

DO SPONSORED ADS HELP ONLINE JOB SEEKERS?

IN THIS BRIEF

- A team of researchers—Apostolos Filippas, John J. Horton, Prasanna Parasurama and Diego Urraca—studied the impact of online job platforms that let job seekers boost their applications with sponsored self-advertisements.
- In their experiment, applicants with the highest bids received prominent placement at the top of an employer's application list.
- The experimental platform randomly varied whether an employer was exposed to a boosted application. Among the exposure group, the platform randomly varied whether the employer was notified that an application had been boosted.
- The results: Boosted applications were positively selected, and boosting an application increased the likelihood of a job seeker being hired by more than 40%.
- Nearly 80% of this increase was from the ranking effect of boosted job applications being ranked higher. About 20% was attributed to the signaling effect, in which employers were notified that a job application had been boosted.
- Boosted ads had no negative effects on employer outcomes including the number of jobs posted, number of hires made, and average feedback to hires.

Several online platforms, including Google's popular search engine, allow sellers to pay to have their listings more prominently displayed alongside "organic"—that is, regular and unsponsored—results. Could a similar "sponsored ad" approach work for online job marketplaces?

Previous research has examined the impact of sponsored advertising on several areas, including online search engines (Blake et al., 2015; Coviello et al., 2017), e-commerce platforms (Moshary, 2021; Abhishek et al., 2022; Joo et al., 2024), and restaurant platforms (Sahni and Nair, 2020; Dai et al., 2023).

But labor markets have distinct characteristics that make it difficult to predict the effects of sponsored advertising. In comparison with other platforms, online job markets depend less on prominence and visibility. That's because employers typically look at relatively small pools of applicants. In addition, when job seekers boost their own listings, it may send a signal to employers, notifying them of the job seeker's interest in and fitness for a particular job. However, employers might also view a job seeker's sponsored ad as an act of desperation, assuming that high-quality workers already have enough work and don't need to advertise themselves.

Some prior research has been conducted on algorithmic hiring, too, to study the role of digital technologies in matching workers to jobs. This includes research on the design of algorithms (for example, Ramanath et al., 2018) and the effects of algorithmic hiring on labor market outcomes (including Li et al., 2020).

THE EXPERIMENT

To learn more, a group of researchers—Apostolos Filippas, John J. Horton, Prasanna Parasurama and Diego Urraca—conducted what they say is the first empirical study of sponsored advertising in the online labor market. They did so by conducting an experiment using a large online labor market.

In this setting, employers post descriptions for jobs that can be done remotely, including computer programming, writing and graphic design. Workers, in turn, use the online market to search for and apply for these jobs. Under normal conditions, the platform’s proprietary algorithm shows the applicants to employers in ranked order based on best matches. From this ranking, employers can create a short list of candidates they wish to interview and possibly hire.

In the experiment, all workers, when applying for a job, had the option of bidding to advertise themselves through “boosted applications” (Figure 1). This is similar to the way companies bid to pay Google for prominent listings on relevant search-results pages. Workers in the experiment could apply to any job on the platform using a proprietary currency called “coins.” In addition, each employer had a job-specific application tracking system (ATS), which conveyed the name, profile picture and other information about each job applicant.

Boost your application (optional)

Bid for one of 3 boosted application spaces at the top of the employer's ATS

How bidding works ▾

Slot	Bid
1st place	20 Coins. 1 hour ago
2nd place	15 Coins. 1 hour ago
3rd place	10 Coins. 30 minutes ago

+ Set a Bid

Figure 1: Example of a job applicant's view of the auction interface. ATS is short for application tracking system.

In turn, the platform varied whether and how employers were exposed to these boosted applications. Each employer was randomly assigned to one of four groups:

- **Placebo group:** These employers saw no change to the application list; they were shown only the organic results.
- **First treatment group:** Also known as the AdOn group, these employers saw boosted ads at the top of their list, including a “Highly Interested” label next to the name.

In addition, hovering over the label revealed that the worker had paid more to boost their advertisement (Figure 2).

- **Second treatment group:** These employers, the AdNoDisclosure group, were shown boosted ads, but were not shown the “Highly Interested” label.
- **Third treatment group:** Known as the AdNoRec group, these employers were shown boosted ads, but were not shown an additional algorithmically determined “Best Match” label seen by employers in the other groups.

Employer View of Boosted Job Application

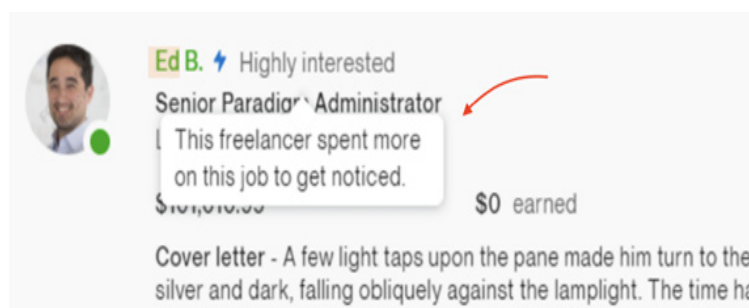


Figure 2: Boosted application from the first (AdOn) treatment group.

In the experiment, workers were not told which treatment group they belonged to. This experimental design allowed the researchers to disentangle four distinct effects of sponsored advertising: the self-selection effect, in which workers boost applications only when they’re both highly qualified for and interested in a job; the ranking effect, in which boosted ads are ranked higher; the signaling effect, which occurs when an employer is notified that an application was boosted; and the interaction of advertising effects with other algorithmic recommendation labels.

The researchers conducted their experiment in the fall of 2021. A total of 106,788 employers participated in the experiment. So did 510,975 workers; during the experiment period they submitted more than 3.6 million applications for some 167,000 jobs.

THE RESULTS

The researchers' experiment delivered four main results:

1) Even when employers aren't shown boosted ads, workers who advertise are both more likely to be sought out by employers and more likely to be hired.

To precisely estimate the self-selection effect into advertising, the researchers compared outcomes of those who paid for boosted ads and those who did not within the Placebo group only. Since boosting had no effect on the employer's application list—again, the Placebo group employers were shown the organic results only—the results indicate that boosted applications are positively selected.

Indeed, the researchers found that boosted applications in the Placebo cell were 80.5% more likely to be interviewed and 101% more likely to be hired compared with non-boosted applications in the Placebo cell. The explanation may be that since these effects were present even with worker fixed effects, it seems that workers selectively boost when the match quality is high for a particular job. They may also put more effort into applications they choose to boost.

2) When employers do see boosted ads, workers who boost job applications are 28.7% more likely to be interviewed for the job and 40.8% more likely to be hired.

To estimate the causal effects of boosting, the researchers compared the difference in outcomes between boosted and non-boosted applications in the first treatment group (AdOn) to the difference in outcomes in the Placebo cell. This comparison between cells differenced-out the self-selection effect and isolated the causal effects of boosting.

3) The ranking effect accounts for 79.8% of the total effects of boosting, while the signaling effect accounts for 20.2% of the total effects.

To make this determination, the researchers compared the difference in outcomes in the first treatment group (AdOn, which captures both the ranking and signaling effects) to those of the second (AdNoDisclosure, which captures just the ranking effect). When boosted applications were ranked

higher, it increased the likelihood of a worker getting hired by 32.5%. And the disclosure that the application was boosted increased the likelihood of a worker getting hired by 8.3%.

4) The effects of boosting are similar both in the presence and absence of the algorithmically determined recommendation label.

To make this determination, the research team compared the outcomes in the first treatment group (AdOn, where employers see an additional algorithmic recommendation label) with the third treatment group (AdNoRec, where employers do not see the additional recommendation label).

In the third treatment group (AdNoRec), the effect of boosting on the likelihood of a worker getting hired is 41.5%. This is not a statistically significant difference compared with the effect of boosting in the first treatment group (AdOn), 40.8%. In other words, the researchers found no evidence in their context that sponsored advertising competes with other algorithmic recommendation labels, lowering the effectiveness of sponsored advertising.

CONCLUSIONS

The results of the experiment have two important implications for the design of online labor markets and their intermediaries:

- **Boosted applications can be a useful tool for workers** to signal their interest and fit for a job to employers, increasing their likelihood of being interviewed and hired. Employers do not view these boosted applications as acts of desperation. On the contrary, they take the signals at face value, viewing the boosted applications as a positive signal.

While boosted advertising can help job seekers, **there are no observable differences in employer outcomes.** In theory, boosted applications should increase matching efficiency. However, the researchers did not observe significant increases in the final match success between employers and workers. One reason for this might be where in the hiring process the increase in matching efficiency occurs. Hiring is a multi-stage process, and boosted advertising happens in the

first stage only. For this reason, advertising is likely increasing the matching efficiency, either by increasing the quality of the short list or by reducing the amount of time employers spend reviewing and screening workers.

In sum, the experiment demonstrates that boosted job applications empower workers to send a costly signal of interest and fit for specific jobs. Boosted ads provide a new information channel that can be used to improve the job-matching process.

REPORT

Read the [full research report](#).

ABOUT THE RESEARCHERS

[Apostolos Filippas](#) is an Assistant Professor of Information, Technology and Operations at Fordham University's Gabelli School of Business, and a research affiliate with the MIT Initiative on the Digital Economy (IDE).

[John J. Horton](#) is the Richard S. Leghorn Career Development Professor and an Associate Professor of Information Technologies at the MIT Sloan School of Management. He is also the lead of the IDE's AI, Marketplaces and Labor Markets research group.

[Prasanna Parasurama](#) is an Assistant Professor of Information Systems and Operations Management at the Goizueta Business School of Emory University.

[Diego Urraca](#) is the pen name of a platform-market employee, used to preserve the platform's anonymity.

REFERENCES

Abhishek, V., et al. (2022). [The Impact of Retail Media on Online Marketplaces: Insights from a Field Experiment](#). Working paper.

Blake, T., et al. (2015). [Consumer Heterogeneity and Paid Search Effectiveness: A Large-Scale Field Experiment](#). *Econometrica*, vol. 83, no. 1.

Coviello, L., et al. (2017). [A Large-Scale Experiment to Evaluate the Effectiveness of Paid Search Advertising](#). CESinfo Working Paper no. 6684.

Dai, W., et al. (2023). [Frontiers: Which Firms Gain from Digital Advertising? Evidence from a Field Experiment](#). *Marketing Science*, vol. 42, no. 3.

Joo, M., et al. (2024). [Do Sellers Benefit from Sponsored Product Listings? Evidence from an Online Marketplace](#). *Marketing Science*, vol. 43, no. 4.

Li, D., et al. (2020). [Hiring as Exploration](#). Working Paper 27736. National Bureau of Economic Research; Cambridge, Mass.

Moshary, S. (2021). [Sponsored Search in Equilibrium: Evidence from Two Experiments](#). Working paper.

Ramanath, R., et al. (2018). [Towards Deep and Representation Learning for Talent Search at LinkedIn](#). Proceedings of the 27th ACM International Conference on Information and Knowledge Management (CIKM '18). Association for Computing Machinery; New York.

Sahni, N.S. and Nair, H.S. (2020). [Does Advertising Serve as a Signal? Evidence from a Field Experiment in Mobile Search](#). *Review of Economic Studies*, vol. 87, no. 3.



MIT Initiative on the Digital Economy

MIT Sloan School of Management
245 First St, Room E94-1521
Cambridge, MA 02142-1347

ide.mit.edu

Our Mission: The MIT Initiative on the Digital Economy (IDE) is shaping a brighter digital future.

We conduct groundbreaking research on the promise--and peril--of new digital technologies including generative artificial intelligence (GenAI), quantum computing, data analytics, and distributed marketplaces. We also investigate the rise of fake news and misinformation and the development of a digital culture. Through research and the convening of leaders from academia, industry, and government, the IDE provides critical, actionable insight for people, businesses, and government to understand and benefit from new technologies and how they're rapidly changing the ways we live, work, and communicate.

Contact Us: David Verrill, Executive Director,
MIT Initiative on the Digital Economy

617-452-3216

dverrill@mit.edu

Become a Sponsor: The generous support of individuals, foundations, and corporations help to fuel cutting-edge research by MIT faculty and graduate students. It also enables new faculty hiring, curriculum development, events, and fellowships.

Additional Contact: Albert Scerbo, Associate
Director,

MIT Initiative on the Digital Economy
267-980-2616

ascerbo@mit.edu

[View all our sponsors](#)

Connect with us:

