Gender Differences in Salary and Promotion in Political Science

Donna K. Ginther

Associate Professor
Department of Economics
University of Kansas
1300 Sunnyside Drive
Lawrence, KS 66045
Email: dginther@ku.edu

February 17, 2004

For presentation at: *American Political Science Association*

Abstract:

This study uses data from the Survey of Earned Doctorates and the Survey of Doctorate Recipients to evaluate gender differences in the academic pipeline, salaries, and promotion for political scientists. Women are represented in academic careers in political science in proportion to the number of doctorates awarded. The gender salary gap in political science is small and almost entirely explained by differences in observable characteristics for faculty at all ranks. Finally, women in political science are more likely to obtain tenure than their male colleagues. Compared with earnings and promotion outcomes for women in other science and social science disciplines, women in political science have experienced unrivaled success.

Acknowledgements: I thank the National Science Foundation for granting a site license to use the SDR data and the American Political Science Association for commissioning this study. Any errors are my own responsibility.

Gender Differences in Salary and Promotion in Political Science

I. Introduction

In his examination of the salaries and appointments of men and women in academia, the Director of Research at the American Association of University Professors (AAUP) observes: "Substantial disparities in salary, rank, and tenure between male and female faculty persist despite the increasing proportion of women in the academic profession." (Benjamin, 1999) Yet the question remains as to whether this is true of all of academic disciplines. Research by Ginther (2001) and Ginther and Hayes (1999, 2003) suggests that women in science and humanities face very different labor markets; the gender gap in these disciplines differs as well. Disentangling the causes of gender disparities in salary and promotion requires an in-depth examination of the relationship between the two. In this paper I examine gender differences in employment outcomes for academics in political science. Compared with other social science disciplines, women in political science face few disparities in salaries and promotion relative to men.

This study uses data from the Survey of Earned Doctorates (SED) and the Survey of Doctorate Recipients (SDR) to examine the distribution of women across social science fields and gender differences in salary and promotion. The SED is a census of doctorates awarded in the United States each year. I use the 1974 – 2000 waves of the survey to evaluate changes in the distribution of women in social science fields. The SDR is a nationally representative sample of Ph.D. scientists in the United States used by the National Science Foundation to monitor the scientific workforce and fulfill its congressional mandate to monitor the status of women in science. This study uses data from the 1973-2001 waves of the SDR. The SDR collects detailed information on

doctorate recipients including demographic characteristics, educational background, employer characteristics, academic rank, government support, primary work activity, productivity, and salary. Academics in the social sciences with special attention paid to those in political science, economics, sociology, and anthropology are included in the analysis. Although the SDR has comprehensive measures of factors that influence academic salaries and promotion, the data lack extensive measures of publications.

My evaluation begins with an examination of the distribution of women across social science fields. Next, the gender salary and promotion gaps in social science are considered. The analysis concludes with a comparison of the status of women in political science with women in other academic disciplines.

II. The Representation of Women in Political Science

Women are not equally distributed across social science fields. Figure 1 graphs the percentage of doctorates awarded to females between 1974 and 2000 using data from the SED.[1] Women's success in academic careers is predicated on the receipt of a doctorate. Compared with most social science disciplines, women are less likely to obtain a doctorate in political science. By 2000 over half of all doctorates awarded in social science disciplines are granted to women compared with only 35 percent of political science doctorates. However, compared with economics (27 percent), physical science (24 percent), or engineering (16 percent) women earn a higher percentage of doctorates in political science. This suggests that economics (a related social science)

[1] Fields in social science include: clinical psychology, psychology, economics, political science, sociology and anthropology, and other social science fields.

constitutes the most reasonable comparison group for political science rather than all social science disciplines.

Figure 2 shows that women's progress in the political science academic pipeline has kept pace with the percentage of doctorates awarded. Figure 2 uses data from the 1973 – 2001 waves of the SDR to graph the percentage of faculty who are female by rank in political science, economics, sociology and anthropology, and all social sciences excluding political science. Between 1995 and 2000 an average of 32 percent of doctorates were awarded to women in political science and by 2001 33 percent of assistant professors in political science were women. This contrasts sharply with economics where women earned 25 percent of the doctorates on average but made up only 16 percent of assistant professors by 2001. Between 1991 and 2001, the percentage of women assistant and associate professors grew more rapidly in political science than in other social science fields. Growth in the percentage of female full professors in political science was slow during the first half of the 1990s but accelerated after 1995. Given the rapid increase in associate professors in the 1990s, one would expect that women would become more prevalent as full professors in political science in the next decade.

Academic rank provides an imperfect measure of women's promotion in academia compared with tenure status. Figure 3 uses data from the SDR to graph the percentage of tenured faculty who are female in political science, economics, sociology and anthropology, and social science excluding political science. In 2001, political science had a lower percentage female who are tenured (23 percent) than social science disciplines excluding political science (29 percent) and sociology and anthropology (35 percent). This difference is largely the result of political science having fewer women in

the academic pipeline than these disciplines. By comparison, economics falls below social science disciplines with only 12 percent of tenured faculty who are female in 2001. Yet compared with other social science disciplines, political science has seen the most rapid increase in the percentage of tenured faculty who are female.

Women's representation in academia tells only part of the story about the effect of gender on academic careers. From the macro perspective, women in political science have achieved representation in the academic pipeline that corresponds with the numbers of doctorates awarded. This study now examines the micro-level outcomes of the gender salary and promotion gaps in political science and other social science disciplines.

III. The Gender Salary Gap in Political Science

Salary regressions are estimated for men and women separately over time as a function of those factors that influence salaries such as demographic characteristics, academic background, and employer characteristics. The difference between estimated male and female salaries can be decomposed using a method developed by Oaxaca (1973). This method separates the gender salary gap into two components, the "explained" portion of the gap attributable to differences in observable characteristics (such as academic rank and differences in productivity), and the "unexplained" portion of the gap attributable to gender differences in the estimated regression coefficients. The sum of the explained and unexplained portions is the total gender salary gap. The unexplained gap resulting from gender differences in coefficients should equal zero provided that men and women are paid the same for a given level of observable characteristics. When it is nonzero, the unexplained portion of the gender salary gap has

often been interpreted as accounting for the effect of discrimination. However, in order to do so the model must contain all relevant observable characteristics that have an impact on salaries.[2]

There are several factors that affect the salaries of academics. Demographic characteristics such as race, marital status, fertility, and years of work experience may have a positive or negative effect on salaries. For example, on average, marriage increases male salaries while having a negative effect on female salaries. Employer characteristics such as working at a public or private institution, liberal arts or a doctoral institution, and the Carnegie ranking of the employer may also affect salaries. Top research institutions pay more than liberal arts colleges. Public institutions have state-mandated salary scales that tend to be more restrictive than those at private institutions. Employee characteristics such as the academic rank and tenure status of the individual also influence salaries, with salaries increasing with academic rank and tenure.

Measures of productivity also affect salaries. These include factors such as whether the individual receives government support, primary work activities, and publications. Having a greater (or lesser) amount of these factors will have an impact on salaries. If men are more likely to work at top-ranked research universities, the gender salary gap will be larger. Salary differences may also result from differential treatment reflected in differences in estimated coefficients. For example, at private institutions if men are paid more than women and private institutions are equally likely to employ both, then the gender salary gap will increase.

These observable characteristics may also reflect the preferences and choices of women in social science. For example, women in social science may be more likely to be

[2] A mathematical derivation of the Oaxaca decomposition may be found in Ginther (2001).

employed at teaching colleges. However, these characteristics potentially reflect discriminatory practices in social science; women may be more likely to work at teaching colleges because of discriminatory hiring practices on the part of research universities. On average, teaching colleges tend to pay less than research universities and this will have an impact on the gender salary gap. My analysis will not be able to distinguish between those observable characteristics that result from individual choices and those that may reflect discrimination. Yet, taken together, these observable characteristics may explain a substantial portion of the gender salary gap.

I examine gender salary differentials by estimating separate models for men and women and using the Oaxaca salary decomposition to account for the explained and unexplained portion of the gender salary gap in 2001.[3] The top panel of Table 1 presents the gender salary gap for political science, economics, sociology and anthropology, and social science excluding political science with all academic ranks combined. The gender salary gap in political science is the smallest of all the social science disciplines considered at less than 12 percent. The gender salary gap can be decomposed into two components—the explained gap resulting from gender differences in observable characteristics and the unexplained gap resulting from gender differences in estimated coefficients. Then entire salary gap in political science is explained by observable characteristics. The negative two percent unexplained gap suggests that differences in coefficient estimates actually favor women in political science.

[3] Salary regressions are estimated separately by gender. The natural logarithm of real wages is regressed on a constant, age in the survey year, dummies for African American, other race, a quadratic in work experience since Ph.D, rank, doctorate quality, employer quality, employer type, government support, primary work activity, number of papers, and number of publications. The text indicates whether rank is controlled for using dummy variables or whether models have been estimated separately by rank.

Previous research by Ginther and Hayes (1999, 2003) shows that the majority of the gender salary gap in the humanities disappears when separate salary regressions are estimated for each academic rank. Since men are still the majority of associate and full professors and these ranks pay more, a large portion of the gender salary gap may be explained by the relative numbers of men and women at various ranks. To examine whether the gender salary gap in the social sciences is explained by rank, I estimated salary differences for each rank (the remaining panels of Table 1). Male assistant professors in political science earn only one percent more than females. This contrasts sharply with economics which has a 16 percent salary gap for assistant professors. The gender salary gap for associate professors in political science is four percent—the largest gap to be found in political science when conditioning on rank. However, the entire gap can be explained by observable characteristics. This gap is less than half the size of the gap in economics and sociology and anthropology.

The gender salary gap in political science switches signs for full professors—women full professors earn five percent more on average than their male colleagues. The entire gap results from coefficient differences that favor women in political science relative to men. This contrasts sharply with economics and social science excluding political science—disciplines that have a 15 and 10 percent gender salary gap for full professors respectively.

IV. The Gender Promotion Gap in Political Science

The salary gap estimates presented above were estimated by academic rank in order to control for men being more prevalent in the associate and full professor ranks. It

could be that the gender salary gap is being understated by the previous estimates if women are less likely to get promoted. In order to examine this possibility, I estimate conditional hazard models of promotion to tenure for men and women in political science, economics, sociology and anthropology, and social science excluding political science.[4] Figure 4 presents predicted survival without tenure curves for men and women using data from the SDR. The survival curves can be interpreted as the probability of not obtaining tenure for a given number of years after the doctorate. The survival curves slope downward, indicating that as time progresses fewer people survive untenured (more people are promoted with tenure).

The survival curves for political scientists in Panel A of Figure 4 differ markedly from the survival curves of the other disciplines shown. For instance, if we consider the predicted probability of remaining without tenure eight years after receipt of the doctorate by discipline, 45 percent of women and 51 percent of men in political science do not have tenure. This indicates that women are more likely to be promoted with tenure in political science than men eight years after the doctorate. Women's advantage in promotion in political science persists up to 15 years after the doctorate. This contrasts sharply with the other social science disciplines presented in Figure 4. In economics, eight years after receipt of the doctorate, less than half of the men remain without tenure, whereas 65 percent of women remain without tenure. In sociology and anthropology and social science disciplines excluding political science, men are more likely to receive tenure than

[4] The model estimates the proportional hazard rate of promotion to tenure conditional on age in 2001, race dummies, foreign born and children dummies, the proportion of time observed in the sample: married, having children under the age of six, working at a private college, teaching, management, other activities, and receiving government support; controls for number of employers, and papers and publications per year of work experience.

women. Thus, compared with other social science disciplines, gender differences in the duration to tenure in political science favor women.

V. Conclusion

This research has considered the representation of women in the academic pipeline, and gender differences in salary and promotion in academic careers for men and women in political science, economics, sociology and anthropology, and all social science disciplines excluding political science. Although women are less likely to obtain doctorates in political science compared to other social science disciplines, their representation in the academic pipeline closely corresponds to the number of doctorates awarded. Women in political science have increased their representation in the assistant and associate ranks and as tenured faculty more rapidly than women in other social science disciplines.

The study next considers the gender gap in salary and promotion in social science. After controlling for rank, the gender salary gap in political science is small when compared with other social science disciplines. In the case of full professors, women in political science have higher salaries on average than men. Finally, the study shows that women are more likely to obtain tenure in political science than their male colleagues after controlling for demographic characteristics, employer characteristics, and publications.

Up to this point, women's academic careers in political science have been compared with a limited number of social science disciplines. It is reasonable to place political science in a larger context of other academic disciplines. Research by Ginther

and Hayes (1999, 2003) shows that after controlling for academic rank, women in the humanities earn on average the same salaries as their male colleagues. Despite parity in salaries, women in the humanities are nine percent less likely to be promoted to tenure than men. Research by Ginther (2001, 2003, 2004) and Ginther and Kahn (2004) shows a negligible gender promotion gap in life science, physical science, and engineering. However, Ginther (2001, 2003, 2004) finds a significant gender salary gap at the full professor rank for women in science—men earn 12 percent more than women after controlling for demographic characteristics, employer characteristics, and publications. One-third of this salary gap remains unexplained by observable characteristics. Finally, Ginther and Kahn (2004) find that compared with men, women are 21 percent less likely to obtain tenure 10 years after the doctorate in economics, whereas in political science, women are four percent more likely to obtain tenure.

Results from this study and previous research suggest that women in political science have been remarkably successful in obtaining parity and in some cases advantage in terms of salary and promotion when compared with men. This is clearly not the case in other social science, science, or humanities disciplines. Other academic disciplines, my own in particular, may want to learn the secrets of women's unrivaled success in political science.

References

Benjamin, Ernst. 1999. "Disparities in the Salaries and Appointments of Academic Women and Men." Academe 85(1): 60-62.

Ginther, Donna K. 2001. "Does Science Discriminate Against Women? Evidence from Academia: 1973-1997." Federal Reserve Bank of Atlanta Working Paper 2001-02.

Ginther, Donna K. 2003. ""Is MIT the Exception? Gender Pay Differentials in Academic Science 1973-1997." *Bulletin of Science, Technology, and Society* 23:1, 21-26.

Ginther, Donna K. 2004. "Why Women Earn Less: Economic Explanations for the Gender Salary Gap in Science" *AWIS Magazine* (forthcoming Winter 2004).

Ginther, Donna K. and Kathy J. Hayes. 1999. "Salary and Promotion Differentials by Gender for Faculty in the Humanities." *American Economic Review Papers and Proceedings* 89(2): 397-402.

Ginther, Donna K. and Kathy J. Hayes. 2003. "Gender Differences in Salary and Promotion for Faculty in the Humanities, 1977-1995." *Journal of Human Resources.*

Ginther, Donna K. and Shulamit Kahn. 2004. "Women in Economics: Moving Up or Falling Off the Academic Career Ladder?" *Journal of Economic Perspectives* (forthcoming 2004).

Oaxaca, Ronald. 1973. "Male Female Wage Differentials in Urban Labor Markets." *International Economic Review, 14(3)*, 693-709.

Table 1: Gender Salary Gap in Social Science
2001 Survey of Doctorate Recipients

All Ranks Pooled	**Salary Gap**	**Explained**	**Unexplained**
Political Science	11.54%	13.96%	-2.42%
Economics	21.58%	9.01%	12.57%
Social Science	18.30%	15.95%	2.35%
Sociology / Anthropology	13.56%	13.74%	-0.17%
Assistant Professors			
Political Science	1.03%	-1.55%	2.58%
Economics	16.44%	11.78%	4.66%
Social Science	6.85%	4.58%	2.27%
Sociology / Anthropology	-1.32%	0.29%	-1.61%
Associate Professors			
Political Science	4.25%	5.92%	-1.67%
Economics	9.51%	-0.55%	10.06%
Social Science	7.36%	5.58%	1.78%
Sociology / Anthropology	9.12%	2.42%	6.70%
Full Professors			
Political Science	-5.44%	0.63%	-6.08%
Economics	15.11%	0.61%	14.50%
Social Science	9.58%	6.91%	2.67%
Sociology / Anthropology	1.79%	4.53%	-2.74%

Notes: Salary Gap estimated using linear probability model. Explained and unexplained gap estimated using Oaxaca (1973) decomposition. Male salaries assumed to reflect non-discriminatory salary structure.

Figure 1: Percentage of Doctorates Granted to Females, 1974-2000 Suvey of Earned Doctorates

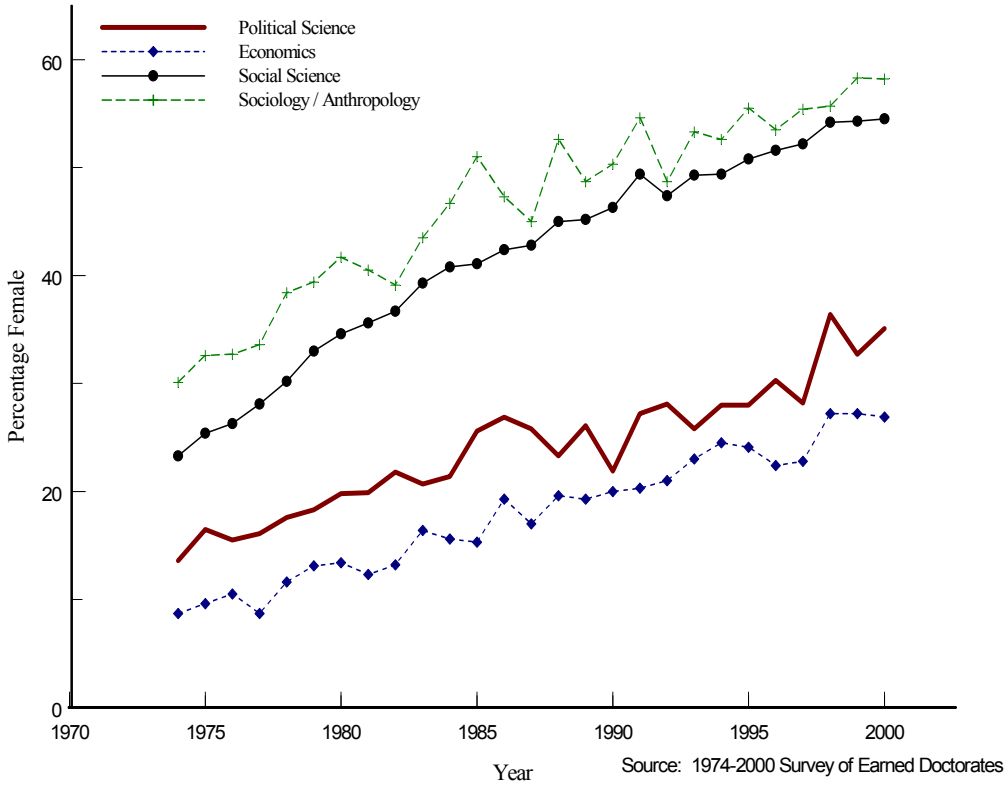
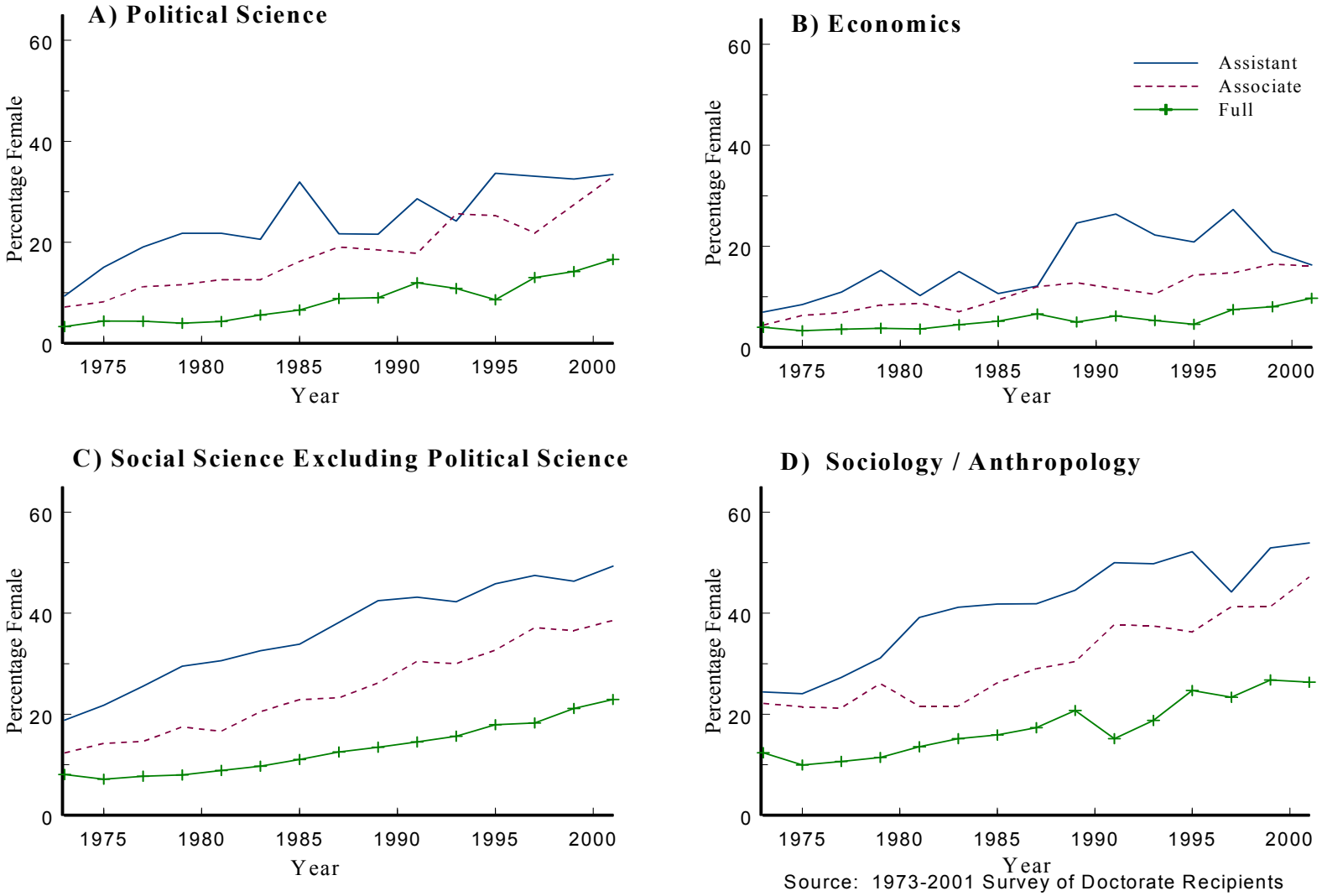
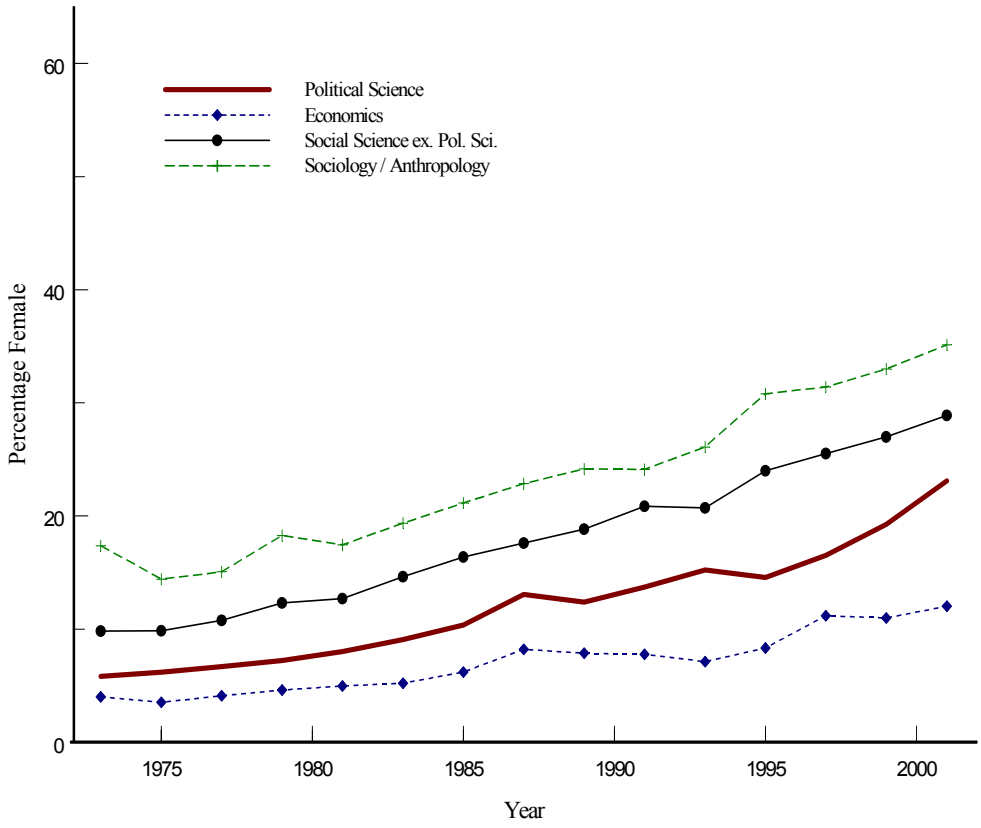


Figure 2: Percentage Female by Academic Rank, Social Science Disciplines



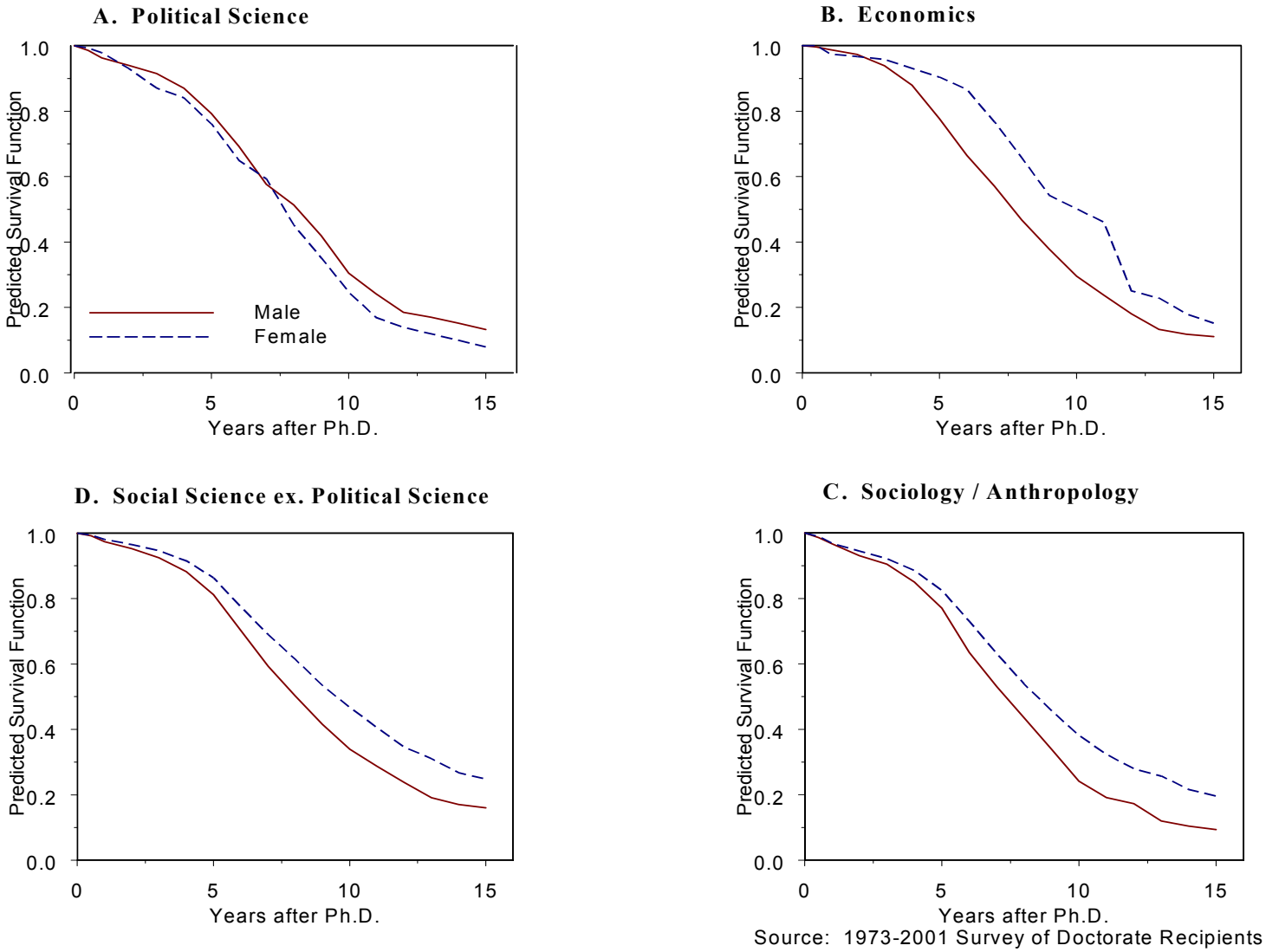
Source: 1973-2001 Survey of Doctorate Recipients

Figure 3: Percentage of Tenured Faculty who are Female, by Discipline



Source: 1973-2001 Survey of Doctorate Recipients

Figure 4: Predicted Survival Without Tenure Functions, by Gender and Discipline



Source: 1973-2001 Survey of Doctorate Recipients