U.S. Navy Promotion and Retention by Race and Sex

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January, 2010

Executive Summary

The Navy is committed to providing equal promotion and retention opportunities to all its employees.

What is the issue?

The Navy takes many steps to prevent discrimination or unequal treatment in promotion and retention across race and sex, including a very formal process involving largely objective measures. However, because one part of the promotion decision involves ratings by supervisors, promotion differences across demographic groups—and hence retention differences—could occur. Previous studies, which were commissioned by the Navy, revealed patterns of potential biases in promotion across race and sex for enlisted personnel. In turn, a lower rate of promotion could reduce the likelihood of retention for that demographic group.

The objective of this study, which was not commissioned by the Navy, is twofold: first to investigate the extent of possible promotion bias by estimating the differences in the probability of promotion across race and sex taking account of economic conditions and individual sailors’ characteristics; and second to investigate retention rates across race and sex given Navy promotion policy and general economic conditions. The analysis uses data on enlisted personnel in pay grades E3 thorough E7 from January, 1997 through May, 2008, which allows comparison of promotion and retention patterns in two distinct environments: pre- and post-9/11. This is the first study simultaneously to examine the separate decisions of the Navy and its employees while controlling for employees’ abilities using an aptitude or ability test score. This paper presents the results for the Administration skill group, which is a large group with a broad cross-section of races and Armed Forces Qualifying Test (AFQT) scores, which measure ability. Results for other skill groups are qualitatively similar.
What did the study find?

Promotion Results

Despite the Navy’s elaborate controls to ensure fairness, the annual probability of promotion varied statistically and significantly across races and by sex during the period analyzed. Rates of promotion differed for two reasons. First, they vary due to differences in the characteristics of employees across race and sex, including differences in education levels, length of service, training, types of skill, and AFQT test scores. This source of difference—called “characteristics” difference in this study—is not evidence of direct discrimination in promotion and retention. It captures differences in the distribution of characteristics across race and sex, possibly due to unequal treatment in the civilian world. Second, promotion and retention probabilities differed across race and sex for people with the same characteristics. This source of difference—called “coefficient” difference in this study—may be evidence of unequal treatment.

The estimation model produces very clear-cut results concerning race and promotion probabilities. Blacks, Hispanics, and other races were less likely to be promoted than Whites, with coefficient (treatment) differences playing roughly twice as large a role as characteristic differences in explaining the overall difference in promotion probabilities between Whites and other races. The gap in promotion rates compared to Whites is most pronounced for Hispanics. These differences in promotion probabilities vary by race and pay grade but in all cases it is at least 4% per year.

However, this coefficient or treatment difference by race fell after 9/11. Nonetheless the gap in promotion rates between Whites and other races increased moderately after 9/11 because of changes in the distribution of characteristics across races.

Differences in promotion probabilities by sex varied across pay grades. Males were substantially more likely to be promoted than females in pay grades E4 and E5. During the war years, the actual gap at E4 and E5 between men and women increased both because of changes in the Navy’s treatment of the sex (as reflected by the estimated coefficients on sex) and because the average characteristics of women became less attractive to the Navy than those of men. In contrast, E6 women did better than men during peace (before 9/11) and even more so during war (after 9/11). However, because women in E6 had relatively less attractive characteristics during...
war years than during peace years, E6 women were much more likely than men to be promoted during peace but only slightly more likely during war. Females were more likely than males to stay in the Navy at E4, but were less likely at E5 and E6.

Other individual characteristics mattered, but no single characteristic other than race or sex played a dominant role. For example, aptitude or ability as measured by the AFQT score had a relatively small role in determining promotions. Raising the typical E4 sailor’s score from the 55th percentile to the 80th increases the promotion probability 2.2 percentage points.

Retention Results

The study finds that lower rates of annual promotion decreased the probability that a sailor remained in the Navy. However all else the same, Blacks, Hispanics, and other races were more likely to stay in the Navy than Whites over the period analyzed. This result is likely driven by the relative lack of opportunities for minorities in the civilian labor market and the relative increase in the Navy pay relative to civilian wages.

When conditions are bad in the civilian labor market, sailors are more likely to remain in the Navy. For most of the time period, this effect was quantitatively small because almost everyone remained in the Navy. Now, these conditions may matter more. Our model, does a good job of predicting the actual observed retention rate in 2006 of 88.3% based on actual Navy policies and the poor labor market conditions in that year. Simulation results show that if the excellent civilian labor market conditions of 1998 had prevailed in 2006 while all other 2006 policies and conditions remained the same, the retention probability would have fallen substantially. That is, given the very low promotion rates in 2006, if the sailors had good opportunities in the civilian labor market, most of them would have left. These simulations suggest that Navy policies (other than the size of the Navy) contribute much less to keeping sailors in the Navy than do civilian labor market and political conditions.

Methodology

The model consists of two equations. The first equation predicts an individual’s probability of promotion as a function of their characteristics—including AFQT score, education, Navy experience, race, sex, and so forth—and various Navy policy variables such as time in rank, demand and supply. The second equation predicts whether an individual will remain in the Navy
conditional on whether they were promoted, Navy policy variables, individual characteristics such as marital status, and the state of the civilian labor market. The data set covers virtually all enlisted sailors in all skill groups (occupations) and pay grades (E3 through E7) from January 1997 through May 2008. Although the results are qualitatively similar across the Navy’s 21 skill groups, the paper reports results for only the Administrative group, which is a large group with a broad cross-section of races and AFQT scores.
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Abstract

The Navy’s promotion-retention process involves two successive decisions: The Navy decides whether an individual is selected for promotion, and then, conditional on the Navy’s decision, the sailor decides whether to reenlist or leave the Navy. Rates of promotion and retention depend on individuals’ demographic and other characteristics, wars and economic conditions and factors that the Navy policy makers can control. Using estimates of these decision-making processes, we examine two important public policy questions: Do Navy promotion and retention rates differ across race and sex? Can the Navy alter its promotion and other policies to better retain sailors, or do war and civilian labor market conditions determine retention?

Key Words: promotion, retention, labor, sex, race

JEL Classification Codes: J45, J7

We thank the office of Navy Personnel Research, Studies and Technology (NPRST) for giving us permission to use the data, for replying to all of our questions and for granting us permission to publish this paper. NPRST is not responsible for our findings or conclusions.