Journal of Economic Behavior and Organization 215 (2023) 406–420

Contents lists available at ScienceDirect

Journal of Economic Behavior and Organization

journal homepage: www.elsevier.com/locate/jebo

Do looks matter for an academic career in economics? ☆

Galina Hale [a], Tali Regev [b,*], Yona Rubinstein [c]

[a] University of California Santa Cruz, NBER, and CEPR, United States of America
[b] Reichman University (IDC), Israel
[c] London School of Economics (LSE), United Kingdom

ARTICLE INFO

JEL classification:
J71
J24
I23
M51
D91
A14

Keywords:
Beauty
Appearance
Economists
Statistical discrimination
Taste discrimination

ABSTRACT

We show that physical appearance plays a role in the success of economics PhD graduates and investigate the underlying mechanisms driving this relationship. Leveraging a unique dataset of career and research productivity trajectories of PhD graduates from leading economics departments in the United States, we provide robust evidence that appearance is a predictive factor for both research productivity and job placement. Our analysis goes beyond establishing the association between attractiveness and success within the profession. By jointly examining appearance, job outcome, and research productivity, as well as the longitudinal development of the latter two over time, we show that the effect of appearance can be partially, but not fully, attributed to its role as a predictor of research productivity, with the remainder of the effect reflecting an intrinsic demand for attractiveness.

1. Introduction

Appearance bias in the labor market has been widely documented in the literature. Attractive individuals generally land better jobs and make more money than plain-looking ones (Hamermesh, 2011). However, less is known about the role of appearance in the academic labor market. Given that the primary criteria for scholars' hiring and promotions hinges on research productivity, one would expect that what matters is brains, not looks. Yet, because interaction with colleagues and presentation skills are instrumental, some aspects of individuals' academic performance may depend on their attractiveness. We investigate whether the attractiveness of PhD candidates predicts their success in securing more prestigious academic jobs and whether this reflects higher research productivity or the demand for and appreciation of good-looking individuals in academia.

The field of economics within academia is perfectly suited for the analysis of the impact of appearance because economists regularly produce rankings of economics departments and have well-defined and readily available measures of researchers' productivity. For these reasons we can distinguish between the quality of the job, given by the institution's published rankings, and research

☆ This paper would have been impossible without instrumental help of Ishai Avraham, Sahar Baribi, Emily Breza, Mor Dudkin, Charles Norton, Amir Padan, Alex Rothstein-Landman, Eran Rubinstein, Yuri Sherman, and Rotem Yaron. We would like to thank Kelly Quinn, Christina Paxson, Nicole Tateosian, and Deborah Donohue from Proquest for providing institutional data. We benefitted from comments from many of our colleagues, especially Daniel Hamermesh, Panu Poutvaara, as well as two anonymous referees. All errors are ours.

* Corresponding author.
E-mail addresses: gbhale@ucsc.edu (G. Hale), tregev@runi.ac.il (T. Regev), yonarubinstein@gmail.com (Y. Rubinstein).

https://doi.org/10.1016/j.jebo.2023.09.022
Received 29 June 2023; Received in revised form 16 September 2023; Accepted 18 September 2023

Available online 5 October 2023

productivity, measured by the number of publications and citations. As a result, our analysis extends the scope of previous studies examining the role of appearance in employment by jointly studying measures of job quality, research productivity, and success over time. To discipline our empirical analysis, we show in a stylized model how these data can help separate the productivity effect and the demand for beauty.

We construct a dataset of 752 individuals who earned their PhDs from ten of the leading economics departments in the United States between 2002 and 2006. We follow these individuals from graduation until 2017 ("last observed job"). The dataset includes information on the graduates' field of study, publication records, citations, and job placements. To measure appearance, we collected photographs from their professional websites in 2011 and solicited ratings of their physical attractiveness using 241 independent evaluators. To measure job placement success, we use departments' ranking from RePEc (2019). Finally, we use the number of publications and citations to measure research productivity. Using these data, we study whether attractiveness predicts job success during the first formative years of the candidates' careers, and the extent to which these findings reflect attractiveness as a signal of productivity or a taste for physical attractiveness.

We find that physical appearance plays a significant role in determining individuals' academic success, with attractiveness having a persistent impact on individuals' careers. Consistent with previous research (Dilger et al., 2015; Fidrmuc and Paphawasit, 2018), we observe that attractiveness predicts research output.[1] More attractive economists receive higher overall citations as well as citations per publication. Furthermore, appearance predicts career outcomes: women in top PhD programs are more attractive than men, suggesting that attractive women have a better chance of being selected into these elite programs. In terms of subsequent job outcomes, attractive individuals are more successful than those with a plain appearance. They are more likely to secure positions in higher-ranking PhD institutions, and after graduation, they are more likely to find jobs in the private sector rather than academia or the public sector.[2] Within academia, attractive-looking PhD graduates are more likely to be placed at higher-ranking institutions for their first job. Importantly, appearance remains a significant factor in subsequent job rankings even after controlling for PhD school and first job rankings. These effects are robust across different samples and specifications and are substantial in magnitude. Specifically, a one standard deviation increase in attractiveness score is associated with a 7-9 percentage point increase in the probability of achieving an above-median outcome in terms of job placement or citation count, depending on the outcome being considered.

Given the predictive power of appearance for research output, employers might rationally value appearance for its potential to signal future productivity, thus engaging in statistical discrimination. To differentiate between statistical and taste-based discrimination, we leverage the idea that statistical discrimination should dissipate as more information is accumulated about a candidate (Altonji and Pierret, 2001). We examine whether attractiveness predicts success as measured by the rank of the candidate's first job department and whether the predictive power of attractiveness diminishes as more information accrues about the researcher's productivity, as measured by the number of publications and citations. Our findings reveal that attractiveness retains its capacity to predict job ranking even when more information is available. This suggests that attractiveness is valued by employers beyond its impact on research productivity.

Why would appearance matter for the success of academic economists or predict their research productivity? Beauty matters in the labor market because good looks are appreciated by co-workers, bosses, and customers (Biddle and Hamermesh, 1998; Babin et al., 2020). Moreover, attractive individuals tend to receive more favorable feedback and foster more positive interactions with others (Jackson et al., 1995; Langlois et al., 2000), which can boost their confidence, charisma, and effectiveness in every task that requires human interaction (Thornton and Ryckman, 1991; Mobius and Rosenblat, 2006; Judge et al., 2009). Better-looking people are therefore more likely to be hired (Beam et al., 2020) and, once employed, command higher wages (Hamermesh and Biddle, 1994; Langlois et al., 2000; Harper, 2000; Judge et al., 2009; Bóo et al., 2013).

In academia, appearance may work in similar ways. Advisors, colleagues, co-authors, and students might demand good looks because they enjoy and value looks, because they believe attractiveness is correlated with superior scholarship (Dion et al., 1972), or because attractive individuals are actually more effective teachers and scholars (Dilger et al., 2015; Fidrmuc and Paphawasit, 2018).[3] Attractive individuals may also receive greater attention and resources throughout their training and therefore are more likely to succeed. For example, increased faculty attention may lead to greater opportunities such as one-on-one meetings, research assistant positions, and offers to collaborate on academic projects. These advantages can lead to higher-quality job market papers, improved initial job placements, and ultimately, success in their careers. In principle, perceived beauty may also be correlated with perceived competence and intelligence, suggesting an additional mechanism for the importance of appearance in academia.[4] However, in our data, the correlation between perceived attractiveness and perceived intelligence is minimal.[5]

Our study contributes to this literature in two distinct ways. First, we provide empirical evidence that attractive individuals in academia exhibit higher research productivity, as evidenced by their publication success, measured as citations. Second, we demonstrate that attractiveness matters for job quality beyond its impact on productivity. We organize our presentation as follows.

[1] We focus solely on research productivity. Sen et al. (2010) find that teaching productivity is more affected by the "hotness" ratings from students than research productivity.

[2] While the private sector may not be the preferred job outcome for many PhD economists, this finding is consistent with the appearance premium in the private sector: at the margin, more attractive individuals face a better set of private sector offers and therefore are more likely to choose such jobs.

[3] A positive relationship between attractiveness and public speaking invitation and fees, at least for social sciences, is demonstrated in Bi et al. (2020).

[4] In fact, Berggren et al. (2010) found this effect in the study of perception of politicians.

[5] Our independent evaluators rated photographs for both attractiveness and perceived intelligence dimensions. Since perceived intelligence doesn't hold much predictive power in our analysis, we do not report these results and focus only on attractiveness ratings.

In Section 2, we introduce a model with physical attractiveness having a direct value for employers and also serving as a signal of future productivity. In Section 3, we describe our dataset of career and productivity trajectories of PhD graduates from leading economics departments in the United States. In Section 4, we examine the relationship between attractiveness and research output, as measured by citations. Section 5 explores the impact of physical attractiveness on job outcomes above and beyond its effect on research productivity. Finally, in Section 6, we conclude.

2. Model

We introduce a model to guide the empirical analysis, distinguishing between employers' aesthetic preferences and appearance as a signal of future productivity. Workers' beauty may be valued by employers either due to an intrinsic taste for beauty, i.e., they enjoy working next to attractive individuals, or because beauty correlates with and therefore predicts productivity. Although not explicitly modeled, the correlation between beauty and productivity can either result from co-workers' taste for beauty, in which case they are eager to collaborate with attractive individuals and hence increase attractive workers' productivity, or because attractive individuals are better at selling their products, i.e., are more convincing presenters. We show that the two reasons for valuing beauty imply that: (1) attractive individuals will have better labor market outcomes than less attractive individuals; (2) over time, as more information about a worker's actual productivity is revealed, the role of appearance in predicting the worker's labor market outcomes becomes smaller; (3) over time, the intrinsic taste for beauty will continue to play a role so that the role of appearance in predicting a worker's labor market outcome will not disappear.

Let individual i of beauty group g have a productive value v_{ig} and an intrinsic beauty value u_g for the employer, with weights δ and $1-\delta$ respectively. Thus, the total value V_i of a worker to an employer is given by

$$V_i = \delta v_{ig} + (1-\delta)u_g. \tag{1}$$

The worker's productive value v_{ig} depends both on their beauty u_g and their ability ϵ_{ig}, which is drawn from their beauty-group-specific ability distribution:

$$v_{ig} = u_g + \epsilon_{ig}, \quad \epsilon_{ig} \sim \mathcal{N}(0, \sigma^2_{\epsilon,g}). \tag{2}$$

The productive value is not fully observed by the employer. Instead, the employer only observes, at each period t, the worker's beauty g and a noisy signal about the worker's productivity, s_{igt}:

$$s_{igt} = v_{ig} + \eta_{igt}, \quad \text{where noise is distributed } \eta_{igt} \sim \mathcal{N}(0, \sigma^2_{\eta,gt}). \tag{3}$$

We assume that this signal becomes more informative over time so that the signal's noise decreases over time. Specifically, we assume that the variance of the noise term $\sigma^2_{\eta,gt}$ declines with t. This reduced-form formulation represents the accumulation of actual information on productivity over time.

The expected value of a worker's productivity v_{ig} given the productivity signal s_{igt} and her beauty group g is therefore given by:

$$\begin{aligned} &E(v_{ig}|s_{igt}) = (1-\gamma_t)u_g + \gamma_t s_{igt}, \\ &\gamma_t = \frac{cov(v_{ig}, s_{igt})}{var(s_{igt})} = \frac{\sigma^2_{\epsilon,g}}{\sigma^2_{\epsilon,g} + \sigma^2_{\eta,gt}}. \end{aligned} \tag{4}$$

Thus, the expected value for employers is given by:

$$EV_i = \delta((1-\gamma_t)u_g + \gamma_t s_{igt}) + (1-\delta)u_g. \tag{5}$$

The first term reflects the productivity signaling effect of beauty while the second term reflects the intrinsic value of beauty to employers.

We do not explicitly model the matching of individuals to employers, but note that nearly every model will result in assortative matching outcomes, which gives us:

Proposition 1. *Attractive individuals will have better labor market outcomes than less attractive individuals. This follows immediately from assumptions.*

Proposition 2. *Over time, as more information about a worker's actual productivity is revealed, the role of appearance in predicting the worker's labor market outcomes will become smaller. This is true because with time, more weight is placed on the more precise signal as* γ_t *converges to one, and the weight* $1-\gamma_t$ *on the group's productive value* u_g *goes to zero.*

Proposition 3. *Over time, the intrinsic taste for beauty will continue to play a role, so that the role of appearance in predicting a worker's labor market outcome will not disappear. This is true because the intrinsic taste for beauty is captured by the term* $(1-\delta)u_g$ *which remains positive and constant over time.*

Thus, if we observe that the role of appearance in predicting job outcomes diminishes over time, it suggests that appearance serves as a signal of productivity. Consequently, a decrease in the coefficient on attractiveness over time can imply statistical discrimination. If this effect declines to zero over time, it means there is no evidence of intrinsic demand for beauty. If, however, this decrease is small or the coefficient remains stable over time, it implies that attractiveness continues to hold value for employers beyond its role as a signal of future research productivity – reflecting an intrinsic demand for attractiveness, or "a taste for beauty."

3. Data

3.1. Career and productivity data

We gathered data for all PhD students graduating from ten of the top economics departments in the United States by utilizing each institution's library catalog of dissertations for the years 2002-2006.[6] Whenever library data were unavailable, we collected the data from ProQuest's dissertation database. Data on the field of research was extracted from the dissertations' titles.[7]

Data on job placement upon graduation and up to fifteen years post-graduation are based on institutional placement records and an online CV search conducted in October 2017. Publication information at the time of the last observed job was extracted from Harzing's "Publish or Perish" engine, which itself is based on Google Scholar search. To address potentially duplicated publication counts arising from online working paper versions, our analysis employs the hc-index of publications.[8] For citation history we collected the cumulative number of citations for each individual in each year in our dataset using CitEc: Citations in Economics, a service provided by RePEc (2021). Citations for individuals without CitEc records were obtained through Google Scholar, and these cases were marked with a "google scholar indicator".[9]

Ranking of economics departments was extracted from RePEc (2019), which provides the rankings of the top 10 percent of economics research institutions globally, based on faculty's impact-adjusted pages published in the top 50 journals. To facilitate the presentation, we reversed the ranking such that a higher rank number (999 being the highest) corresponds to a superior institution.[10]

Our universe consists of the entire cohort of 1106 students who obtained a PhD in economics from ten of the top institutions between 2002 to 2006. The subset utilized for the analysis consists of 752 individuals, including 183 women, for whom we were able to locate online photographs. Given that academic positions customarily involve maintaining a webpage featuring a photograph, our dataset likely covers all graduates who were engaged in academia until at least 2017, and potentially beyond.[11] Regression samples vary depending on data availability for each outcome, as detailed in Online Appendix Table A1.

The descriptive statistics for our sample can be found in Table 1. Regarding the distribution of PhD graduates across economic fields, men were significantly more likely to specialize in theory and finance, and women were significantly more likely to specialize in industrial organization. However, our tests reveal that there are no differences in the importance of appearance across fields. The average RePEc (2019) rank of the PhD institution of our graduates is 16.7.[12] Among the 636 graduates with available first job information, 75 percent were working in academia, 15 percent in a government or a public sector institution, and 10 percent in the private sector. Note that our sample, which is based on the availability of online photographs, is likely to under-represent graduates employed in the private sector.

The rank of the first job institution of those working in academia is available in the RePEc (2019) dataset for 388 individuals. This sample encompasses all graduates whose first job was at the top 10 percent of economics research institutions, excluding the least successful ones, many of whom were employed abroad. The average rank of these first job institutions was 148.2.[13] For the last observed (academic) job recorded in our data (in 2017), there are 297 observations, with an average rank of 171.3, and 91 observations lost between the time of the first job and last observed job.[14]

We observe 269 individuals with publication and citation records.[15] The average hc-index for publications when the last job was observed (between 11 to 15 years after graduating in 2017) was 13.4, with a median of 12. The average number of citations 7 years post-graduation was 206.3, with a median of 106. These citations figures for our graduate sample are slightly less than half of those reported by Hamermesh (2018) for faculty members 7-8 years post-graduation at the top 30 institutions.[16]

[6] The selection of universities was dictated by data availability and includes Berkeley, Chicago, Harvard, MIT, NYU, Northwestern, Penn, Princeton, UCLA, and Yale.

[7] Fields were coded using JEL classification into the fields of Econometrics, Micro/Theory, Macro, International, Public, Labor, IO, Devel/Growth, Finance and Other.

[8] The h-index assigns a score of h to a scholar who has published at least h papers, each of which has been cited in other papers at least h times. The hc-index, or contemporary h-index of citations, adds an age-related weighting to each cited article.

[9] Yearly citation data were extracted in 2021.

[10] Ranking data were extracted in September 2019.

[11] The proportion of women in our sample corresponds to the proportion of women among all graduates in those ten top economics departments during the specified years, regardless of photograph availability.

[12] In the Table, we report the average of the inverted RePEc (2019) ranks, which equals 983.3.

[13] In the Table, we report the average of the inverted RePEc (2019) ranks which is 851.2.

[14] This is likely due to both voluntary and non-voluntary separations of individuals from academic positions.

[15] We exclude 32 observations that appeared to be capturing citations of other scholars with the same names.

[16] For the faculty member sample Hamermesh (2018) reports a mean citation count of 465 and median of 280.

Table 1
Descriptive statistics: graduates.

	mean	sd	min	max	count
Attractive	0.50	0.17	0.08	0.94	752
Female	0.24	0.43			752
Asian looking	0.17	0.38			752
Cohort graduation year	2004	1.45	1999	2006	752
Devel/Growth	0.07	0.26			752
Econometrics	0.04	0.20			752
Finance	0.11	0.32			752
IO	0.07	0.25			752
International	0.08	0.27			752
Labor	0.13	0.34			752
Macro	0.10	0.30			752
Micro/Theory	0.21	0.41			752
Public	0.04	0.20			752
Other	0.14	0.35			752
Professional photo factor	0.00	0.78	-1.34	0.92	752
Smiling photo factor	0.00	0.40	-1.74	0.71	752
Large photo factor	0.00	0.20	-0.55	0.67	752
Attractive (raw score)	4.60	1.21	1.67	8.78	752
Attractive (by reliable raters)	0.50	0.18	0.08	0.98	752
Rank of PhD institution	983.30	13.18	961	999	752
First job is academic	0.75	0.44			636
First job is government	0.15	0.36			636
First job is private	0.10	0.31			636
Last job is academic	0.69				661
Rank of first job	851.81	193.63	51	999	388
Rank of last observed job	853.37	193.82	50	998	297
Rank of photo institution	850.06	196.20	173	999	294
HC-index of publications at last observed job	13.39	7.60	0	40	269
Citations 7 years post graduation	206.25	288.24	0	1802	269

3.2. Appearance ratings

After collecting the photographs, we relied on online evaluators to provide appearance ratings. We adjusted raw ratings to account for the heterogeneity of evaluators. We also analyze heterogeneity in the quality of the photographs to determine which confounding factors we need to control for in our regressions.

3.2.1. Method

Photographs of the individuals in our sample were collected online in 2011 with a total of 752 photographs collected. Individuals were rated for how attractive they were based on these photographs by one research assistant and 240 U.S.-based workers of Amazon Mechanical Turk (AMT), an online marketplace for online workers.[17] Each AMT evaluator was referred to a password-protected site, where they provided their personal details such as age, gender, country of primary citizenship, and years of education. Each evaluator was then asked to rate the appearance of 50 individuals in our sample based on the photographs. The question asked about each individual photographed was: "On a scale of 1 to 10 (1 - not at all, 10 - very much), do you find this person attractive?". In addition, one research assistant evaluated all photographs.

Summary statistics of evaluators' characteristics are presented in Online Appendix Table A2. Half of the evaluators were women, the mean age was 33, and they had on average 15 years of education. On average, each photograph in the sample was viewed and rated by 14 evaluators. The ratings for each photograph were averaged across evaluators to produce the raw attractiveness score of the photographed individual. To capture the extent to which there was agreement on the appearance rating of each graduate, we also recorded the standard deviation of the ratings for each individual photographed.

Evaluators tend to have idiosyncratic benchmarks when rating individuals' photographs and may vary in their tendency to give high or low ratings. For example, a rating of 1 given by a tough evaluator may be equivalent to a rating of 3 given by a more lenient one. To standardize the appearance ratings across evaluators, we re-scaled each evaluator's ratings into a percentile ranking based on that evaluator's distribution of ratings. Since each evaluator rated 50 photographs, which were randomly and independently chosen from the sample, we assume each evaluator viewed photographs that were similarly distributed in terms of their appearance. The re-scaled appearance score for each individual in our sample was constructed as the average of the percentile ratings. For the rest of the analysis, we use this re-scaled score.[18]

[17] Individuals were also rated for how intelligent they appeared based on these photographs. We asked for both impressions since it was not clear *a priori* which dimension of appearance is most relevant for hiring, promotions, and overall academic success. Here we only report the results for attractiveness, because we did not uncover robust patterns for the effects of "looking intelligent" ratings.

[18] In the robustness analysis we show that when we use raw scores instead, the results are qualitatively the same but are less precisely estimated.

Table 2
Appearance ratings of PhD graduates in top schools, by gender.

	All Graduates		Men Graduates		Women Graduates		Men-Women
	mean	sd	mean	sd	mean	sd	difference in means
Attractive (raw)	4.60	1.21	4.36	1.09	5.34	1.26	-0.978***
S.D. of attractive (raw)	0.23	0.05	0.23	0.05	0.22	0.06	0.204***
Attractive	0.50	0.17	0.47	0.16	0.61	0.18	-0.144***
S.D. of attractive rating	0.23	0.05	0.23	0.05	0.22	0.06	0.004
Attractive by female raters	0.50	0.19	0.46	0.18	0.62	0.18	-0.166***
S.D. of attractive by female	0.21	0.07	0.22	0.07	0.20	0.07	0.015***
Attractive by male raters	0.50	0.18	0.47	0.17	0.60	0.20	-0.127***
S.D. of attractive by male	0.23	0.08	0.22	0.08	0.23	0.09	-0.007
Attractive by reliable raters	0.50	0.18	0.46	0.16	0.62	0.18	-0.152***
S.D. of attractive by reliable raters	0.22	0.06	0.22	0.05	0.22	0.06	0.007*
N	752		569		183		

Notes: Last column reports difference in means, with t-test, where * Denotes significance at 10%; ** Denotes significance at 5%; *** Denotes significance at 1%.

Table 3
Correlations of different attractiveness measures.

Attractivness measure	re-scaled	By female raters	By male raters	By reliable raters	Raw
re-scaled	1.0000				
By female raters	0.9329	1.0000			
By male raters	0.8967	0.7063	1.0000		
By reliable raters	0.9933	0.9392	0.8763	1.0000	
Raw	0.9196	0.8551	0.8203	0.9121	1.0000

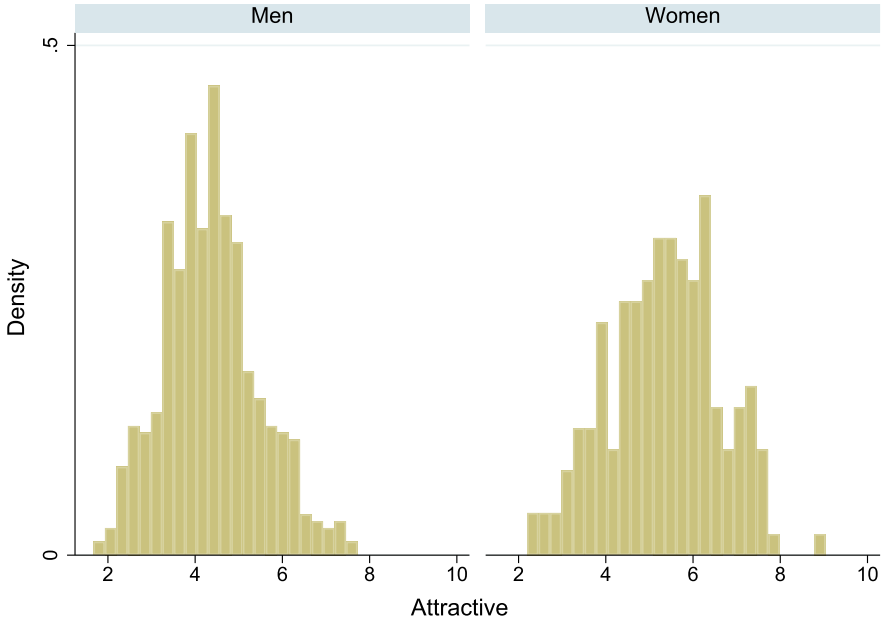

Fig. 1. Distribution of attractiveness of men and women.

3.2.2. The ratings

Table 2 presents summary statistics for the attractiveness ratings. It displays the raw ratings, the re-scaled ratings, and the ratings for specific evaluator subgroups: female evaluators, male evaluators, and reliable evaluators. Reliability is determined using a variation on Cronbach's α (Cronbach, 1951), where an evaluator is considered reliable if the sum of squared distances of their normalized ratings from the mean rating of others is small. Using this criterion, we identify 19 out of 241 evaluators as unreliable. Notably, all these measures are highly correlated, as depicted in Table 3.

The raw attractiveness scores are presented at the top of Table 2, and Fig. 1 depicts the raw distribution of attractiveness for men and women. We can see that the whole distribution of attractiveness for women is shifted to the right relative to men's attractiveness

distribution.[19] Given the established finding that in the general population men are judged to be on average as attractive or good-looking as women (Hamermesh, 2011), this implies a selection of women in PhD economics programs such that they are on average better-looking than men in these programs.

The mean re-scaled attractiveness score for all graduates is 0.5 by construction. We see that men received on average a lower attractiveness score than women, with women rated 0.14 higher than men, which is 0.85 standard deviations higher. Both female and male evaluators gave higher attractiveness scores to women relative to men. The difference in the attractiveness ratings between female and male evaluators was not statistically significant. The race of raters was not collected, however, at the time the data were collected, the AMT worker population included 83.5% whites and 4.4% blacks (Berinsky et al., 2012).

3.2.3. The characteristics of photographs

A concern might arise that a spurious correlation between the attractiveness of an individual and her academic success is driven by the quality of the photograph. This would be the case if higher-ranked institutions produce better photographs that are taken professionally for the best appearance. If this were the case, the relationship between the rank of the institution and the attractiveness of their employees would be the result of reverse causality, and not because attractive individuals land better jobs. It is also possible that attractiveness as reflected by a photograph can be manipulated by individuals (by dressing in business attire, by choosing a professional photographer, or by smiling), and the individuals or schools that manipulate the quality of photographs are a non-random sub-sample of our population. Another possibility is that more meticulous people have both better photographs and better papers. Therefore, we might find systematic differences between individuals based on their assessed attractiveness when, in fact, it is their ability or school quality that determines the quality of photographs.

Previous research has shown that the quality of the photograph or the degree of primping has little influence on perceived beauty (Hamermesh et al., 2002). However, to fully address this concern, we investigate the role of the quality of the photograph. All photographs were coded for their size (small or large), background setting (home/leisure or office/professional), dress code (business attire or not), professionalism (seemingly taken by a professional photographer or not), and whether the individual in the photograph was smiling or not.[20] The descriptive statistics are found in Online Appendix Table A3. The size of the photographs wasn't uniform, with 11% being large, and 4% being smaller than usual. Some 56% of pictures had the photographed person smiling in them, with the fraction of women smiling at 71%, significantly higher than the 51% of men. Of all pictures, 32% were taken at home and 34% were taken professionally. In 72% of the photos, the individual was dressed for business.

We first test whether appearance rating depends on the characteristics of the photographs. To do so, we ran an OLS regression model predicting the attractiveness score based on the photograph characteristics (see Online Appendix Table A4). A large photo increases the attractiveness score for men (by 0.05). Smiling increases the attractiveness score of women (by 0.05). Having the photo taken at home is associated with a higher attractiveness score for men.

Because the coded characteristics of the photograph may be correlated, we conducted a factor analysis of the 6 photograph characteristics: large photo, small photo, photo taken at home, photo professionally taken, subject in business attire, and subject smiling. This analysis revealed that the six items loaded on three distinct dimensions: professional photo, subject smiling, and a large photo (see Online Appendix Table A5). In all regression models, we control for these three photograph quality factors.

Note also that the attractiveness scores of individuals who are perceived to be Asian are significantly lower than non-Asians. In the following analysis, we will therefore ensure that our results are robust to excluding or controlling for individuals who appear to be of Asian descent ("Asian looking").

4. Appearance and research productivity of economists

The primary measure of academic output is publications and, more importantly, citations. Economists are evaluated and promoted based on the quality of their publications (Heckman and Moktan, 2020). Thus, our analysis uses the cumulative citations garnered by each individual during the initial 7 years following graduating. This metric reflects the influence of their research at a juncture when tenure decisions are commonly made. We begin by demonstrating that appearance predicts observed research productivity, and provide some robustness tests. Subsequently, we proceed to establish that the predictive capacity of appearance diminishes as more concrete information about research productivity is accumulated, highlighting appearance's potential role as a signal of productivity.

Using the number of citations as our productivity measure, we estimate OLS regression models with attractiveness as the main explanatory variable. The results are reported in Table 4. We find that attractiveness predicts the success of publications, as measured by citation counts. In column (1), we observe that the total citation count is strongly associated with attractiveness, even after accounting for picture quality factors. In terms of magnitude, the coefficient of 364 for attractiveness implies that a one standard deviation increase in attractiveness corresponds to a 0.21 standard deviation increase in citations seven years following graduation.

In column (2), we introduce controls for the rank of the PhD institution and the rank of the first job, since both of these are predetermined 7 years after graduation. More importantly, this enables us to test whether the effect of attractiveness on citations stems from attractive individuals attending and completing programs at higher-ranked institutions (potentially due to obtaining stronger reference letters, whether justified or not). Our findings indicate that both PhD institution and first jobs rankings have small positive effects on the number of citations: that is, superior quality institutions are associated with more citations, as expected. More

[19] This is also true for the re-scaled attractiveness score we use throughout.

[20] Smiling has been found to be associated with a higher perception of beauty (Reis et al., 1990; O'Doherty et al., 2003).

Table 4
OLS regression models predicting the total number of citations 7 years post graduation by attractiveness score.

Dependent variable: Citations 7 years post graduation					
	(1)	(2)	(3)	(4)	(5)
Attractiveness score	364.100***	291.173***			
	(97.515)	(92.869)			
Attractiveness (by male raters)			262.833***		
			(88.643)		
Attractiveness (by female raters)				240.493***	
				(83.716)	
Attractiveness (by reliable raters)					251.725***
					(89.047)
Rank of PhD institution		6.182***	6.217***	6.222***	6.234***
		(1.245)	(1.247)	(1.249)	(1.249)
Rank of first job institution		0.184**	0.181**	0.188**	0.188**
		(0.084)	(0.085)	(0.085)	(0.085)
Google scholar indicator	216.896***	211.407***	210.016***	215.950***	212.698***
	(41.267)	(38.948)	(39.071)	(38.995)	(39.072)
Professional photo factor	33.338	23.781	20.825	25.485	23.049
	(21.162)	(20.208)	(20.177)	(20.361)	(20.274)
Smiling on the photo factor	-49.838	-33.965	-33.756	-34.104	-33.383
	(45.915)	(43.421)	(43.510)	(43.567)	(43.576)
Large photo factor	-26.374	-36.835	-35.320	-31.675	-34.864
	(85.462)	(80.652)	(80.796)	(80.824)	(80.921)
Adjusted R^2	0.128	0.224	0.221	0.219	0.218

Notes: 269 observations. Cohort dummies included in all regressions but not reported. Standard errors are in parentheses. *p<0.10, **p<0.05, ***p<0.01.

importantly, the results demonstrate that the inclusion of PhD and first-job institution rankings increases the adjusted $R2$ from 0.11 to 0.21. This suggests that the selection of attractive people into better Ph.D. programs explains some but not all of the association between attractiveness and citations.

In columns (3) and (4), we explore whether the gender of evaluators matters, but find no significant difference between the effect of males' evaluations and the effect of female's evaluations of appearance.[21] Subsequently, we eliminate evaluations from unreliable evaluators. The results derived from using only reliable evaluators are statistically not different from the results obtained using all evaluators (column (5)). We conduct additional robustness tests and test for heterogeneity in Section 6.

These results establish that attractiveness predicts citations, and might therefore serve as a signal for research productivity. We next test whether this predictive power declines as more information is available. To do so, we regress the number of citations in years 5 through 7 on attractiveness. We gradually introduce as regressors the total number of citations in years 1, 2, 3, and 4. Our objective is to investigate whether the predictive power of attractiveness on later citations diminishes as we observe actual citations from earlier periods. The results of these OLS regressions are presented in Table 5. Indeed, the coefficient on attractiveness decreases in magnitude and significance as we move from columns (1) to (5).[22]

Thus, the data reveal patterns that align with the assumptions outlined in our model. More specifically, these results suggest that attractiveness holds a signaling value for productivity: it predicts citations, but less so as time goes by, and as more information is revealed. Thus, attractiveness can be used as a signal of future productivity. In what follows we will test whether employers actually treat attractiveness as a signal of future productivity or value attractiveness for other reasons.

5. Career, productivity, and attractiveness

We now investigate whether attractiveness scores predict job outcomes at each stage of the career we can measure: the rank of the PhD institution, the type of the first job, the rank of the first job, and the rank of the last job observed in 2017.

[21] Despite the growth in the share of women in economics, men remain the majority of faculty. As of 2015, 81% of tenured or tenure-track faculty were men (McElroy, 2016). Consequently, men predominantly constitute the population shaping the environment in which appearance is valued, thus, implying that appearance scores derived from men's assessments might have a larger impact on outcomes compared to overall or women-only ratings. However, we do not find evidence for this prediction.

[22] Given the serial correlation of yearly citations, we also repeat our analysis of Table 5, focusing only on the innovations in citations, absent the serial correlation. That is, we take the citation innovation in year 't' to be the residual from regressing citations in year 't' on the cumulative citations up to year 't-1'. The results are similar to the results reported in the table.

Table 5
OLS regression models predicting the number of citations 5 to 7 years post graduation by attractiveness score.

Dependent variable: Citations in years 5-7 post graduation					
	(1)	(2)	(3)	(4)	(5)
Attractiveness score	183.695***	145.806***	119.797**	90.426*	58.791
	(60.800)	(54.857)	(51.282)	(48.174)	(41.867)
Rank of PhD institution	3.982***	3.035***	2.515***	2.060***	1.425**
	(0.815)	(0.742)	(0.697)	(0.656)	(0.572)
Rank of first job institution	0.125**	0.111**	0.096**	0.080*	0.058
	(0.055)	(0.050)	(0.046)	(0.043)	(0.038)
Google scholar indicator	140.167***	113.391***	96.127***	79.204***	57.377***
	(25.498)	(23.169)	(21.763)	(20.534)	(17.943)
Total citations year 1		1.907***			
		(0.242)			
Total citations year 2			1.611***		
			(0.154)		
Total citations year 3				1.328***	
				(0.104)	
Total citations year 4					1.162***
					(0.067)
Adjusted R^2	0.228	0.376	0.458	0.526	0.645

Notes: 269 observations. Cohort dummies and picture properties included in all regressions but not reported. Standard errors are in parentheses. *p<0.10, **p<0.05, ***p<0.01.

5.1. Empirical approach

Most of our dependent variables are ranks. Therefore, it is unreasonable to assume that any explanatory variable will have a linear effect on the dependent variable. For this reason, our main approach is ordered logit.[23] Specifically, we estimate the following regression:

$$Pr\left(Y_i = k\right) = Pr\left(z_{k-1} < \mathbf{X_i'}\beta < z_k\right) = \frac{1}{1+e^{-z_k+\mathbf{X_i'}\beta}} - \frac{1}{1+e^{-z_{k-1}+\mathbf{X_i'}\beta}}, \tag{6}$$

where k is a given outcome value, z_k is the set of estimated cutoffs of the latent variable, $\mathbf{X_i'}$ is the matrix of explanatory variables, and β is the coefficient that is assumed to be the same across cutoffs.

The only variable that is not ordered is the type of the first job. For this regression, we estimated a multinomial logit model with outcomes $j = \{private, academia, government\}$:

$$Pr\left(Y_i = j\right) = \frac{e^{\mathbf{X_i'}\beta_j}}{\sum_{n=j}^{J} e^{\mathbf{X_i'}\beta_n}}, \tag{7}$$

where J is the number of outcomes and coefficients β_j vary by outcome.

5.2. PhD institution

We begin by testing whether the rank of the PhD granting institution is associated with attractiveness. This is important for two reasons: first, the results will tell us whether attractiveness might be a factor in graduate admissions and PhD completion probability (we cannot distinguish between these two components because we only observe graduation data); second, it will tell us whether we need to control for the rank of the PhD institution in the following regressions.

Table 6 reports our results. Remember that we inverted the ranking so that the best institution holds a ranking of 999, therefore a positive coefficient indicates a higher rank. In square brackets, we report regression coefficients as odds ratios, with a coefficient of 1 signifying the lack of an effect. In the specification where no control variables are introduced, and attractiveness score is the only explanatory variable (column (1)), we find a strong and significant effect: more attractive individuals get their PhDs from more prestigious schools. This effect remains effectively unchanged when we include indicators for cohort (year of graduation, column(2)), as well as for characteristics of the photographs (column (3)).

This finding could be driven by two factors: either more attractive individuals are more likely to apply and be accepted into higher-ranked schools, or, once accepted, more attractive individuals are more likely to complete the program, or both. Since we don't observe PhD program applications or admissions, but only graduations, we cannot disentangle these two effects. Given that the ranking of the PhD program is likely to be important to the development of academic careers, and it is correlated with attractiveness score, we will control for the ranking of the PhD program in all our subsequent regressions to isolate the direct effect of the attractiveness score.

[23] This approach is less parametric than using, for example, log-linear regression, in that it does not require a functional form for the effect of a latent variable on the outcome, due to estimated cut-off constants. Our results are robust to using OLS instead of ordered logit.

Table 6
Ordered logit regression models predicting the rank of PhD institution by attractiveness score.

Dependent variable: Rank of PhD institution			
	(1)	(2)	(3)
Attractiveness score	0.810**	0.820**	0.822**
	(0.367)	(0.371)	(0.374)
	[2.249]	[2.271]	[2.275]
Professional photo factor			0.054
			(0.083)
Smiling on the phot factor			0.098
			(0.171)
Large photo factor			-0.076
			(0.355)
Cohort dummies		Y	Y
Pseudo R^2	0.001	0.002	0.002

Notes: 752 observations. Rank is ordered from lowest to highest (rank = 999). Cutoff estimates are omitted, but available upon request. Standard errors are in parentheses. In square brackets we report coefficients in exponential form with 1 indicating no effect. *p<0.10, **p<0.05, ***p<0.01.

Table 7
Multinominal logit regression models predicting the type of first job by attractiveness score.

Dependent variable: Type of first job		
	(1)	(2)
Job type is "academic"		
Attractiveness score	-1.754**	-1.723**
	(0.768)	(0.769)
	[0.173]	[0.179]
Rank of PhD institution	-0.004	-0.004
	(0.010)	(0.010)
Constant term	3.005***	3.010***
	(0.495)	(0.495)
Job type is "government"		
Attractiveness score	-2.518***	-2.336**
	(0.944)	(0.938)
	[0.081]	[0.097]
Rank of PhD institution	-0.003	-0.004
	(0.012)	(0.013)
Constant	1.756***	1.684***
	(0.587)	(0.584)
Photo quality factors		Y
Pseudo R^2	0.008	0.031

Notes: 636 observations. Omitted category is "private." Standard errors are in parentheses. In square brackets we report coefficients in exponential form with 1 indicating no effect. *p<0.10, **p<0.05, ***p<0.01.

5.3. *Type of first job*

Next, we test whether attractiveness plays a role in the type of first job individuals land after graduation: academic, government, or private sector (including international organizations).

The results are reported in Table 7, with odds ratios reported in square brackets. In the first column, we don't control for photo quality factors; in the second we do. The omitted category in the regression is "private sector." The coefficients on attractiveness indicate that graduates with higher attractiveness scores are less likely to end up in either academia or government jobs, compared to the private sector. Note that there is no statistically significant difference in terms of the effect of attractiveness between academic and government jobs. Interestingly, the rank of PhD institution does not have an effect (the coefficient is quite precisely zero), suggesting that the distribution of the first job type is independent of the PhD institution rank.[24]

The result that more attractive individuals tend to end up in the private sector resonates with the findings of Biddle and Hamermesh (1998), who document the selection of attractive-looking law graduates into the private sector. This suggests that attractiveness

[24] Since we focused on top schools, we do not believe that this particular result generalizes to the overall population.

Table 8
Ordered logit regression models predicting the rank of first job by attractiveness score.

Dependent variable: Rank of first academic job			
	(1)	(2)	(3)
Attractiveness score		1.169**	1.245**
		(0.531)	(0.534)
		[3.218]	[3.474]
Rank of PhD institution	0.028***	0.027***	0.028***
	(0.007)	(0.007)	(0.007)
Professional photo factor			-0.167
			(0.111)
Smiling on the photo factor			-0.107
			(0.250)
Large photo factor			-0.276
			(0.466)
Pseudo R^2	0.007	0.008	0.009

Notes: 388 observations. The ranking is organized from the lowest rank to the highest, with rank = 999 representing the best. Regressions include academic institutions only. Cohort dummies included in all regressions but not reported. Cutoff estimates are omitted, but available upon request. Standard errors are in parentheses. In square brackets we report coefficients in exponential form with 1 indicating no effect. *p<0.10, **p<0.05, ***p<0.01.

has more value in the private sector, driven either by the presence of end consumers who care about appearance or by regulation and hiring practices that moderate the attractiveness premium in the public sector or academia. Moreover, this finding suggests that the "faculty attention" channel is limited; we do not find that faculty's preference for academic positions channels attractive students toward such jobs.

Note that our sample of graduates is derived from the availability of online photographs. Because private sector positions are less likely to be associated with a personal web page, our sample under-represents individuals in the private sector. It is not clear, however, which individuals in the private sector do have online photographs, and whether this selection is related to attractiveness or productivity. This concern does not affect the subsequent analysis which focuses on academic positions, as most academics maintain personal web pages featuring photographs.

5.4. Rank of academic first job

We now focus on academic careers and explore the impact of attractiveness on the ranking of the first academic job. The outcomes of the ordered logit regressions are presented in Table 8. As before, a higher rank signifies a higher-quality institution. We include cohort indicators in all regressions. In the first column, we test whether the rank of the PhD institution predicts the rank of the first academic job, and find that there is, indeed, a positive and statistically significant, but rather small, effect. Thus, we continue to control for the rank of the PhD institution. Moving on to column (2), we introduce the attractiveness score into the model. Our results indicate a strong association between a higher score and a better-quality institution, even when we control for picture quality (column (3)).

Putting these two sets of results together, it is important to acknowledge the potential presence of selection bias when interpreting the effects of attractiveness on the ranking of the first academic job. For PhD candidates in top PhD programs in economics, academic positions are often the preferred outcome, particularly among the top students — most students consider academic positions as their first choice and the reason they enrolled in these programs in the first place. Students with comparatively weaker CVs might face a choice between lower-ranked academic offers or opportunities in the private sector. Among this subgroup, more attractive candidates may be inclined to pursue higher-quality private sector jobs for reasons discussed in the literature. Consequently, less attractive candidates with lower-quality CVs are more likely to end up in lower-ranked academic positions than more attractive students. This would result in the positive association between attractiveness and quality of the first academic job that we find in Table 8. However, our dataset does not allow explicitly confirming or ruling out this selection channel. This is not, however, a concern for the rest of our analysis once we control for the rank of the first academic job.

5.5. Later jobs: uncovering the value of attractiveness

We next look at the ranking of the job held by individuals in 2017 (when we completed our employment data collection), conditional on the rank of the first job and on research productivity.[25] The results of the ordered logit regression models predicting

[25] In these regressions we limit the sample to those whose last observed job was in academia. However, we do not exclude individuals whose first job post-graduation was outside academia. Our results are robust to excluding them.

Table 9
Ordered logit regression models predicting the rank of last observed job by attractiveness score.

Dependent variable: Rank of last observed academic job						
	(1)	(2)	(3)	(4)	(5)	(6)
Attractiveness score	1.356**	1.911***	1.859***	1.790***	1.685**	1.766**
	(0.609)	(0.677)	(0.681)	(0.682)	(0.684)	(0.693)
	[3.879]	[6.758]	[6.417]	[5.991]	[5.393]	[5.848]
Total citations year 1			0.002			
			(0.003)			
Total citations year 2				0.003		
				(0.002)		
Total citations year 3					0.003**	0.002
					(0.002)	(0.001)
HC-index of publications at last observed job						0.064***
						(0.018)
Rank of PhD institution	0.013*	0.010	0.010	0.008	0.007	-0.000
	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Rank of first job institution	0.007***	0.006***	0.006***	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	297	249	249	249	249	249
Pseudo R^2	0.048	0.046	0.047	0.047	0.049	0.054

Notes: The ranking is organized from the lowest rank to the highest, with rank = 999 representing the best. Columns (2)-(7) exclude 30 observations that are suspected to have duplicates in terms of publication counts and an additional 18 observations that do not have citation counts. Cohort dummies and picture properties are included in all regressions but not reported. Cutoff estimates are omitted, but available upon request. Standard errors are in parentheses. In square brackets we report coefficients in exponential form with 1 indicating no effect. *p<0.10, **p<0.05, ***p<0.01.

the rank of the last observed job on attractiveness are reported in Table 9. All regressions include the rank of PhD institution, the rank of the first job institution, cohort dummies, and picture properties.

In column (1), we observe that individuals with higher attractiveness scores tend to secure positions in better-ranked institutions, even when accounting for the ranking of their PhD program and their first job. Note that the rank of the PhD institution and rank of the first job both have a positive and statistically significant effect, but rather small in magnitude. Column (2) reports the results of the same regression but excludes individuals whose citation counts are missing or are suspected to include citations of other individuals with the same name. These results can be compared to columns (3) to (5) which progressively incorporate citation information accumulated over time, and to column (6) where the total number of publications in 2017 is included. Remarkably, attractiveness continues to be an important factor in predicting the last job outcome, with the coefficients becoming only slightly smaller and not statistically different as we progressively control for additional citation information.

We next investigate whether attractiveness is valued by employers above and beyond its value as a signal for research productivity. Guided by our model, we test whether the effect of appearance on job rank becomes weaker with time and information. When we compare the effect of attractiveness on the ranking of the last observed job (column (1) in Table 9) to its effect on the ranking of the first job (column (3) in Table 8), we find that these are not statistically different. Thus, we do not observe a decline over time in the importance of attractiveness for hiring and promotions in economic departments, which makes it unlikely that our results are completely explained by statistical discrimination.[26] Hence, our analysis leads us to the conclusion that while attractiveness predicts research productivity and thus can be used by employers as a signal of future productivity, it is also valued for its aesthetic appeal and potential contributions to teaching or other non-research productivity aspects.

5.6. Magnitudes

To evaluate magnitudes of the effect of attractiveness on career outcomes, we compare the distribution of predicted probabilities evaluated at means of all variables vs. predicted probabilities evaluated at mean plus one standard deviation of attractiveness and means of other variables. For all regression samples, the mean attractiveness is around 0.5 and the standard deviation is around 0.17, thus we compute predicted probabilities for attractiveness values of 0.5 and 0.67.[27]

We find that one standard deviation increase in attractiveness raises the probability of being at the top-three PhD programs, with a combined increase of probability from 36 to 40 percent, while reducing the probability of being in the lowest three of our list of PhD programs, with a combined decrease of probability from 24 to 21.5 percent.

Among those in academia, a one standard deviation increase in attractiveness improves the probability of getting a first job in an above-median-ranked institution from 52 to 57 percent, with a corresponding decline in the probability of getting a first job in a below-median-ranked institution, while the probability of the last observed job being above median increases from 52 to 58 percent.

[26] We cannot rule out, however, that the reason is that we don't observe people for long enough: the number of years from first job hiring to last observed job hiring or promotion decision (8 on average) might not be enough for alternative information about true productivity to be revealed.

[27] Since the samples vary across regressions evaluating different outcomes, we compute the exact mean and standard deviation of each regression sample, but differences are negligible.

These effects are not overwhelmingly large, but they are substantial in magnitude. Moreover, they once again underscore no decline in the effect of appearance between the first and last observed job.

6. Heterogeneity and robustness tests

We examine the robustness of our results by considering alternative measures and specifications, as well as exploring heterogeneous effects. Here we briefly discuss this analysis conducted for our primary findings regarding citations and the rank of the last job observed. Detailed tables can be fount in the Online Appendix.

6.1. Heterogenous effects

We begin by testing whether specific sub-samples drive our results. First, we ask whether the importance of attractiveness for citations and job placement is concentrated in business schools. This could be the case since teaching is particularly important in business schools and the literature has found that attractiveness predicts students' evaluations (Sen et al., 2010). We test whether our results are driven by business schools by interacting the attractiveness score with a business school indicator. For citations, we find that the coefficient on attractiveness is six times larger for people in business schools relative to other schools (Table A6 column (2)). This could be because the publication venues and citation histories are different for researchers in business. The effect of attractiveness on the rank of the last observed job is not statistically different for graduates located in business schools relative to other schools (Table A7 column (2)).

Another possibility is that a specific demographic is driving our results. Individuals that look Asian in the photographs constitute 17 percent of our sample. As can be seen in Figure A2 and Online Appendix Table A4, seemingly Asian individuals tend to have lower attractiveness scores relative to non-Asian individuals when rated by predominantly white AMT workers.[28] To test whether this biases our result, we include an interaction term between attractiveness and an indicator for "Asian Looking" and re-estimate our key regressions. For both regressions, the interaction term is not significant, and the main coefficient of interest remains unchanged (Table A6 column (3) and Table A7 column (3)).

We next explore whether the results vary by gender. Including a female indicator in the citation regression, we observe that the main effect on attractiveness is larger. While the negative coefficient on the "Attractiveness X Female" is not significant, it is marginally so. Hence the results suggest that attractiveness is a better predictor of citations for men relative to women (Table A6 column (4)). When the effect of attractiveness on the rank of the last observed job is estimated separately for women and men, we find that the results are significant for women and not men (Table A7 columns (4) and (5)). Note that there are substantially fewer women than men in the sample, and therefore the effects are less precisely estimated for women.

6.2. Robustness

It is also possible that there is a relationship between attractiveness and the choice of a specific field in economics and that academic success varies by field. It has been shown, for instance, that citation counts vary across economic fields (Anauati et al., 2016). To assess whether our results are driven by specific fields, we include field fixed effects in our regressions. We find that the results are not affected by this addition (Online Appendix Table A8 column (2) and Table A10 column (2)).

Next, we conduct a test to establish that our results are not driven by reverse causality resulting from the quality of the photographs, which might be correlated with the rank of the institution where the photograph was taken. Since the last observed job was recorded in 2017, and photos were collected in 2011, the ranking of the institution in which a photo was taken is predetermined in the regressions for the last observed job and similarly for citations. Thus, in Online Appendix Table A8 column (3) and Online Appendix Table A10 column (3) we control for the ranking of the institution in which the photo was taken. This should alleviate most concerns about reverse causality. We find that the effect of attractiveness is not affected by this control and that, instead, the rank of the first job is no longer significant.[29]

We verify that our results are not driven by a specific ranking of institutions. In the main analysis, we used 2019 rankings. It turns out that rankings change quite a bit from year to year. To be sure that our results are not driven by any specific institution, we repeat our analysis with 2017 rankings. The results are reported in Online Appendix Table A8 column (4) and Online Appendix Table A10 column (4).

In addition, we explore various extensions of our data. In our main analysis, we omitted 32 observations that seemed to capture citations of other scholars sharing the same names. We verify that our results are not sensitive to this exclusion (Online Appendix Table A8 column (5)). Since our ranking data only cover the top 10 percent of economics departments globally, our main analysis excluded individuals with positions at economic departments not listed in the RePEc (2019) ranking. We run the last job regression on an extended dataset that signs the lowest ranking to the 56 missing economics departments. The results, shown in Online Appendix Table A10, column (5), are not different from the benchmark results in column (1).

[28] Data on perceived race were extracted from the photographs by visual examination. For our purposes, this is a relevant measure because this is how a person's race is perceived by potential employers and colleagues. Only 8 individuals in our sample were identified as looking black and 130 were identified as looking asian. Since there are only eight black-looking individuals in our sample, the effect of looking black was never significant in any model.

[29] Figure A1 in the Online Appendix shows that the ranking of the first job and the ranking of the institution that took the photo are highly correlated. Thus, we implicitly control for this channel in our benchmark analysis.

We also test whether our results are driven by the exact empirical specification we chose. Because citations are truncated at zero and highly skewed, we test whether the results hold when we use as our dependent variable the natural log of (1+citations), or when we estimate a quantile regression instead. We find similar results to our main specification, see Online Appendix Table A9 columns (1)-(4). For the rank of the last observed job regression, our approach is to re-estimate it using OLS and Ordered Probit models. We find that our results are robust to these specification changes (Online Appendix Table A10 columns (5) and (6)).

Overall, we find that our results are robust to empirical specification, additional controls, and definitions of the measures we use.

7. Conclusion

We explore the role of scholars' appearance on their hiring and publication success and find that appearance matters. Attractiveness is related to educational achievements, hiring, and publication outcomes. In particular, more attractive individuals are more likely to graduate from better-ranked PhD institutions and are more likely to go to the private sector after completing their PhD. Among those going into academia, more attractive individuals are more likely to get jobs at higher-ranked institutions and have better publication records. The differences are substantial in magnitude.

One striking finding is that appearance predicts citations. This outcome is surprising since economics publications usually do not include authors' photos and are supposedly cited based on their impact and influence alone. The existing literature discusses a few potential mechanisms that could explain this finding. Attractiveness has been found to be related to individual characteristics that are developed through a process of expectancy confirmation (Darley and Fazio, 1980; Langlois, 1986; Langlois et al., 2000). In this process, stereotypes regarding attractive people being more competent than less attractive people generate expectations that lead to consistently differential judgment and treatment (Jackson et al., 1995). These expectations are internalized and the differential treatment causes the development of differential behavior, traits, and self-views (Judge et al., 2009). Thus, attractive people become more confident and therefore might be more likely to solicit constructive comments, and, as a result, may produce higher quality papers that are cited more. Due to higher confidence, they might be more likely to submit their papers to conferences and therefore their papers will get higher exposure. They might also be more charismatic when presenting their papers and therefore provide better marketing for their papers and, as "good presenters," might be more likely to be invited to seminars and future conferences.

Could it be the case, then, that hiring and promotion committees are simply using appearance as a proxy for future academic productivity? Our finding of a direct impact of appearance on academic productivity, as measured by citations, could rationalize the appearance bias in hiring and promotion. However, guided by our model, the empirical analysis reveals that, at best, such statistical discrimination can only partially explain the effect, with the rest of the effect driven by a preference for attractiveness that is not related to productivity. Employers have a taste for looks, which is independent of their assessment of and value for the candidates' talent and productivity (Becker, 2010).

Can the same underlying forces which make beauty affect productivity also explain why more attractive individuals end up in better jobs? Stinebrickner et al. (2019) provides evidence that the beauty wage premium for college graduates appears only in jobs where attractiveness is likely to affect productivity, with large premiums attached to jobs that require interpersonal interaction. Even though much academic work is conducted individually, appearance may influence success because labor market outcomes depend on human interactions. Hiring, academic publications, and citation counts are likely to be affected by the success with which a paper was presented in seminars and conferences. Moreover, attractiveness might increase a person's chances of being invited as a co-author. In this way, academia is not so different from other industries.

Declaration of competing interest

We hereby declare that we have no relevant or material financial interests that relate to the research described in the paper "Do Looks Matter for an Academic Career in Economics?," by Galina Hale, Tali Regev, and Yona Rubinstein.

Data availability

The code will be publicly available. Because the data includes sensitive attractiveness ratings, we restrict the data to the editorial board.

Appendix A. Supplementary material

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.jebo.2023.09.022.

References

Altonji, Joseph G., Pierret, Charles R., 2001. Employer learning and statistical discrimination. Q. J. Econ. 116 (1), 313–350.
Anauati, Victoria, Galiani, Sebastian, Gálvez, Ramiro H., 2016. Quantifying the life cycle of scholarly articles across fields of economic research. Econ. Inq. 54 (2), 1339–1355.
Babin, Jobu, J., Hussey, Andrew, Nikolsko-Rzhevskyy, Alex, Taylor, David A., 2020. Beauty premiums among academics. Econ. Educ. Rev. 78, 102019.
Beam, Emily A., Hyman, Joshua, Theoharides, Caroline, 2020. The relative returns to education, experience, and attractiveness for young workers. Econ. Dev. Cult. Change 68 (2), 391–428.
Becker, G.S., 2010. The Economics of Discrimination Economic Research Studies. University of Chicago Press.

Berggren, Niclas, Jordahl, Henrik, Poutvaara, Panu, 2010. The looks of a winner: beauty and electoral success. J. Public Econ. 94, 8–15.
Berinsky, Adam J., Huber, Gregory A., Lenz, Gabriel S., 2012. Evaluating online labor markets for experimental research: Amazon.com's mechanical turk. Polit. Anal. 20 (3), 351–368.
Bi, Weilong, Fai Chan, Ho, Torgler, Benno, 2020. "Beauty" premium for social scientists but "unattractiveness"premium for natural scientists in the public speaking market. Humanit. Soc. Sci. Commun. 7 (1), 118.
Biddle, Jeff E., Hamermesh, Daniel S., 1998. Beauty, productivity, and discrimination: lawyers' looks and lucre. J. Labor Econ. 16 (1), 172–201.
Bóo, López, Florencia, Rossi, Martín A., Urzúa, Sergio S., 2013. The labor market return to an attractive face: evidence from a field experiment. Econ. Lett. 118 (1), 170–172.
Cronbach, Lee J., 1951. Coefficient alpha and the internal structure of tests. Psychometrika 16 (3), 297–334.
Darley, John M., Fazio, Russell H., 1980. Expectancy confirmation processes arising in the social interaction sequence. Am. Psychol. 35 (10), 867.
Dilger, Alexander, Lütkenhöner, Laura, Müller, Harry, 2015. Scholars' physical appearance, research performance, and feelings of happiness. Scientometrics 104, 555–573.
Dion, Karen, Berscheid, Ellen, Walster, Elaine, 1972. What is beautiful is good. J. Pers. Soc. Psychol. 24 (3), 285.
Fidrmuc, Jan, Paphawasit, Boontarika, 2018. Beautiful minds: physical attractiveness and research productivity in economics. Working paper No. 17-12. Brunel University London.
Hamermesh, Daniel S., 2011. Beauty Pays: Why Attractive People Are More Successful. Princeton University Press.
Hamermesh, Daniel S., 2018. Citations in economics: measurement, uses, and impacts. J. Econ. Lit. 56 (1), 115–156.
Hamermesh, Daniel S., Biddle, Jeff E., 1994. Beauty and the labor market. Am. Econ. Rev. 84 (5), 1174–1194.
Hamermesh, Daniel S., Meng, Xin, Zhang, Junsen, 2002. Dress for success: does primping pay. Labour Econ. 9 (3), 361–373.
Harper, Barry, 2000. Beauty, stature and the labour market: a British cohort study. Oxf. Bull. Econ. Stat. 62, 771–800.
Heckman, James J., Moktan, Sidharth, 2020. Publishing and promotion in economics: the tyranny of the top five. J. Econ. Lit. 58 (2), 419–470.
Jackson, Linda A., Hunter, John E., Hodge, Carole N., 1995. Physical attractiveness and intellectual competence: a meta-analytic review. Soc. Psychol. Q., 108–122.
Judge, Timothy A., Hurst, Charlice, Simon, Lauren S., 2009. Does it pay to be smart, attractive, or confident (or all three)? Relationships among general mental ability, physical attractiveness, core self-evaluations, and income. J. Appl. Psychol. 94 (3), 742.
Langlois, Judith H., 1986. From the eye of the beholder to behavioral reality: development of social behaviors and social relations as a function of physical attractiveness. In: Physical Appearance, Stigma, and Social Behavior: The Ontario Symposium, vol. 3. Erlbaum, Hillsdale, NJ, pp. 23–51.
Langlois, Judith H., Kalakanis, Lisa, Rubenstein, Adam J., Larson, Andrea, Hallam, Monica, Smoot, Monica, 2000. Maxims or myths of beauty? A meta-analytic and theoretical review. Psychol. Bull. 126 (3), 390.
McElroy, Marjorie B., 2016. Report: committee on the status of women in the economics profession (CSWEP). Am. Econ. Rev. 106 (5), 750–773.
Mobius, Markus M., Rosenblat, Tanya S., 2006. Why beauty matters. Am. Econ. Rev. 96 (1), 222–235.
O'Doherty, J., Winston, J., Critchley, H., Perrett, D., Burt, D.M., Dolan, R.J., 2003. Beauty in a smile: the role of medial orbitofrontal cortex in facial attractiveness. Neuropsychologia 41 (2), 147–155. The cognitive neuroscience of social behavior.
Reis, Harry T., Mcdougal Wilson, Ilona, Monestere, Carla, Bernstein, Stuart, Clark, Kelly, Seidl, Edward, Franco, Michelle, Gioioso, Ezia, Freeman, Lori, Radoane, Kimberly, 1990. What is smiling is beautiful and good. Eur. J. Soc. Psychol. 20 (3), 259–267.
RePEc, 2019. IDEAS.
RePEc, 2021. CitEc: Citations in Economics.
Sen, Anindya, Voia, M.-C., Woolley, F., 2010. Hot or Not: How appearance affects earnings and productivity in academia. Working Paper CEP 10-07, Carleton Economics Working Papers (CEWP).
Stinebrickner, Ralph, Stinebrickner, Todd, Sullivan, Paul, 2019. Beauty, job tasks, and wages: a new conclusion about employer taste-based discrimination. Rev. Econ. Stat. 101 (4), 602–615.
Thornton, Bill, Ryckman, Richard M., 1991. Relationship between physical attractiveness, physical effectiveness, and self-esteem: a cross-sectional analysis among adolescents. J. Adolesc. 14 (1), 85–98.