

# Research on Women in Economics and other Sciences

With this list, we provide an overview of recent evidence on women in academia. The papers are organized in sections devoted to the role of teaching and role models, the effect of women in committees and the evaluation of women by committees, the role of the share of women and quotas for women, tenure policies and tenure decisions concerning women, affirmative action and stereotypes as well as the effects of interventions on minority-related outcomes.

Our thanks go to Michèle Tertilt for providing us with the basis for this list. Please help us to update it if you are aware of other relevant research!

Excellent overviews of the state of women and underrepresented minorities in the economics profession in the US are provided by

Bayer, A., and C. E. Rouse (2016): "Diversity in the economics profession: A new attack on an old problem," *The Journal of Economic Perspectives*, 30(4): 221-242.

Lundberg, Shelly and Stearns, Jenna (2019): "Women in Economics. Stalled Progress." *The Journal of Economic Perspectives*, 33(1): 3-22.

## 1) STUDYING, TEACHING AND ROLE MODELS

**Avilova and Goldin (2018):** The paper reports on the setup and the first findings of an RCT aimed at increasing the proportion of female undergraduate students choosing to major in economics in the US. Overall, 20 schools are in the treatment group, and they choose which interventions they would like to use (better information, mentoring and role models, instructional content and presentation style). Some preliminary findings are reported.

Avilova, Tatyana, and Claudia Goldin (2018): "What Can UWE Do for Economics?" *American Economic Review: Papers and Proceedings*, 108: 186-190.

**Boustan and Langan (2019):** The paper documents large differences in the number of female PhD students and their success across economics departments in the US. Based on data and interviews, the authors find that departments that have more successful female PhD students also hire more women faculty, have better contact between advisor and student, run research seminars with more cooperative atmosphere, and have senior faculty that cares about gender issues.

Boustan, Leah and Langan, Andrew (2019): "Variation in Women's Success across PhD Programs in Economics." *Journal of Economic Perspectives* 33,1 (2019): 23-42.

**Carrell, Page, and West (2010):** The authors find that female professors have a strong positive influence on female students' success in male-dominated fields (STEM), in particular those at the upper end of ability distribution (high SAT scores). No effect of instructors' gender has been identified on male students' performance. Through the random allocation of students to professors at USAFA military academy, the authors can avoid self-selection and attrition bias.

Carrell, Scott E., Marianne E. Page and James E. West (2010): "Sex And Science: How Professor Gender Perpetuates The Gender Gap," *The Quarterly Journal of Economics*, 125(3): 1101-1144.

**The Economist (2016):** University teachers are evaluated worse by students in subjects with a quantitative focus (mathematics, economics, computer science) than in the social sciences. Female university teachers are evaluated as less "brilliant" and more "horrible" in all ten subjects evaluated. The analysis was conducted by The Economist in collaboration with Enrico Bertini and Cristian Ferlix (both NYU).

The Economist (2016): "Ratings agency – Grading university teachers," January 21<sup>st</sup> 2016.

**Gaule and Piacentini (2017):** The authors examine the nexus between same gender advisors, productivity, and the decision to become an academic in chemistry, chemical engineering, and biochemistry. They consider U.S. universities between 1999 and 2008 and career choices of students with or without an advisor of the same gender. Their findings suggest that students working with an advisor of the same gender tend to be more productive during the PhD, and are also more likely to proceed to an academic career afterwards.

Gaule, P., and M. Piacentini (2017): "An Advisor Like Me? Advisor Gender and Post-Graduate Careers in Science". Institute for the Study of Labor (IZA), No. 10828.

**Porter and Serra (2017):** A field experiment is employed to examine the impact of female role models on young women's decisions to major in economics, a male-dominated field. Randomly selected principles of economics classes receive a 15-minute visit by each of two selected role models. The results show that the role model intervention had no impact on male students, but significantly increased female students' likelihood of expressing interest in the economics major and enrolling in further economics classes.

Porter, C. and D. Serra (2017): "Gender Differences in the Choice of Major: The Importance of Female Role Models". Working Paper.

## 2) COMMITTEES AND RECRUITMENT

**Vernos (2013)** studies the gender composition of ERC panels and the success rates of females, and she finds no correlation.

Vernos, Isabel (2013): "Quotas are questionable," *Nature*, 495, 39.

**Auspurg, Hinz and Schneck (2017)**: For hiring committees at a medium-sized German university, there is no correlation between gender composition in the committee and female hires over a period of many years and for many disciplines. However, women are less likely to apply than men, controlling for academic achievement.

Auspurg, K. Hinz, T. and A. Schneck (2017): "Appointment Procedures as Tournaments: Gender-Specific Chances of Being Appointed as Professors," *Zeitschrift für Soziologie* 46(4): 283–302.

**Bagues and Esteve-Volart (2010)**: The authors analyze how the chances of success of female and male candidates for positions in the Spanish Judiciary from 1987 to 2007 were affected by the gender composition of their randomly assigned evaluation committee. They find that hiring committees display opposite-gender preferences.

Bagues, M. F. and B. Esteve-Volart (2010): "Can Gender Parity Break the Glass Ceiling? Evidence from a Repeated Randomized Experiment," *Review of Economic Studies*, 77: 1301–1328.

**Breda and Ly (2015)**: Using entrance exams to ENS (École Nationale Supérieure), an elite university in France, the authors find a bias in favor of female candidates in male-dominated subjects such as mathematics, and a bias favoring men in female-dominated subjects (e.g. humanities). Examiners' gender does not seem to have an impact.

Breda, T., and S. T. Ly (2015): "Professors in Core Science Fields Are Not Always Biased against Women: Evidence from France," *American Economic Journal: Applied Economics*, 7(4): 53-75.

**Ceci and Williams (2015)**: Academics from biology, economics, engineering, and psychology departments were asked to evaluate three fictitious applications for a tenure-track position, two of them being very qualified and one slightly less, where gender was systematically varied. The authors find a bias against men in tenure-track positions, since the results reveal a 2:1 preference for women by faculty members of both genders across all fields. The only exceptions are male economists who show a slight preference for their own sex.

Ceci, S. J., and W. M. Williams (2015): "National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track," *Proceedings of the National Academy of Sciences*, 112.17: 5360-5365.

**De Paola and Scoppa (2015):** The authors investigate whether the gender composition of the selection committee influences the likelihood of candidates' success in receiving promotion to associate and full professor in economics and chemistry at Italian universities. They exploit the random assignment of evaluators and control for candidates' scientific productivity and a number of individual characteristics in 130 competitions. Women are less likely to receive promotion in general (by 3.7 percentage points) and even more so if the committee is exclusively male. This effect almost disappears in mixed-gender committees.

De Paola, M., and V. Scoppa (2015): "Gender Discrimination and Evaluators' Gender: Evidence from Italian Academia," *Economica*, 82(325): 162-188.

### 3) QUOTAS/ SHARE OF WOMEN AND THEIR IMPACT

**Bertrand, Black, Jensen, and Lleras-Muney (2014):** The effects of a quota (a minimum of 40% of each gender) for corporate boards in Norway are analyzed. The authors do not find any effects on the representation of women in top positions (apart from those on the board), on the gender wage gap, and on women's decisions to enroll in business education programs. There is also no trickle-down effect on women in lower-level executive positions.

Bertrand, M., Black, S. E., Jensen, S., and A. Lleras-Muney (2014): "Breaking the glass ceiling? The effect of board quotas on female labor market outcomes in Norway," *National Bureau of Economic Research* No. w20256.

**Gagliarducci and Paserman (2015):** Based on data from Germany between 1993 and 2010, they find that the correlation between the share of women in high-level executive positions and female-friendly policies can be explained by sorting of female managers (self-selection). After accounting for establishment fixed effects and establishment-specific time trends, there is no evidence that female executives promote female-friendly policies (e.g. providing childcare facilities, mentoring female junior staff) more than their male colleagues.

Gagliarducci, S., and M. D. Paserman (2015): "The Effect of Female Leadership on Establishment and Employee Outcomes: Evidence from Linked Employer-Employee Data," *Gender Convergence in the Labor Market*, *Research in Labor Economics* Vol. 41, Emerald Group Publishing Limited, 41, 343-375.

**Kunze and Miller (2017):** The authors analyze whether a larger share of female workers translates into more promotions for women (and thus a smaller gender gap in promotions) in Norway. Controlling for individual characteristics and fixed effects, the authors find that having more women in higher-ranked positions increases the share of women in ranks below them, but not at their own rank. Moreover, a larger share of women at one's own rank (more female co-workers) influences the chance of a promotion negatively.

Kunze, A., and Miller, A. R. (2014): "Women helping women? Evidence from private sector data on workplace hierarchies," *National Bureau of Economic Research* No. w20761.

Kunze, A. and Miller, A. R. (2017): "Women helping women? Evidence from private sector data on workplace hierarchies". *Review of Economics and Statistics*, 99(5), 769-775.

**Matsa and Miller (2013):** The authors compare publicly listed firms in Norway, which were affected by its 2006 quota, with unlisted Norwegian firms, and with listed and unlisted firms in other Scandinavian countries. Those firms for whom the quota is binding lay off fewer workers, have higher relative labor costs, and lower short-term profits. The effect also holds for more experienced boards (fewer new members).

Matsa, D. A., and A. R. Miller (2013): "A Female Style in Corporate Leadership? Evidence from Quotas," *American Economic Journal: Applied Economics*, 5(3), 136-69.

#### 4) TENURE, TEACHING EVALUATIONS, AND PUBLICATIONS

**Antecol, Bedard and Stearns (2016):** The authors analyze the effects of tenure clock stopping policies associated with the birth of a child. Most universities adopted gender-neutral policies at some point in time, i.e. policies applying the same way to mothers and fathers. Using a newly assembled data set comprising the universe of assistant professor hires at top-50 economics departments in the US from 1985 to 2004, they find that the adoption of gender-neutral tenure clock stopping policies substantially reduces female tenure rates, while substantially increasing male tenure rates.

Antecol, H., Bedard, K. and J. Stearns (2016): "Equal but Inequitable: Who Benefits from Gender-Neutral Tenure Clock Stopping Policies?", *American Economic Review*, 108(9): 2020-41.

**Bagues and Zinovyeva (2015):** The authors use evidence from centralized selection exams for positions of full and associate professors in Spain across all academic disciplines from 2002 to 2006. Evaluators were randomly selected from a pool of eligible evaluators, and the rules regarding conflicts of interest were seldom implemented. The findings suggest that when candidates are evaluated by their PhD advisor, a colleague, or a coauthor (strong connection), they are approximately 50 percent more likely to be promoted. The presence of a weak connection (e.g., an evaluator and the candidate have participated in the same thesis defense) increases candidates' chances of success by 20 percent.

Bagues, M. F., and N. Zinovyeva (2015): "The Role of Connections in Academic Promotions," *American Economic Journals: Applied Economics*, 7(2): 264–292.

**Blau, Currie, Croson and Ginther (2010):** The authors evaluate the success of the CSWEP Mentoring Program (CeMENT) to assist female assistant professors in preparing for tenure. Their results indicate positive effects of participating in the program on both top-tier publications and total publication rates as well as on successful grant applications.

Blau, F. D., Currie, J. M., Croson, R. T., and D. K. Ginther (2010): "Can mentoring help female assistant professors? Interim results from a randomized trial," *American Economic Review: Papers & Proceedings* 100 (May 2010): 348–352.

**Boring (2017):** Data from a French university are used to analyze gender biases in teaching evaluations by students. Male students are biased in favor of male professors. Moreover, men are perceived as being more knowledgeable and having stronger leadership skills in class although students appear to learn as much from women as from men.

Boring, A. (2017): "Gender biases in student evaluations of teaching." *Journal of Public Economics*, 145: 27-41.

**Card, DellaVigna, Funk and Iriberry (2018):** The authors investigate gender differences in the evaluation of papers by leading economics journals (*Journal of the European Economic Association, Quarterly Journal of Economics, Review of Economics and Statistics, and Review of Economic Studies*). They observe that both male and female referees seem to be more demanding when the author of a paper is a woman. Given that editors largely follow the referees, it is found that female-authored papers have a 7 percentage point lower probability of receiving a revise and resubmit relative to a citation-maximizing benchmark.

Card, D., DellaVigna, S., Funk, P., and N. Iriberry (2018): "Are Referees and Editors in Economics Gender Neutral?" Working Paper.

**Ginther and Kahn (2004):** The article surveys the career paths of female economists with a PhD. The growth in economics PhDs granted to women has not translated into a corresponding percentage increase in tenured women. Ten years after having obtained the PhD, 68 percent of male, but only 47 percent of female economists have received tenure. Compared to other academic disciplines (life sciences, political science, and statistics), women in economics are less likely to get tenure and take about a year longer to get it.

Ginther, D. K., and S. Kahn (2004): "Women in Economics: Moving up or Falling Off the Academic Career Ladder?" *The Journal of Economic Perspectives*, 18(3): 193–214.

**Hengel (2017):** The review process and the readability of articles are investigated with respect to gender differences.

Hengel, E. (2017): "Publishing While Female: Are Women Held to Higher Standards? Evidence From Peer Review." Mimeo.

**Krapf, Ursprung and Zimmermann (2017):** The paper studies the relationship between parenthood and research productivity. The authors conducted a survey among economists holding a PhD and working in academia and linked the responses to the publication records in RepEC. It is found that being a mother is not associated with a lower research productivity. At the same time, it is observed that for unmarried woman, there is a negative effect of parenthood on research productivity. At the same time, it is observed that for unmarried women, there is a negative effect of parenthood on research productivity while the effect is positive for untenured men.

Krapf, M., Ursprung, H.W. and C. Zimmermann (2017): "Parenthood and productivity of highly skilled labor: Evidence from the groves of academe", *Journal of Economic Behavior & Organization*, 140: 147-175.

**Mengel, Sauermann and Zölitz (2019):** The authors exploit a natural experiment at the University of Maastricht where students are randomly allocated to section instructors. They investigate teaching evaluations of male and female instructors, controlling for the ability of the instructor (based on the grades achieved by his or her students and their self-assessed study time for the course). Male instructors are evaluated better than female instructors, which is mainly driven by evaluations of male students. The effect is stronger for younger female instructors (PhD students) and in mathematical courses.

Mengel, F., Sauermann, J., and U.Zölitz (2019): "Gender Bias in Teaching Evaluations." *Journal of the European Economic Association*, 17(2): 535-566.

**Sarsons (2017):** While men receive just as much credit for co-authored work as for solo-authored publications, women do not when collaborating with men. Only if all authors are female, women get as much recognition for their work as men. Recognition is measured as an increase in the probability of being tenured.

Sarsons, H. (2017): "Recognition for Group Work: Gender Differences in Academia." *American Economic Review: Papers and Proceedings* 107(5): 141-45.

**Ductor, Goyal, and Prummer (2018):** The paper investigates research output of men and women in economics as well as collaboration patterns. Men display a significantly higher research output than women. The authors investigate differences in the co-authorship networks. They find that women have fewer collaborators, they collaborate more often with the same co-authors, and a higher fraction of their co-authors are co-authors of each other. Moreover, women collaborate more and work with more senior co-authors.

Ductor, L., S. Goyal, and A. Prummer (2018): "Gender and Collaboration." Working Paper.



## 5) AFFIRMATIVE ACTION & STEROTYPES

**Bracha, Cohen, and Conell-Price (2015):** The authors run experiments with GRE math questions, both with and without affirmative action. They find that affirmative action has a negative effect on the performance of high-ability women. This could be due to a “stereotype threat effect.”

Bracha, A., A. Cohen, and L. Conell-Price (2015): "Affirmative action and stereotype threat," *Harvard Law School John M. Olin Center Discussion Paper* 805.

**Babcock, Recalde, Vesterlund and Weingart (2017):** The authors examine gender differences in the frequency of requests and in the acceptance of requests for tasks with low promotability. They find that, relative to men, women are more likely to volunteer, more likely to be asked to volunteer, and more likely to accept direct requests to volunteer.

Babcock, L., Recalde, M.P., Vesterlund, L., Weingart, L. (2017): “Gender differences in accepting and receiving requests for tasks with low promotability.” *American Economic Review*, 107(3): 714-47.

**Reuben, Sapienza, and Zingales (2014):** An experiment on hiring for a mathematical task is conducted where decision makers only know the appearance of the candidates. The authors find that men are twice more likely to be hired than women. In another treatment, candidates report their ability. In this treatment, women are still discriminated against since men overstate their ability, and employers do not discount this. Discrimination is lowest with full information about candidates’ past performance.

Reuben, E. Sapienza, P., and Zingales, L. (2014): “How stereotypes impair women’s careers in science.” *PNAS* March 25, 111 (12): 4403-4408.

**Wu (2017):** Quantitative text analysis is used to study how women and men are referred to on Econ Job Market Rumors. The author finds that posts relating to women contain 43% fewer terms concerning academic issues and 192% more terms about personal matters and physical attributes than posts relating to men.

Wu, A., (2017): “Gender Stereotyping in Academia: Evidence from Economics Job Market Rumors Forum.” Mimeo.

## 6) EFFECT OF INTERVENTIONS, WORKSHOPS, AND AWARENESS ON SELECTION CHOICES

**Pope, Price, and Wolfers (2018):** To examine whether raising awareness of a racial bias can reduce it, the media attention highlighting racial bias among professional basketball referees is exploited. This occurred in May 2007 following the release of an academic study. The data confirm that racial bias existed in the years after the study's original sample but prior to the media coverage. After the media coverage, the bias was not existent anymore.

Pope, D. G., Price, J., and J. Wolfers (2018): "Awareness reduces racial bias." *Management Science*, [Published Online](#): 6 Feb 2018.

**Chang, Milkman, Gromet, Rebele, Massey, Duckworth and Grant (2019):** The paper reports on the effects of an online diversity training program among the employees of a large company. The training was aimed at reducing stereotypes and implicit bias. The training had an effect on attitudes towards women while the treatment effect on behavior was mixed.

Chang, E.H., Milkman, K.L., Gromet, D.M., Rebele, R.W., Massey, C., Duckworth, A.L. and A.M. Grant (2019): "The mixed effects of online diversity training." *PNAS* 116(15): 7778-7783.

**Devine, Forscher, Austin, and Cox (2012):** The authors analyze the responses of 91 nonblack undergraduate students who took a 12-week course to raise awareness of the existence and effects of implicit bias and to learn about an array of strategies to reduce the bias. Implicit race bias was measured with the Black-White IAT (implicit association test). Students in the treatment group improved their scores on the tests, and the change persisted eight weeks after the end of the course. In the comparison group no such change in the test score results occurred.

Devine, P. G., Forscher, P. S., Austin, A. J., and W. T. Cox (2012): "Long-term reduction in implicit race bias: A prejudice habit-breaking intervention." *Journal of experimental social psychology*, 48(6): 1267-1278.

**Goldin and Rouse (2000):** In this classic study, the authors examine whether the hiring process of orchestras became more impartial by using blind auditions. They find that the change of the hiring process to auditions behind a curtain greatly enhanced the likelihood that a female contestant won in the final round. The switch to blind auditions can explain about one-third of the increase in the proportion of female musicians among new hires.

Goldin, C., and C. Rouse (2000): "Orchestrating Impartiality: The Effect of 'Blind' Auditions on Female Musicians". *American Economic Review*, 90(4): 715-741.

**Soll, Milkman, and Payne (2014):** The authors review the literature on ways to "de-bias" judgments, which apply not only to attitudes about women and minorities, but also to other decision biases. Factors to consider are removing identifiers, minimizing time pressure and distractions, discrediting feelings of connection or chemistry, committing to fair and relevant admissions or hiring criteria before learning the applicants' race or gender, and collecting more evidence on candidates' competencies, among many others.

Soll, J. B. and Milkman, K. L., and J. W. Payne (2015): "A User's Guide to Debiasing." Chapter 33, *Wiley-Blackwell Handbook of Judgment and Decision Making*. G. Keren and G. Wu (Eds.).

**Sheridan, Fine, Pribbenow, Handelsman, and Carnes (2010):** The authors created and implemented a training workshop for faculty search committees designed to improve the hiring process and increase the diversity of faculty hires at the University of Wisconsin-Madison. They employed a quasi-experimental design, comparing the outcomes for departments that sent at least one faculty member to a workshop with outcomes for departments that sent no faculty member to the workshops between 2004 and 2007. They find that attendance of the workshop correlates with more hiring of women by the respective faculties and that this increase is stronger, the more faculty members attended the workshop.

Sheridan, J. T., Fine, E., Pribbenow, C. M., Handelsman, J., and M. Carnes (2010): "Searching for excellence & diversity: increasing the hiring of women faculty at one academic medical center". *Academic medicine: journal of the Association of American Medical Colleges*, 85(6): 999.

**Kalev, Dobbin, and Kelly (2006):** Using federal data about the workforce of 708 private sector establishments from 1971 to 2002, coupled with a survey about employment practices, several measures to increase diversity are investigated. It turns out that diversity training and diversity evaluations are least effective at increasing the share of white women, black women, and black men in management. Efforts to attack social isolation through mentoring and networking show modest effects while establishing a responsibility for diversity (such as affirmative action plans, diversity committees and taskforces, diversity managers and departments) leads to the strongest increases in managerial diversity.

Kalev, A., Dobbin, F., and Kelly, E. (2006): "Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies". *American Sociological Review*, 71(4): 589-617.

**Van den Brink, Benschop, and Jansen (2010):** Transparency and accountability as tools for gender equality are studied, based on a qualitative analysis of actual university policies (interviews of members of selection committees and an analysis of appointment reports by selection committees) in the Netherlands. The findings show that processes in selection committees under the new transparency rules are still led by unintended gender practices, and transparency policies can even be counterproductive when actors use these policies strategically for their own benefit.

Van den Brink, M., Benschop, Y., and W. Jansen (2010): "Transparency in academic recruitment: a problematic tool for gender equality?" *Organization Studies*, 31(11): 1459-1483.

## 7. OTHER

**Günther, Grosse, and Klasen (2017):** Gender differences in conference attendance, engagement with the speaker after the presentation, and topics of talks attended are analyzed, using field data from the VfS annual conference in 2012. Among the findings are that women are more likely than men to attend another woman's talk while men are more attracted to talks by tenured professors than women. Moreover, the topics presented by speakers are unrelated to gender, but men are less interested in attending talks on health, education, welfare, and development.

Günther, I., Grosse, M., and S. Klasen (2017): "How to Attract an Audience at a Conference: Paper, Person or Place?", *German Economic Review*, 18(4): 468-491.

[Here](#) you can find a list of "Research on Women in Economics", collected by the EEA.