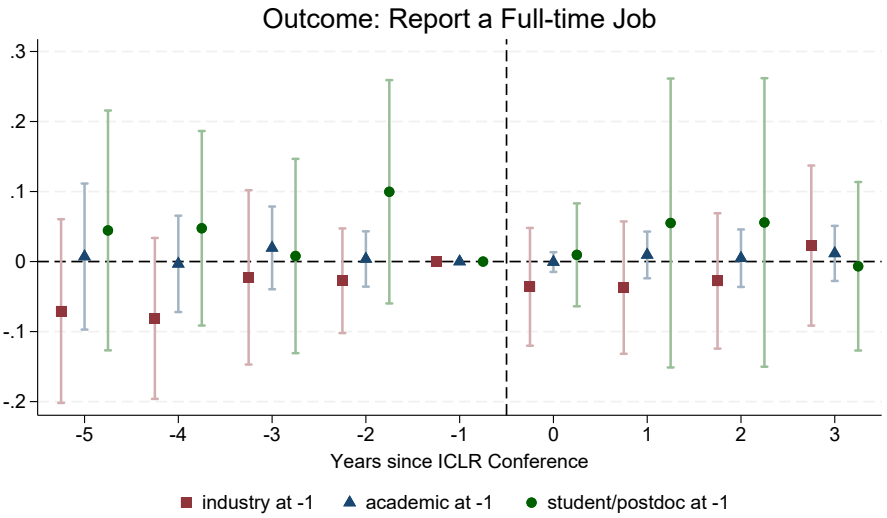
Notes: This figure shows the estimated impacts of an ICLR publication on moving to top firms from different types of employers outside the top firms, which are represented by the coefficients $\{\gamma_l\}$ in the dynamic difference-in-differences model (5). The model is estimated on authors in the matched sample who are outside the top firms at -1, separately by whether the author was employed by nontop firms in industry at -1 (red), employed by academia (blue), or were students or postdocs (green). The control/rejected authors in the matched sample are drawn without replacement. Standard errors are robust and clustered at the author level.

FIGURE A.11. Reporting of Any Full-time Job (with covariate balancing)

(a) Pooled

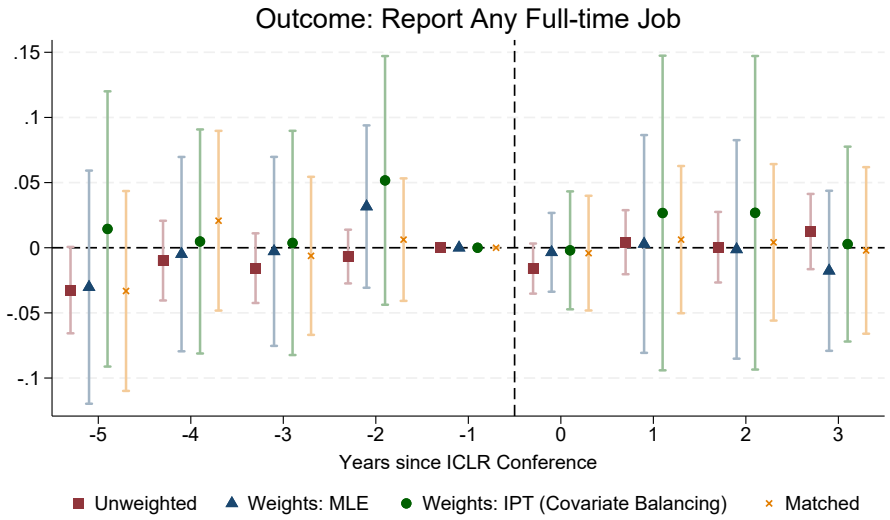


(b) By Origin at -1



Notes: This figure shows the estimated impacts of an ICLR publication on reporting any full-time job on LinkedIn (person×year level), which are represented by the coefficients $\{\gamma_l\}$ in the dynamic difference-in-differences model (5). The estimation sample comprises authors who are not employed by top firms at -1, consistent with the sample restriction in Figures 5-6. Rejected authors are reweighted by $\frac{\hat{p}_i}{1-\hat{p}_i}$, where the propensity score $\hat{p}_i$ is estimated by GMM (8) to achieve covariate balancing. Panel (a) shows the pooled estimate, whereas panel (b) shows the separate estimates based on the type of employers at -1: nontop firms in industry at -1 (red), employed by academia (blue), or were students or postdocs (green). Standard errors are robust and clustered at the author level.

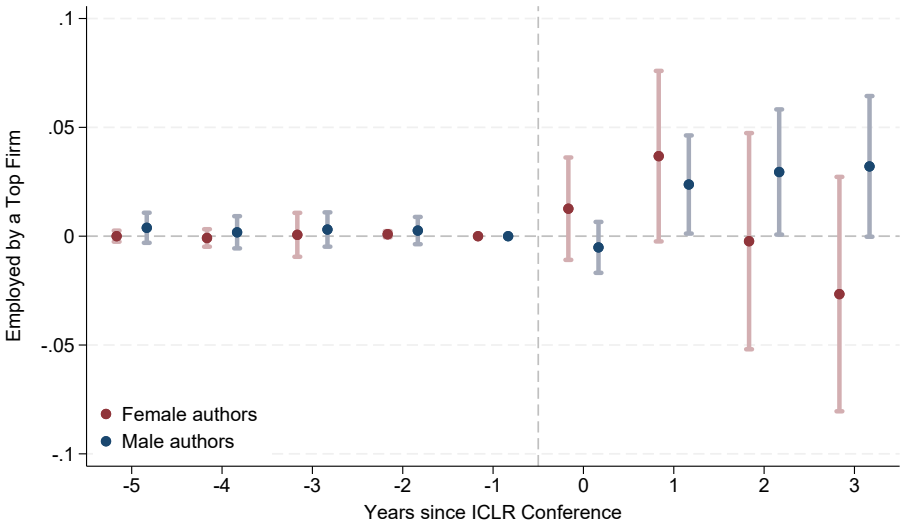
FIGURE A.12. Any report of a full-time job: Estimates by Method



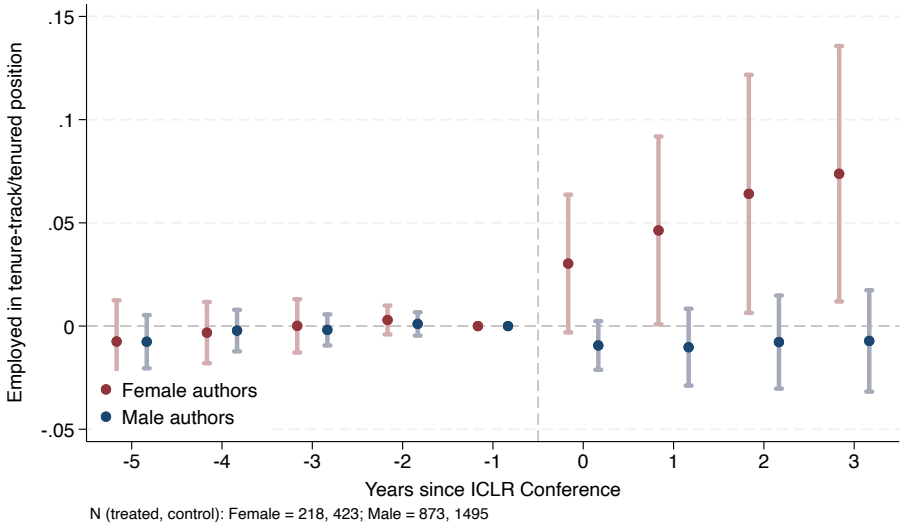
Notes: This figure shows the estimated impacts of an ICLR publication on reporting any full-time job on LinkedIn (person×year level), which are represented by the coefficients $\{\gamma_l\}$ in the dynamic difference-in-differences model (5). The estimation sample comprises authors who are not employed by top firms at -1, consistent with the sample restriction in Figures 5-6. We present the estimates using different weighting and matching methods. "Weights: MLE" or "IPT" refers to the estimates after we weight each rejected author by $\frac{\hat{p}_i}{1-\hat{p}_i}$ (accpeted authors are weighted by 1). The propensity score $\hat{p}_i$ is estimated by maximum likelihood under "Weights: MLE", and by method of moments under "Weights: IPT" to achieve covariate balancing. "Matched" refers to estimates among 1-1 matches between accepted and rejected authors. The methods are discussed in detail in Section 4.1.2.

FIGURE A.13. Gender Differences in Employment Outcomes among Students/Postdocs (Unweighted)

(a) Top Firms



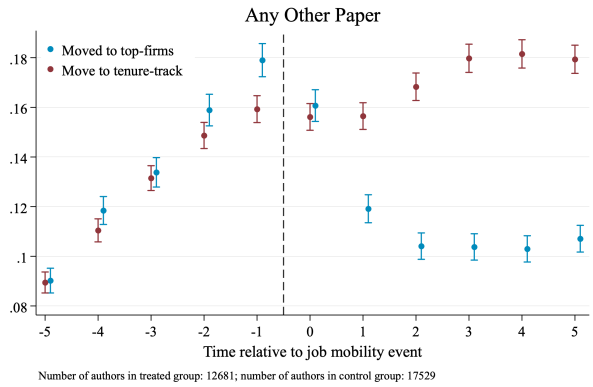
(b) Tenure-track Jobs



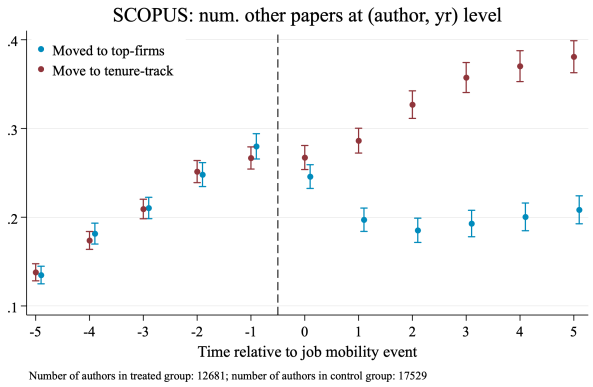
Notes: This figure shows the estimated impacts of an ICLR publication on employment at (a) top firms, and (b) tenure-track/tenured positions, separately by gender of the authors. We estimate the dynamic difference-in-differences model (5) separately for female and male authors who are students/postdocs at -1 (the year prior to the event). In contrast with Figure 7, the estimation sample is not weighted. Standard errors are robust and clustered at the author level.

FIGURE A.14. Publication Productivity in non-AI research - Movers to Top firms vs. Tenure-track

(a) Any Non-AI Paper

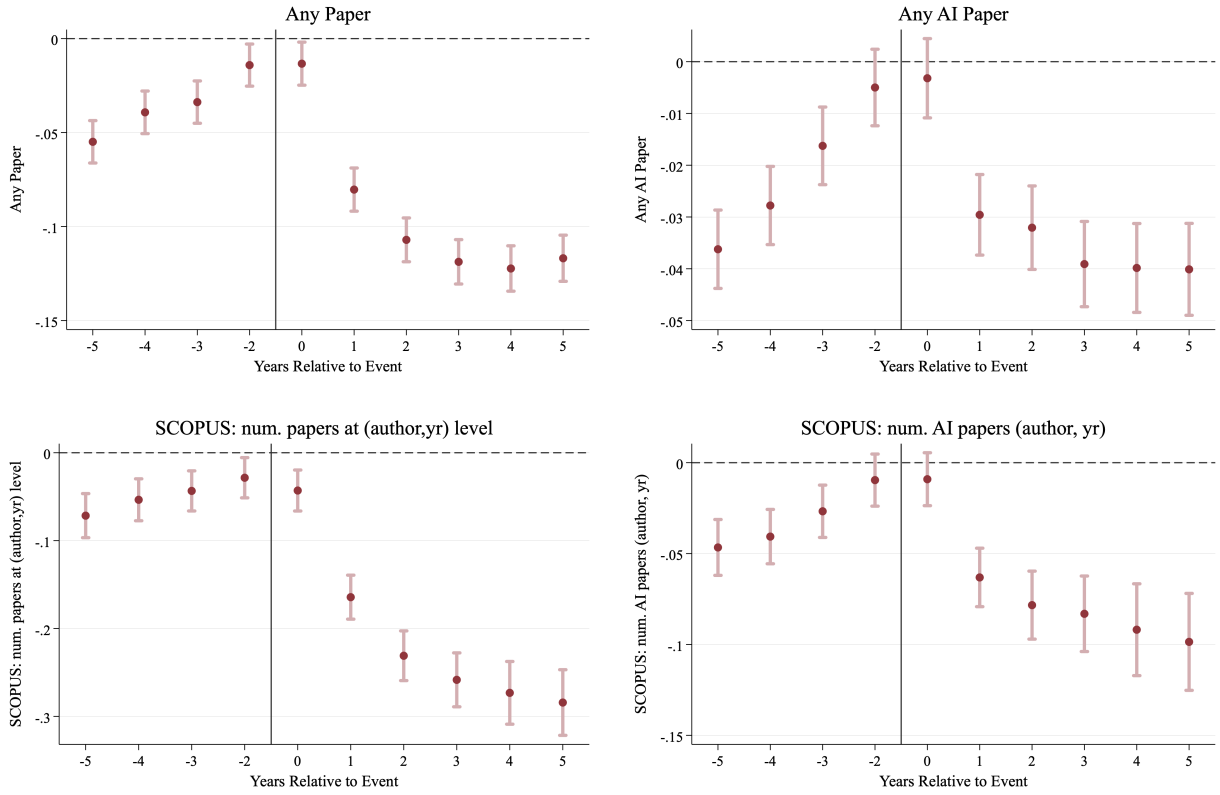


(b) Number of non-AI Papers



Notes: The figure plots the changes in the average publication productivity of non-AI papers among CS authors who are moving to top firms for the first time, and among authors who are moving to tenure-track positions for the first time, respectively. The x-axis represents the year of the first move to top firms (blue), or the year of the first move to a tenure-track job (red). Publication productivity (relative to -1) is measured by the probability of publishing any non-AI paper in panel a, and by the number of non-AI publications in panel b. The estimation sample includes all researchers in the Scopus–Revelio matched data with observed job transitions and complete event windows. For researchers with multiple moves, we consider the first move.

FIGURE A.15. Dynamic Difference-in-Differences Estimates: Movers to Top firms relative to Movers to Tenure track



Notes: This figure shows the difference-in-differences estimates of the changes in publication productivity around moves to top firms (at 0), relative to authors who enter tenure track positions at 0. Each regression controls for person and year fixed effects. Standard errors are robust and clustered at person level.

A3. Appendix Tables

TABLE A.1. First Job the Year After PhD

	Industry				Academia		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Industry	Top	Re-Scientist	Engineer	Academia	Postdoc	Tenure-Track
AI papers	.003514	.006803	.01038	-.007327	-.002858	-.0004205	-.0008396
	(.0007037)	(.0009546)	(.001125)	(.0008984)	(.0006762)	(.0004957)	(.0004518)
Other Papers	-.001238	-.001841	-.005178	.00382	.001787	-.0009024	.001945
	(.0005495)	(.0005118)	(.0005978)	(.0005072)	(.0005484)	(.0004522)	(.0004122)
female	-.08686	-.008415	-.00808	-.06833	.05895	.01367	.02279
	(.004993)	(.002558)	(.003109)	(.003668)	(.005119)	(.004202)	(.00349)
asian	.07394	.04715	.02582	.04231	-.07737	-.03455	-.02118
	(.007236)	(.003851)	(.004646)	(.005707)	(.007363)	(.005982)	(.005097)
white	.03923	.008931	.001407	.01206	-.03616	-.01287	-.009764
	(.006795)	(.003305)	(.004193)	(.005238)	(.006956)	(.005724)	(.004803)
Constant	.4194	.05281	.0949	.1813	.4964	.2176	.1375
	(.006435)	(.003163)	(.003998)	(.004991)	(.006578)	(.005415)	(.004536)
N	81,225	81,225	81,225	81,225	81,225	81,225	81,225
Adj. R2	.06471	.05337	.03759	.03466	.0514	.03646	.09152
Mean of y	.4454	.07596	.1043	.1845	.4639	.1998	.1322
AI Papersly=1	.8048	1.624	1.431	.5462	.5698	.6183	.5544
Other Papers	1.327	1.935	1.395	1.401	1.082	1.079	1.178

Notes: This table shows the OLS estimates of regression (1) of the initial job placement on publications before graduation, for 81,225 PhD authors in the Scopus-Revelio matched sample — who have published a CS paper according to Scopus database, and have matched to a Revelio individual profile with self-reported education and job history. The sample is restricted to authors who report a PhD degree. Each person's first job is characterized based on her primary employer in the year after obtaining her highest degree. The first four columns are outcomes related to employment in industry, whereas the next three columns are related to employment in academia.

TABLE A.2. Job Mobility After PhD (Year-to-Year Transitions between Employers)

	At Nontop Firms			At Top Firms			In Academia		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Industry	Top	Academia	Industry	Top	Academia	Industry	Top	Academia
Any AI Paper	-.01535	.01571	.009634	-.004354	.001241	.004956	.003816	.005431	-.003643
	(.001812)	(.001338)	(.001472)	(.001804)	(.003085)	(.001513)	(.001271)	(.0005714)	(.001739)
Any Other Paper	-.008466	.003801	.005805	-.007559	-.008193	.00761	.002699	.001435	-.004688
	(.001483)	(.0009481)	(.001228)	(.001916)	(.003294)	(.001673)	(.001046)	(.0003993)	(.001435)
exp1	.1362	-.02243	-.1125	.01181	-.04857	-.02447	-.1419	-.02472	.03495
	(.006847)	(.003682)	(.005703)	(.009673)	(.01677)	(.008121)	(.006291)	(.002206)	(.0085)
exp2	-.1265	.01294	.09872	-.006476	.05943	.0208	.1023	.0187	-.001895
	(.007301)	(.003995)	(.005921)	(.01062)	(.01876)	(.008362)	(.006503)	(.002235)	(.009174)
exp3	.03572	-.003155	-.02663	.0008856	-.01717	-.005826	-.02509	-.004635	.0003702
	(.002377)	(.001294)	(.001869)	(.003646)	(.006414)	(.00268)	(.002019)	(.0006814)	(.002956)
female	-.009857	-.002045	.00944	.001438	.008494	-.001931	-.01013	-.002209	.01875
	(.001728)	(.000936)	(.001309)	(.002447)	(.004214)	(.001863)	(.001447)	(.000496)	(.002114)
asian	.01306	.004462	-.003276	.008481	.00707	-.005645	.002442	.0007162	.01228
	(.00195)	(.001179)	(.001502)	(.002824)	(.005048)	(.002225)	(.001767)	(.0006135)	(.002501)
white	.006727	-.001346	-.004055	.005278	.005581	-.005461	.003446	.0006162	-.006047
	(.00172)	(.0009819)	(.001358)	(.002761)	(.004814)	(.00224)	(.001495)	(.0004876)	(.002113)
MI_pos	.03488	-.01019	-.02455	-.09279	-.03784	-.005685	-.05851	-.01596	.2944
	(.008802)	(.0035)	(.008937)	(.09731)	(.09918)	(.001636)	(.02991)	(.001792)	(.04281)
Re-Scientist	.02057	.004871	-.009188	.008411	.009634	-.006276	-.004328	-.001381	.2241
	(.001057)	(.0007166)	(.000869)	(.001811)	(.003377)	(.001482)	(.002969)	(.000996)	(.003543)
Engineer	.02766	.005303	-.01693	.01239	.02045	-.01041	.02331	-.002521	.1841
	(.0008266)	(.0005242)	(.0006526)	(.001496)	(.002832)	(.001185)	(.004313)	(.001133)	(.004938)
Manager	.02002	-.000658	-.01092	.005719	.001604	-.004766	-.009563	-.003145	.2059
	(.0008725)	(.0005923)	(.0007052)	(.00122)	(.002881)	(.0008291)	(.004384)	(.001119)	(.00528)
Postdoc	-.107	.008111	.05895	-.1054	-.1232	.1015	.008978	.001305	.1739
	(.005094)	(.002116)	(.004136)	(.01112)	(.01322)	(.01067)	(.001813)	(.0006568)	(.002417)
Inverse Mills	-.08335	.03434	-.07037	-.06354	-.09299	.009055	-.02651	.007041	-.4198
	(.02571)	(.01417)	(.01837)	(.03573)	(.05716)	(.0284)	(.02302)	(.008197)	(.03272)
Junior Faculty							-.07268	-.008893	.3203
							(.001118)	(.0003889)	(.001813)
Assoc. Prof							-.06393	-.0066	.3138
							(.00103)	(.0003223)	(.001816)
Full Faculty							-.06287	-.006615	.3117
							(.001083)	(.0003309)	(.001868)
Constant	.9158	.01439	.07335	.9767	.9405	.02443	.1307	.01467	.6872
	(.004719)	(.002559)	(.003639)	(.007066)	(.01172)	(.005824)	(.004306)	(.001513)	(.005985)
N	302,994	302,994	302,994	59,599	59,599	59,599	366,181	366,181	366,181
Adj. R2	.04672	.008104	.03283	.02645	.01417	.03772	.05506	.006569	.2017
Mean	.9565	.01519	.0271	.9847	.9395	.009161	.05036	.005336	.865

Notes: This table shows the OLS estimates of regression (2) of job mobility on indicators for publications, for authors in the Scopus-Revelio matched sample. The estimation sample is restricted to authors who report a PhD degree. See notes under Table 2 for details on the outcomes.

TABLE A.3. Characteristics of Accepted versus Rejected Authors (Unweighted vs. IPW - likelihood)

	Original Sample			Weighted (IPW-Likelihood)	
Variable	Accepted	Rejected	Diff.	Rejected	Diff.
Mode of Referee Rating	6.313	4.007	2.305***	5.871	0.441***
	(1.211)	(1.425)	(0.019)	(0.934)	(0.036)
Min Rating	5.495	3.293	2.202***	5.116	0.379***
	(1.238)	(1.242)	(0.018)	(1.068)	(0.039)
Mean Rating	6.556	4.452	2.104***	5.841	0.715***
	(0.728)	(1.088)	(0.013)	(0.716)	(0.028)
Num. Authors	5.395	4.756	0.639***	5.324	0.072
	(2.665)	(2.123)	(0.037)	(2.455)	(0.077)
Age	30.846	31.066	-0.220***	30.995	-0.149
	(5.331)	(5.557)	(0.080)	(5.593)	(0.209)
Female	0.233	0.250	-0.016***	0.217	0.016
	(0.423)	(0.433)	(0.006)	(0.413)	(0.013)
Foreign	0.465	0.527	-0.063***	0.479	-0.014
	(0.499)	(0.499)	(0.007)	(0.500)	(0.017)
White	0.388	0.353	0.035***	0.399	-0.011
	(0.487)	(0.478)	(0.007)	(0.490)	(0.017)
Asian	0.566	0.597	-0.032***	0.564	0.002
	(0.496)	(0.490)	(0.007)	(0.496)	(0.017)
Minority (Not White/Asian)	0.046	0.050	-0.003	0.038	0.009*
	(0.210)	(0.217)	(0.003)	(0.190)	(0.005)
Any PhD	0.479	0.460	0.019**	0.494	-0.016
	(0.500)	(0.498)	(0.007)	(0.500)	(0.017)
Any Master	0.632	0.623	0.009	0.650	-0.018
	(0.482)	(0.485)	(0.007)	(0.477)	(0.015)
Employed by Industry at -1	0.322	0.295	0.028***	0.327	-0.005
	(0.467)	(0.456)	(0.007)	(0.469)	(0.016)
Employed by Top at -1	0.137	0.082	0.055***	0.148	-0.010
	(0.344)	(0.275)	(0.005)	(0.355)	(0.014)
Employed by Academia at -1	0.156	0.186	-0.030***	0.147	0.009
	(0.363)	(0.389)	(0.006)	(0.354)	(0.010)
Student/Postdoc at -1	0.427	0.414	0.013*	0.446	-0.019
	(0.495)	(0.493)	(0.007)	(0.497)	(0.017)
Observations	6,879	13,234	20,113	13,234	20,113

Notes: This table displays average paper and author characteristics of accepted versus rejected authors in the original (unweighted) sample in columns 1-3, and the reweighted sample using inverse propensity weighting in columns 4-5. The propensity score is estimated by maximum likelihood. The sample includes every author who submitted to ICLR conferences for the first time between 2017 and 2020. 13.7% of accepted authors and 8.2% of rejected authors were employed by top firms at -1, the year prior to their first ICLR conferences. Given that the main outcome of interest is moving to top firms from other places, authors employed by top at -1 are dropped from the estimation sample for the difference-in-differences models (4) and (5). We also compare accepted and rejected authors in Table 3 conditional on authors not employed by top firms at -1, and we estimated the covariate-balancing IPT weights under that restriction.

TABLE A.4. Characteristics of Accepted versus Rejected Authors (Matched Samples)

	Matched Sample (w replacement)			Matched Sample (w/o replacement)		
Variable	Accepted	Rejected	Diff.	Accepted	Rejected	Diff.
Min Rating	5.429	5.302	0.127***	4.390	4.378	0.011
	(1.270)	(1.063)	(0.025)	(1.259)	(1.194)	(0.049)
Mean Rating	6.469	6.099	0.370***	5.857	5.576	0.280***
	(0.726)	(0.589)	(0.014)	(0.672)	(0.725)	(0.028)
Predicted Prob. Accepted (Text)	0.650	0.502	0.148***	0.487	0.395	0.091***
	(0.282)	(0.220)	(0.005)	(0.301)	(0.246)	(0.011)
Num. Authors	5.273	5.104	0.169***	5.029	4.859	0.169*
	(2.560)	(2.806)	(0.057)	(2.351)	(2.261)	(0.092)
Age	30.577	31.249	-0.673***	30.778	31.059	-0.282
	(5.152)	(5.758)	(0.116)	(5.196)	(5.709)	(0.217)
Female	0.230	0.252	-0.022**	0.226	0.221	0.006
	(0.421)	(0.434)	(0.009)	(0.419)	(0.415)	(0.017)
Foreign	0.451	0.496	-0.045***	0.482	0.487	-0.005
	(0.498)	(0.500)	(0.011)	(0.500)	(0.500)	(0.020)
White	0.396	0.419	-0.022**	0.390	0.416	-0.027
	(0.489)	(0.493)	(0.010)	(0.488)	(0.493)	(0.020)
Asian	0.557	0.548	0.009	0.565	0.523	0.042**
	(0.497)	(0.498)	(0.011)	(0.496)	(0.500)	(0.020)
Minority	0.046	0.033	0.013***	0.045	0.060	-0.015*
	(0.210)	(0.178)	(0.004)	(0.208)	(0.238)	(0.009)
Employed by Industry at -1	0.308	0.308	-0.000	0.287	0.287	0.000
	(0.462)	(0.462)	(0.010)	(0.453)	(0.453)	(0.018)
Employed by Top at -1	0.127	0.092	0.034***	0.092	0.101	-0.010
	(0.333)	(0.289)	(0.007)	(0.289)	(0.302)	(0.012)
Employed by Academia at -1	0.147	0.147	0.000	0.170	0.170	-0.000
	(0.355)	(0.355)	(0.008)	(0.376)	(0.376)	(0.015)
Student/Postdoc at -1	0.476	0.476	-0.000	0.466	0.466	-0.000
	(0.499)	(0.499)	(0.011)	(0.499)	(0.499)	(0.020)
Observations	4,424	4,424	8,848	1,263	1,263	2,526

Notes: This table displays average paper and author characteristics for accepted versus in the matched sample. The first three columns summarize the matched sample in which control (rejected) authors are drawn with replacement, whereas the next three columns summarized the matched sample in which control authors are drawn without replacement. Columns 3 and 6 display the difference in means with the corresponding standard error in parentheses. Mean and min rating refer to the set of ratings given by referee reports for the author's paper constituting the event. Predicted probability of acceptance is a score based on a Lasso-logit model leveraging embeddings based on text of referee reports, as described in A. Drawing without replacement reduces the number of matched accepted authors from 4,424 to 1,263, but the covariates are more balanced.