This report describes variations in promotion speed, retention, and pay among two recent cohorts of civil service personnel; develops proxy measures of personnel quality; and uses these measures to examine whether higher-quality GS workers are promoted faster, are retained in the DoD civil service longer, and are paid more than lower-quality workers are, and whether these patterns have changed in recent years.

To conduct this analysis, we constructed a longitudinal database that tracks through FY96 the careers of the workers who entered or reentered the DoD civil service between FY82 and FY96. The data capture information about entry characteristics and how they vary over each individual’s career, as well as pay levels, promotion events and timing, and the timing of exits from the DoD. By tracking the careers of two cohorts, the database permits a comparison across occupational groups and time periods, including a period covering the DoD drawdown. The analysis focuses on the FY88 cohort, whose members entered or reentered prior to the defense downsizing, and on the FY92 cohort, whose members entered or reentered during the defense downsizing.

The data also permit the construction of proxy measures of personnel quality. Three measures are used: entry education, supervisor ratings, and promotion speed. Promotion speed is studied both as an indicator of personnel quality and as a personnel outcome. It is used as a personnel quality indicator in the analysis of whether higher-quality personnel are retained. Because each of the three
measures has its advantages and its drawbacks, more than one measure is used. A regression framework is used to control for other factors that may affect promotion, pay, and retention.

MAIN CONCLUSIONS

The analysis of pay for both cohorts suggests that higher-quality personnel are generally paid more. Those who receive the highest supervisor ratings and thus presumably perform better in their jobs are found to be paid more than those who receive the lowest ratings, when other observed characteristics are held constant. The increment in annual pay associated with receiving the top rating ranges from 2.8 to 4.3 percent. The analysis also suggests that those with more education earn more in the DoD civil service. Furthermore, the relationship between pay and education may be underestimated because the pay variable excludes bonuses and special pays, an omission that could produce a downward bias.

The analysis also indicates that higher-quality GS personnel are generally promoted faster. Those who get more top ratings in their supervisor appraisals are promoted in fewer months than those who get lower ratings. Furthermore, the higher the supervisor rating, the faster the estimated promotion speed. Those with any college education are also promoted faster than those with no college education, although having more education than a bachelor’s degree does not always translate into faster promotion.

The analysis of retention in the DoD civil service produces less clear-cut results, especially for the FY92 cohort. The results on retention of higher-quality personnel depend on the measure of quality used, on whether promotion speed is included in the model, and on the cohort. For the FY88 cohort, the analysis indicates that those who had better supervisor ratings and who were promoted faster stayed longer in the DoD. That is, those who were better matched to the civil service, as captured by their supervisor rating and promotion speed, had a stronger incentive to stay than to leave. However, when personnel quality is measured in terms of entry education, those in the FY88 cohort with at least a bachelor’s degree were found to have had poorer retention, although the estimated effects are not always statistically significant and may be biased due to measurement error. Thus, for the FY88 cohort, the internal opportunities for those with
advanced degrees do not appear to have provided a sufficiently strong incentive to stay longer in the DoD civil service.

The results for entry education and supervisor rating differ somewhat for the two cohorts. Some evidence is found that, unlike the members of the FY88 cohort, those with any college in the FY92 cohort stayed longer in the DoD, although the evidence is not overwhelming because the results are statistically significant only for those with a bachelor’s degree or less, not for those with more education. Thus, for the FY92 cohort, internal incentives to stay in service appear to have been stronger than the incentives to leave for those with an associate’s or bachelor’s degree, but not necessarily for those with a masters degree or a doctorate. The evidence also does not suggest that those in the FY92 cohort who got better supervisor ratings stayed longer, although there is some indication that some of the better performers, particularly those who received a rating of 2 (the second-highest score), had poorer retention than those who had the lowest ratings.

The estimated retention effects of the final measure of quality, promotion speed, are relatively large and statistically significant for the FY92 cohort. Those who were promoted faster are estimated to have had significantly better retention. However, the magnitude of the estimated effects is likely to be biased for both the FY92 and FY88 cohorts because promotion speed and retention may be jointly determined, and the mechanism that jointly determines them is not incorporated in the model.

The analysis of retention in the DoD civil service provides some evidence, although it is not overwhelming, that higher-quality personnel stay longer, especially when quality is measured in terms of having faster promotions and, to some extent, in terms of having better supervisor ratings. This is especially true for the FY88 cohort, which represents the status quo prior to the commencement of the huge DoD downsizing that occurred in the 1990s. But the analysis also suggests that those with the most education—masters degrees or doctorates—do not necessarily seem to stay longer in the DoD.

The regression results for the two cohorts also give some indication of the degree to which promotion, pay, and retention vary among DoD civil service personnel. The analysis, although primarily
descriptive, indicates that these profiles vary considerably across occupational areas, even after other observed individual and job characteristics are accounted for. Entry pay and pay growth differ considerably across occupational areas, as do promotion speed and retention. These results suggest that careers vary significantly across occupational areas despite the common pay table that serves all GS personnel in all occupations. They also suggest that personnel managers may have more flexibility in varying the pay of personnel in different occupations than the common pay table would lead one to expect, because promotion speed can vary considerably.

On the other hand, just because promotion speed can operate to provide pay raises, it is not clear this is the best or most efficient means of raising pay. If personnel are well-suited for their current job but are unsuited for higher-ranking positions, promoting them in order to give them a sizable pay raise may not be an efficient policy. It might be more efficient to enable personnel managers to give sizable pay raises without promotions, abstracting from current personnel policy such as the classification system. Whether such a policy would in fact be more efficient depends on the extent to which performance across ranks is positively or negatively correlated. Those who perform well in the lower ranks of the civil service may also be the best performers in the upper ranks. Thus, promotion as a means of providing pay raises may be a sensible policy. The efficiency of the policy also depends on the incentives of the managers to identify and give sizable raises only to those with the best performance. Since civil service managers are not profit maximizers or residual claimants the way private-sector owners are, they may even elect to give everyone, regardless of quality, large pay raises as a means of maintaining a happy workforce.

Identifying the most efficient set of compensation and personnel policies to ensure that better performers and higher-quality personnel are paid more is beyond the scope of this analysis. The analysis does suggest that current policies generally operate to pay and promote better GS workers, but these policies may not be sufficient to retain them, especially those with the most education. Another analysis that uses the same data (Gibbs, forthcoming) indicates that better-educated scientists and engineers in the DoD laboratories have higher retention. Thus, the poorer retention of those with more edu-
cation, particularly those with advanced degrees, must occur in nonlaboratory settings and in other occupations.

AREAS FOR FUTURE RESEARCH

Although this analysis provides some answers, other questions remain. Therefore, future research might consider addressing the following questions:

- To what extent does promotion speed identify better performers? Promotion speed is determined in part by vacancy rates or, more generally, by requirements for personnel in the upper ranks. This analysis does not address the extent to which promotion speed reflects differential vacancy rates, although account is taken of occupation, region, and other factors that might determine those rates. Because vacancy rates can vary within occupations and among regions, future research should attempt to take better account of the role of vacancy rates in determining the speed of promotion of higher-quality personnel.

- Is the retention of higher-quality personnel sufficient to meet current and future personnel requirements? Although some (not overwhelming) evidence was found to indicate that higher-quality personnel stay longer, whether this retention is sufficient to meet existing and future requirements is still an open question. Future research should examine whether the supply of higher-quality personnel is sufficient.

- Are better measures of personnel quality available? Such measures might include test scores and explicit measures of productivity. Future research should attempt to refine the measures of personnel quality.

- To what extent do higher-quality personnel defer retirement? This analysis focused on retention of new and midcareer personnel. As the civil service workforce ages, along with the rest of the baby boom generation, a greater fraction of that workforce will be near retirement age. Analysis should be conducted on whether higher-quality personnel choose to retire later or earlier than lower-quality personnel. That is, future analysis should address the separation decisions of older personnel.
Do bonuses and special pays provide effective inducements for higher-quality personnel to stay in the DoD civil service? Available evidence indicates that bonuses are effective in improving retention in specific occupations and geographical areas (U.S. Office of Personnel Management, 1999). However, it is not known whether they are differentially more effective for higher-quality than for lower-quality personnel.

More generally, greater use should be made of available data on civil service personnel and on the dataset constructed for this analysis. As more is understood about civil service careers, more equitable and more cost-effective compensation and personnel policies can be put in place to manage the federal civil service workforce.