

In conclusion, Williams called for moving beyond talking about gender bias as merely a “chilly climate” for women in academe. She argued for the need to create a new model for spurring institutional change that specifically names and identifies unexamined bias and considers the risk of family responsibilities discrimination lawsuits against employers.

ECONOMICS OF GENDERED DISTRIBUTION OF RESOURCES IN ACADEME

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Donna Ginther focused her comments on the economics of gender differences in employment outcomes in academia. She observes gender and race differences in employment outcomes. From the economics perspective, gender differences in employment outcomes result from a variety of factors besides discrimination.

- *Differences in productivity.* Are men more productive than women?
- *Differences in choices.* Women’s choice of occupations and jobs affect their employment outcomes.
- *Imperfectly competitive markets.* Becker’s theory of discrimination was predicated on perfect competition; however, universities are not perfectly competitive. In fact, they have monopsony power where universities act as single purchasers of academic labor and have more market power than employees.
- *Job matching.* This theory suggests that differential employment outcomes result from one group performing better on the job than another.

If none of those theories explains the employment-outcome difference, then what is left over could be attributed to discrimination. That said, economists, on average, do not believe that discrimination explains observed gender differences in employment outcomes.

There is no single scientific labor market. As a result, we need to disaggregate the data. We need to look at the different scientific labor markets because they have different outcomes for women. We need to make comparisons across fields to understand the status of women relative to one another. Hiring, salary, and promotion outcomes are interrelated. You cannot look at one without considering the others.

—Donna Ginther

BOX 1-3
The Economist's Perspective^a

~Economists view the world as being organized by markets, and assume that markets matter. Thus, supply and demand determine employment outcomes.

~Economists assume that equally productive workers will be paid the same. Thus, we should not observe gender differences provided that men and women are equally productive.

~Discrimination exists, but market competition will remove it. In other words, if you have a perfectly competitive market, some employer can exploit the fact that it is not paying women enough, hire only women, and then become more profitable.

^aGary Becker won the Nobel prize in economics in part for his theories of discrimination. GS Becker (1971). *The Economics of Discrimination*. Chicago: University of Chicago Press.

What explains the differential employment outcomes in science and engineering fields? To examine hiring, promotion, and salary, Ginther used the 1973-2001 waves of the Survey of Doctorate Recipients (SDR).⁶⁰ Because the SDR is longitudinal, respondents can be tracked over time. She split the data into fields: life sciences (agriculture, food science, and biology), physical sciences (chemistry, earth sciences, physics, and mathematics), engineering, and social science (economics, psychology, sociology, anthropology, and political science). Control variables include the demographic variables of gender, race, and age; academic field and degree; rank and tenure status; and institutional characteristics (Carnegie rankings, public or private). She included control variables for primary work activities which indicate whether the respondent primarily teaches, does research, manages, or engages in another activity. She also included an indicator for whether a respondent receives government support and some measures of publications.

Ginther's research shows again that women's representation depends on field (Figure 1-7). Since the 1970s there has been tremendous growth in the number of doctorates awarded to women. In the physical sciences, there is still anemic representation of women, but in the life sciences and the social sciences (except in economics) half or more of doctorates are awarded to women.

⁶⁰From 1987 to 1995 the SDR also followed people in the humanities; for these years, Ginther includes humanities in her analysis.

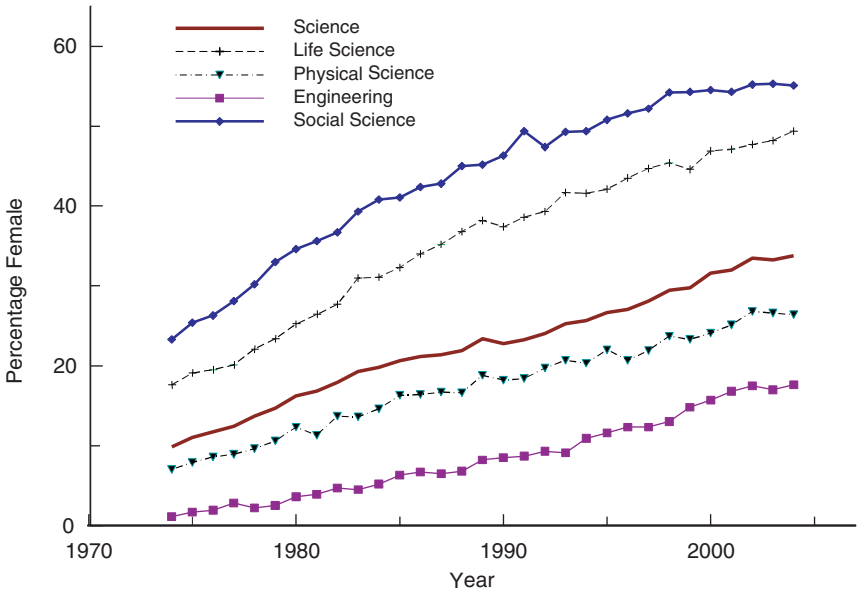


FIGURE 1-7 Percentage of doctorates granted to females.
SOURCE: National Science Foundation (1974-2004) *Survey of Earned Doctorates*. Arlington, VA: National Science Foundation.

However, even in life science and social sciences, the percentages of women tenured is low. For example, in social science, over 50% of the doctorates have been women since 1990, but in 2001 only 28% of tenured faculty were women (Figure 1-8).

Does that discrepancy result from differences in hiring or from differences in promotion? Ginther examined gender differences in tenure-track jobs within 5 years of earning a PhD and measured the effect of being female on getting a tenure-track job. She found that single women are significantly more likely than single men—by 11 to 21%—to have tenure-track jobs. Marital status and presence of children drive this result and explain the leaky pipeline.

Marriage has a positive and significant impact of 22% on men getting a tenure-track job whereas the effect of marriage on women ranges between 0 and 8% for all science, life science, and social science fields. Children, especially young children, significantly decrease the likelihood of women obtaining a tenure-track job between 8 to 10% in all science fields, life science, and social science while having no significant impact on men.⁶¹

⁶¹MA Mason and M Goulden (2002). Do babies matter? The effect of family formation on the lifelong careers of academic men and women. *Academe* 88(6):21-27, <http://www.aaup.org/publications/Academe/2002/02nd/02ndmas.htm>.

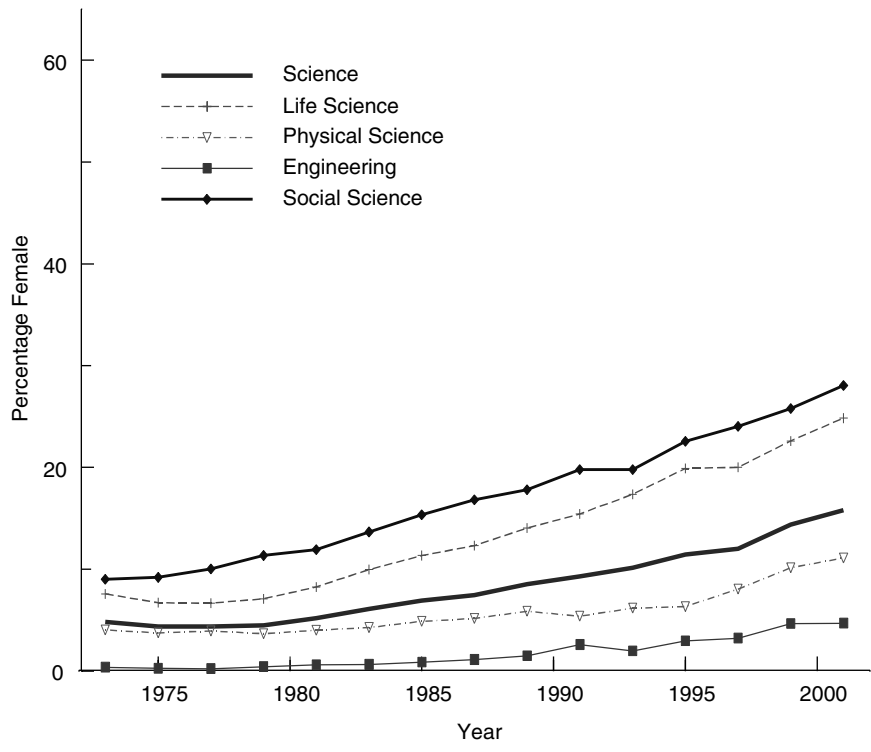


FIGURE 1-8 Percentage of tenured faculty who are women.
SOURCE: National Science Foundation (1973-2001). *Survey of Doctoral Recipients*. Arlington, VA: National Science Foundation.

The differential impact of marriage and children may be explained by a number of factors. Women may choose to have children instead of pursuing an academic career because of the coincident timing of the tenure and biological clocks. The dual career problem may also play a role. Career hierarchies in marriage often result in the husband's career taking precedence over the wife's career. If it is difficult to obtain two tenure-track jobs, she may choose to have children instead of investing in her career.

In particular, with respect to hiring policies, the dual career problem should be taken seriously. There is an economic advantage for a university to hire couples, because couples are less mobile. The university can probably keep them longer.

—Donna Ginther

Ginther also examined gender differences in promotion 10 years past the PhD. Overall, she found a 1.4% gender difference in promotion to tenure 10 years past PhD. The gender promotion gap varies significantly by field. In the social sciences, excluding economics, women are 8% less likely to have obtained tenure; in the life sciences, 2% more likely; in the physical sciences 3% less likely; in engineering, 4% more likely; in humanities, 8% less likely. Economics is the outlier, in which there is a 21% promotion gap in favor of men.

After examining hiring and promotion, Ginther considered the gender salary gap. In the economy as a whole, women earn 75 cents for every dollar a man earns. In engineering, women earn 80 cents for every dollar. Previous research has shown that if academic rank is factored in, the gender differences in salary go away, except for full professors. What is an 18% difference favoring men in science as a whole falls to just over 5% in science for assistant professors, even less for associate professors. For full professors there is a 13.2% salary gap. One-third of the 13.2% salary gap is attributable to valuing the observable qualifications of women differently than men. Across the campus in the humanities, there is essentially no salary difference at any level. Something is going on in the humanities and the social sciences relative to science. For some reason, there are huge salary discrepancies at the full-professor rank in the sciences but not in the social sciences or humanities.

What are the economic explanations for the salary gap? It is not the result of marriage and children, except in the life sciences. Women are more productive on the average than men at Research I institutions; productivity is not explaining the gap. The salary gap is probably not the result of monopsony in the academic labor market. We also can dismiss the explanation that women are not good scientists, because they would not be full professors if that were the case.

What I find is that the salary gap is explained largely by gender differences in work experience and that men are rewarded more than women. That is consistent with the cumulative advantage model.

—Donna Ginther

To address outstanding questions, Ginther recommended improving the quality of data. She suggested building on existing datasets, including the SDR and the National Institutes of Health Consolidated Grant File. The postdoctoral process should be examined because it seems to be a key point at which women are dropping out. In particular, the SDR should add questions on publications and citations, grant awards, laboratory space, number of graduate students supervised, and a special module on postdoctorates. She called for additional questions on spouses—their education, their employment, their earnings, and how much child care time is allocated. She also urged universities to undertake a systematic review of academic salaries.