

Avenues of Attainment: Occupational Demography and Organizational Careers in the California Civil Service¹

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This article outlines a comprehensive approach to analyzing organizational career inequality, emphasizing interdependencies among multiple avenues of attainment: job shifts and lateral moves, within and between organizations; changes in salary and salary ceilings associated with job shifts; and within-job salary advancement. Hypotheses regarding how occupational sex and race composition affect these career outcomes are tested with data describing work histories of California state government employees. Although female- and minority-dominated occupations were disadvantaged in many respects, their incumbents moved among state agencies more frequently (and reaped greater economic benefit) than did employees in occupations dominated by white males. Intraorganizational promotions yielded roughly comparable salary gains for incumbents of male- and female-dominated occupations, but through distinct paths: male-dominated occupations had less frequent promotions with larger salary increases; female-dominated occupations experienced more frequent job shifts with smaller pay changes. Men in female-dominated occupations were shielded from many of the adverse career outcomes experienced by their female counterparts.

INTRODUCTION

Recent assaults on affirmative action initiatives in organizations have rekindled debate about the magnitude, trends, and causes of gender and

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racial inequality in the U.S. labor market. Several studies of aggregate data suggest diminished labor market inequality by sex and race, noting reductions in occupational segregation, a narrowing of wage differentials, improvements in the education and training of previously disadvantaged groups, and some evidence that women working in female-dominated occupations are able to move out of those positions rather than being confined to a series of “women’s jobs” (Leonard 1984; DiPrete and Grusky 1990; Williams and Jaynes 1989; Reskin 1993; Jacobs 1989; Fosu 1992; Scott and Burchell 1994). Other studies conclude that prospects for women and people of color have actually stagnated or even deteriorated recently, reflecting glass ceilings, occupational resegregation and stereotyping, unequal effects of downsizings, and reduced enforcement of government antidiscrimination programs (Cancio, Evans, and Maume 1996; Uri and Mixon 1992; Burstein 1994; Roos and Reskin 1992).

The scholarly literature has, for the most part, been content to make inferences about these issues based on aggregate labor force data, rather than examining directly how opportunities and attainments within organizations vary as a function of race, gender, and the demographic composition of work roles. Frequent reference is made, for instance, to organizational “glass ceilings” that limit advancement prospects for members of particular demographic groups, but few studies have operationalized that construct in research on organizational careers. Yet the theoretical and methodological orthodoxies that dominate current labor market research may limit our understanding of how contemporary organizations have shaped the distribution of career opportunities for historically disadvantaged groups of workers. Models, methods, and data sets that are well suited to analyzing inequality within the labor market as a whole can obscure aspects of inequality within organizations that have important implications for both scholarly and public policy debates. In particular, we believe past research has generally been inattentive to (a) the multiple, interrelated dimensions of career attainment that organizations can influence; (b) the diverse career strategies (including transfers and across-organization moves) that individuals can employ and how these might vary among different groups within the labor force; and (c) how characteristics of individuals interact with characteristics of jobs and

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organizational structure, particularly over time, to shape career outcomes (see also Rosenfeld 1992; Petersen and Morgan 1995).

Accordingly, this article outlines an approach to studying organizational career inequality that can provide more fine-grained insights than existing studies. Our approach identifies the multiple, interrelated avenues of attainment within and between organizational units that are available to employees, as well as the career ceilings that individuals face at a given point in time. We illustrate the advantages of this approach by focusing on the question of whether work roles dominated by women or people of color are disadvantaged in the career opportunities available to their incumbents, relative to jobs staffed disproportionately by white men. We develop hypotheses and statistical models that illuminate the effects of occupational demography (sex and race composition) on job shifts and lateral moves (both within and between organizations); changes in salary and salary ceilings associated with job shifts; and prospects for within-job salary advancement. In addition, we examine the interrelationships among these different facets of career attainment. Our hypotheses are tested on a rich data archive containing detailed work histories from the 1970s and 1980s for thousands of civil servants employed in 32 agencies of the California state government.

Our analyses permit us to address important substantive and policy questions that prior research has not been able to tackle satisfactorily, including: Are individuals and work roles that are advantaged with respect to one facet of career advancement (e.g., opportunities for job shifts within an organization) equally advantaged with respect to other dimensions of advancement (e.g., opportunities for within-job salary growth), or are the various dimensions in some sense compensatory for one another? Are any career disadvantages associated with working in a female- or minority-dominated role equally severe for white male tokens employed in those same positions? What are the cumulative effects of particular types of career transitions? And, for which groups of workers and jobs do early career events have the most powerful and persistent effects on longer-term outcomes?

Conceptualizing Career Inequality in Organizations

Everyday discourse about organizational careers is dominated by two kinds of metaphors: allusions to *ladders* and to *travel* or *racing*. Career advancement is discussed in terms of *climbing a ladder*, *being on a fast track*, or *winning the race*, and career blockages are referred to as *glass ceilings* or *dead ends*. Although not all organizations have formally specified career ladders, we know of few work settings in which employees do not have at least some form of cognitive map describing the routes

available for advancement (the “inside tracks”), including expectations regarding the typical speeds at which individuals progress along those various routes (Lawrence 1988) and the acceptable transfer points for moving onto a different career route (Jennings 1971; Kanter 1977).

These metaphors are informative because they focus attention on important aspects of career dynamics. First, both the ladder and race metaphors imply the notion of a *ceiling* or *destination point* toward which an individual’s career is advancing. A crucial aspect of voluntary and involuntary job transitions in organizations is their potential impact on the length of the career ladder that an individual faces. Differences in the feasible career “target” at which an individual can aim at any point in the career represent an important potential dimension of inequality seldom captured in attainment research.

The ladder and race images have at least two other important implications for thinking about career dynamics. First, they suggest that it is important to model differences in the speed at which individuals are moving up the ladder or running the race (White 1970; Stewman and Konda 1983). These differences may reflect structural and individual characteristics. Some ladders, for instance, have rungs that are further apart, making the climb more difficult, and as in racing, getting off to a fast start in one’s career may provide a sustainable advantage throughout the contest (Rosenbaum 1984). Second, these metaphors highlight the potential effects of open versus closed career paths, which may vary significantly in the availability of “jumping off points” and “detours” for circumventing career blockages (Osterman 1984; Barnett and Miner 1992). Because they are not embedded in a broader model of the career structure that employees are facing, analyses of promotions and pay advancement within organizations typically must treat observed job changes that do not raise pay (lateral transfers and demotions) as anomalies. But with information on the employee’s subsequent career and on how opportunity is structured within the organization, we might instead come to view such job transitions as deliberate strategic maneuvers by employees to raise their long-term career ceiling, even if at a short-term cost. Similarly, because few studies simultaneously model the determinants and consequences of moves both within and between organizational units, it is difficult to determine whether and when individuals facing career blockages are able to exploit opportunities in other organizations by changing work settings.

This discussion suggests the following dimensions of organizational career attainment that impinge upon employees’ eventual economic outcomes: (1) opportunities for upward mobility through job changes within one’s current organization; (2) opportunities for upward mobility by changing organizational units; (3) opportunities for lateral mobility (within or between organizations), which might provide longer-term career ben-

efits; (4) the rate at which individuals advance toward the “pay ceiling”;² and (5) changes in salary and the pay ceiling of one’s job resulting from job shifts within or between organizations. These are the five discrete avenues of organizational attainment investigated in this study. Specifically, we examine differences by sex, race, and occupational demography in each of these facets of attainment and in the pay or promotion returns to various individual and job characteristics.

The following section briefly reviews prior research and theoretical perspectives that bear on these dimensions of organizational attainment. In particular, we consider how and why each dimension might depend on a person’s sex, race, and the gender and racial composition of jobs. We then consider the implications of these ideas for our empirical examination of career histories within California state government agencies.

Occupational Demography and Career Outcomes in Organizations

Mobility within Organizations

Human capital theorists attribute differences in promotions and wage attainment by sex, race, and jobs demography to variations in skills, training, ability, and labor force attachment among groups in the labor market. They argue that women, anticipating familial responsibilities, often migrate toward occupations that involve general human capital, in which skills do not atrophy with disuse. Occupations requiring only general human capital allow for frequent movement into and out of the labor force. This process serves to crowd women into specific occupations, which both lowers their overall market value (due to an abundance of labor supply relative to demand) and reduces opportunities for promotions within job ladders, which tend to be defined by gradients of firm-specific skill (Bergmann 1986). Crowding also reduces opportunities for wage growth over time, in contrast to male-dominated occupations where “learning by doing” is more prevalent and rewarded through wage increases.

This economic account has had only mixed results in its liaisons with empirical data. For instance, Nakamura and Nakamura (1989) used Census data to relate area-specific occupational wages to measures of relevant labor supply and demand. Although they found crowding effects in some

² By “pay ceiling” we mean the maximum wage available in a given job title. Our data set includes information on the posted minimum and maximum pay rates permissible at any point in time within every civil service job title. This permits us to characterize the salary target level toward which each employee’s career is presumably adjusting at any point in time. Therefore, we are able to model pay changes employing a partial adjustment-style framework.

cases, the pattern of effects was far from systematic. They found “no evidence of crowding effects for working women who have at least 12 years of education, or who have no children, or who are not black, or who were already working five years earlier . . . [or who work] in managerial, health, and professional/technical occupations” (Nakamura and Nakamura 1989, p. 85). In addition, despite the fact that there is much less occupational crowding by race than by sex, race composition appears to exhibit similar (albeit weaker) effects on promotions and wage growth as those documented for sex composition, advantaging incumbents of occupations dominated by whites (e.g., Sorenson 1989; but see Reid 1998). Moreover, although detailed controls for job content, organizational context, and worker endowments attenuate some of the impact of job demography on pay, the effects generally persist, contrary to the predictions of human capital theory (England et al. 1988; Parcel 1989; Huffman and Velasco 1997; but see Tam 1997). Studies of the California civil service system have also shown that *prescribed pay rates* (i.e., officially posted pay ranges, as opposed to the average pay actually received by incumbents) fluctuate over time in response to the sex and race composition of incumbents (Baron and Newman 1990). This suggests that the social composition of the individuals doing work is taken into account in ascribing values to jobs (Conk 1978; Bridges and Nelson 1989).

These results have led some scholars to posit a general devaluation of work done primarily by women or people of color. Although the notion of devaluation has typically been invoked to explain how occupational demography affects wage rates, the same logic should have implications for demographic effects on other aspects of attainment—salary targets, the rate of advancement toward a given salary target, mobility chances, and the salary consequences of job changes. If work done by women and people of color is devalued, then workers in female- and minority-dominated occupations should confront lower rates of advancement along each of the dimensions of attainment than do otherwise-equivalent workers in jobs dominated by whites and males. Such a prediction would also be consistent with the queuing explanations for gender segregation and wage inequality that posit a hierarchy of jobs and a queue of workers, with good jobs being reserved for men and whites (Roos and Reskin 1992; Rich 1995).

Numerous studies have documented that promotion prospects for men and whites are superior to those of women and people of color. These patterns have even been observed in civil service systems, even though these are widely viewed as egalitarian work settings (Daley 1996; Naff 1994; Tokunaga and Graham 1996). Fewer studies have examined the effects of occupational sex and race composition on career structures and dynamics, but the extant evidence seems broadly consistent with the de-

valuation and queuing perspectives. For instance, previous research suggests that the segregation of jobs by race and (especially) by sex also corresponds to a segregation of promotion opportunities, with female- and minority-dominated jobs being less likely to be connected through promotion ladders to higher-level positions (Daley 1996); being concentrated in shorter ladders with lower ceilings (Baron, Davis-Blake, and Bielby 1986; DiPrete and Soule 1988); conferring fewer economic benefits from changing jobs than are garnered by incumbents of jobs dominated by white males (Williams and Villemez 1993); and providing lower rates of wage growth within jobs (England et al. 1988; Sorenson 1989; Parcel 1989). Such results are hard to square with human capital and market-based crowding arguments.

Together, these arguments suggest that *individuals in occupations with a high proportion of women or people of color will experience lower rates of mobility and salary advancement within their organization*. Beyond these main effects of occupational demography, however, it is particularly informative to compare male (or white) tokens against others working in female- or minority-dominated work roles. Some previous studies have attributed demographic inequalities to patterns of career interdependence within organizations, arguing that members of advantaged groups benefit by virtue of being surrounded by disadvantaged others, who represent weaker competitors for valued career outcomes (Barnett and Miner 1992; Stovel, Savage, and Bearman 1996). This thesis is provocative because, if men in female-dominated jobs fare better than their female counterparts, it is difficult to attribute gender inequality to something inherent in the types of work roles that are female dominated, as human capital economists have done. Instead, such a pattern would imply that males and whites received preferential treatment on the part of supervisors.³ Preferential treatment is consistent with the similarity-attraction paradigm from social psychology, which suggests that supervisors are likely to favor those with whom they are most similar (Baron and Pfeffer 1994). Because white males often monopolize positions of authority within organizations, supervisors may tend to favor men, whites, and those in male- and white-dominated occupations in assigning promotions.⁴ Experimental studies

³ Of course, superior attainment by male tokens relative to their female counterparts could reflect differences in employee preferences, commitment, and other attributes relating to labor supply. Although we have no direct measures of such attributes, our analyses below include extensive controls for employment history, which are likely to capture any effects of differential labor supply.

⁴ In 1985, women were underrepresented in the supervisory ranks in all major job families in our data from the California civil service, relative to their presence in each job family overall, except for clerical and custodial jobs. For instance, 40% of non-supervisory professionals were female, but only 18% of supervisory professionals; sim-

suggest that even minority group members tend to view majority group members as more deserving (Major, McFarlin, and Gagnon 1984), so even supervisors who are not white or male may evidence this tendency.

Consistent with these ideas, past research has found that male tokens in female-dominated occupations receive favorable treatment. For instance, in a study of a diversified industrial and consumer products firm, Gerhart and Milkovich (1989) found that the percentage of females in the job had no main effect on salary growth or promotions among women, but men's salary growth and promotion chances actually *increased* with the percentage female in their job (also see Williams 1992). Accordingly, beyond the main effects of individual race and gender and of job demography, we expect that *the effect of occupational sex composition varies by sex, with any negative (positive) effects of being in a female-dominated occupation on mobility or salary advancement being smaller (larger) for men than for their female counterparts.*

Moving between Agencies

To gauge whether occupational demography affects access to avenues of attainment requires modeling career moves both within and between enterprises. Using the 1973 Current Population Survey and a coarse classification of occupations based on gender composition, Rosenfeld (1983) found no evidence that the sex-type of an occupation predicted either the incidence of job shifts across employers or the wage impact of those shifts. However, she notes that more fine-grained measures of occupational demography might yield different results and that the effect of occupational sex-type might not appear until later in workers' careers, rather than instantaneously upon shifting employers. According to Rosenfeld, "this suggests the need to trace the wage profiles of those with different patterns of job typicality" (1983, p. 653), precisely the sort of analyses we report here. Although the organizational units examined in our study—different agencies of the California state government—are not independent employers, they are quite distinct in many respects (see below). The "inter-organizational moves" we analyze are perhaps best thought of as intermediate, between, say, divisional transfers within a large multidivisional employer and job shifts between completely independent employers.

Different perspectives on careers inspire competing predictions about how the incidence and consequences of moves across organizational units

ilarly, 42% of field representatives were women, but only 22% of supervisory field representatives. Less pronounced patterns are evident with respect to race composition. For instance, nonwhites represented 43% of clerical employees, 39% of subprofessional/technical workers, and 36% of field representatives in 1985, but only 29%, 24%, and 22% of supervisory workers, respectively.

vary by sex, race, and as a function of job demography. A first consideration is whether interorganizational moves are beneficial or detrimental, relative to intraorganizational moves. Some interorganizational moves are lateral (i.e., without a change in job title or characteristics), whereas others coincide with a change in job classification. Among the latter, some moves result directly in pay increases. However, based on past research and specific features of the setting we examine, there are reasons to predict that moves across organizational boundaries are less advantageous than those that occur within a given organization. Wilk and Craig (1998) argue that intraorganizational mobility leverages superior information about the employee, resulting in stronger person-job matching than occurs when job changes span organizational boundaries. Analyzing data from the National Longitudinal Survey of Youth, they report evidence consistent with this prediction, assessing person-job matches based on how closely the individuals' measured cognitive ability corresponded to the cognitive complexity required by the work role. This suggests that intraorganizational moves are more beneficial for employee careers than movements across organizations.

Economic and sociological perspectives suggest several other liabilities of interorganizational mobility. For example, human capital theory suggests that women (and possibly nonwhites) are concentrated in work roles that involve general rather than organization-specific human capital. If so, we may observe higher rates of lateral movement across organizations among women, nonwhites, and from work roles heavily populated with women and nonwhites. If the skills involved in performing these jobs are truly general, however, then there is no reason to expect such lateral moves to confer economic advantages. Consistent with that expectation, Brett and Stroh (1997) found that only male managers benefited (in terms of compensation) from moving among firms, whereas their female counterparts did not. Indeed, one might predict that those who frequently move between organizations experience diminished chances for internal promotions and wage growth in the future by virtue of their migratory work histories.

Within the particular context we examine, the California civil service, there are other reasons to expect that moves across organizational units are less advantageous than moves that take place within a given agency or bureau. In addition to the standard risks confronted by any worker who moves to a new organization, state civil servants presumably risk obsolescence of "political capital" when they transfer to a different state agency. Unlike a corporate context, in which transferring to a new division may entail high risk but also large potential rewards (e.g., if the division's new product is successful), in the civil service context, it seems likely that the risks dwarf the possible returns. Having to forge a new set of political

alliances and master a new set of institutional constraints puts the transferee at a significant disadvantage, as does the loss of agency-specific tenure, which may be considered in promotion decisions.

If intraorganizational moves are most advantageous, the devaluation hypothesis suggests that occupations dominated by white males are likely to monopolize such opportunities. To the extent that individuals in female- and minority-dominated jobs perceive few opportunities for upward mobility—and its attendant salary gains—within their current place of employment, they may be more likely to pursue mobility through moves across organizational units (whether lateral moves or job changes). Moreover, to the extent that workers in predominantly female and minority jobs rely primarily on general human capital to conduct their work, they may have many opportunities to move between employers without suffering from the loss of valuable, organization-specific experience.⁵ Accordingly, we predict that *interorganizational moves (lateral transfers and job shifts across agencies) are more frequent among employees in female- or minority-dominated jobs.*

Though we predict that interagency moves are less beneficial than intraorganizational moves—and will be more frequent among employees in female- and minority-dominated occupations—it is unclear which occupations should benefit most from moves across units in terms of pay and salary ceiling: those dominated by white males or those dominated by women or people of color. Hence, we do not propose a directional hypothesis regarding the effects of occupational demography on the economic returns from job moves across agency boundaries; instead, we simply examine the issue empirically.

Once again, we are likely to gain purchase on competing explanations of how occupational demography affects interorganizational mobility by considering how the rates and effects of interorganizational movement vary between men and women in female-dominated jobs. To the extent that interorganizational job changes simply represent a “revolving door,” capturing the absence of internal opportunity available in female-dominated jobs, we might expect to see *less* movement among men than among women in female-dominated jobs, because the male tokens will be advantaged in competing for attractive internal promotion opportunities relative to their female counterparts. Moreover, we certainly would not expect to see more lateral transfers among men in female-dominated oc-

⁵ Because we possess work histories for employees in 32 different California state agencies, we are able to model interorganizational mobility as civil servants make lateral moves and job changes between different state agencies. By virtue of civil service regulations that narrowly restrict involuntary transfers, the vast majority of lateral moves observed in this study can safely be assumed to be voluntary.

cupations. But if lateral moves and job changes between agencies are an avenue by which male tokens seek to escape from female-dominated work roles, then we would expect to see *a higher rate of job change across agencies, associated with greater career benefits, for men in female-dominated occupations* (see South et al. 1983, 1987). This argument suggests that there is likely to be high mobility among male tokens in female-dominated jobs precisely because male tokens are seeking to flee female-dominated positions for more sex-typical jobs with greater opportunities for advancement (Rosenfeld 1983; Williams and Villemez 1993). To test whether there is any evidence of male flight out of female-dominated jobs, we also report evidence on changes in occupational gender composition associated with men's and women's job changes within and between agencies. The "flight" hypothesis suggests that *among those in female-dominated jobs, there will be more movement toward male-dominated positions by men than by women, especially for job changes occurring across organizational boundaries*.

METHODS

Our arguments pertain to the effects of occupational demography on various career transitions and on the pay consequences of each of these mobility events. Accordingly, we break down the attainment process into individual components and model each outcome. As we describe below, our models also incorporate endogenous career history variables, enabling us to assess whether the effects of occupational demography on a particular career outcome are reinforced or compensated for by effects of demography on other avenues of attainment.

Event Models

We analyze three types of career transitions (intra-agency job changes as well as moves between different state agencies with and without job changes) in terms of the instantaneous transition rate, r , defined as:

$$rk(t) = \lim_{\Delta t \downarrow 0} \frac{\Pr(t \leq T < (t + \Delta t), D = k | T \geq t)}{\Delta t},$$

where k refers to one of three mutually exclusive destinations in D : a different job class in the same state agency, a different job class in a different agency, and the same job class in a different agency. The variable T measures the time spent at risk of making one of these possible transitions, and the probability $\Pr$ refers to the likelihood of experiencing one of these transitions during the small interval from t to $(t + \Delta t)$, conditional

on an employee being at risk of making a transition as of time t (Tuma and Hannan 1984).

We model the hazards of the three events as competing risks, using the approach described by Kalbfleisch and Prentice (1980). Spells that end in other kinds of events—such as exiting the civil service, taking maternity leave, or moving from a full- to a part-time job—were included in the data, and the hazards of these events, although not estimated, were also treated as competing risks. Note that the events we study are repeatable, so an individual did not leave the risk set after experiencing one of the three transitions; instead, an employee's waiting time was reset to zero following the occurrence of any modeled event (Kalbfleisch and Prentice 1980).

We specify each rate as varying according to the piecewise-exponential functional form:

$$r_k(t) = \exp[\gamma_p + \mathbf{B}'\mathbf{X}_t],$$

where γ_p includes 11 duration-period effects, $\mathbf{X}_t$ includes independent variables that are allowed to vary over time, and $\mathbf{B}$ are the parameters to be estimated. We adopt the piecewise specification of duration dependence because of its flexibility: it permits the rate to vary with duration without requiring strong parametric assumptions. In defining the duration periods, one must strike a balance between precision, which is improved by specifying short periods, and the requirement that each period be sufficiently long to include enough events for estimation. We defined the periods as follows: less than 2 weeks; 2 weeks to 1 month; 1–3 months; 3–6 months; 6 months to 1 year; 1–2 years; 2–3 years; 3–4 years; 4–5 years; 5–6 years; 6 years or greater (with an observed maximum of 9.31 years). The transition rate models were estimated using TDA (Blossfeld and Rohwer 1995).

Salary and Ceiling Change Models

We model the magnitude of salary and salary ceiling changes, conditional on a job class change, as a power function:

$$S_{t_1} = S_{t_0}^\alpha \exp(\Phi' \mathbf{Z}_{t_0}) \mu,$$

where S refers either to salary or salary ceiling,⁶ $\mathbf{Z}_{t_0}$ are covariates, which we discuss below, α and the vector Φ are parameters to be estimated, and μ is an error term. This form allows salary and salary ceilings to follow

⁶ Salary and salary ceiling refer, respectively, to an employee's monthly pay level and to the maximum monthly pay prescribed for an employee's job title.

a skewed distribution. When expressed in terms of the natural logarithm, this specification becomes linear in the parameters:

$$\log(S_{t_1}) = \alpha[\log(S_{t_0})] + \Phi'Z_{t_0} + \varepsilon,$$

where $\varepsilon = \log(\mu)$.

We estimated the transformed model using a generalized least squares (GLS) specification that allows for person-specific random effects. Standard error estimates were obtained using White's (1980) method, which is robust to heteroscedasticity. This approach yields unbiased and efficient estimates of the model under the assumption that the magnitudes of salary and ceiling changes are independent of the transition rates (Petersen 1988).

Intrajob Salary Change Model

We analyze intrajob salary change using the stochastic differential equation model developed by Blossfeld, Hannan, and Schömann (1988, 1989; Hannan, Schömann, and Blossfeld 1990). Their model is appropriate for analyzing change in a continuous dependent variable, such as pay, when observation spells are of unequal lengths, as are job spells in our data. Their model allows the salary change rate to vary as a function of job duration and independent variables measured at the start of a job spell, requiring only that salary be measured at the start and end of each spell (or as of the point of right censoring). This approach was appropriate for our data, because our independent variables change little or not at all within each job spell, and there is thus little to gain from modeling the exact time path of salary changes within spells.

The model depicts salary change as varying with job duration t and being proportionate to the salary level S_t :

$$\frac{dS_t}{dt} = \lambda_t S_t.$$

The rate of salary change is allowed to vary as a linear function of job duration, the other independent variables, and a disturbance term $v(t)$, which is assumed to be a random white noise process with a mean of 0:

$$\lambda_t = a + \mathbf{G}'\mathbf{X}_{t_0} + ct + v(t).$$

Note that we include in $\mathbf{X}$ the salary level at the start of a given job, so that the rate of salary change varies explicitly with salary level. Substituting this expression for λ^t in the differential equation and integrating, the model becomes:

$$\log \left[\frac{S_t}{S_{t_0}} \right] = a\Delta t + \mathbf{G}'\mathbf{X}_{t_0}\Delta t + \frac{c}{2}(\Delta t)^2 + w(\Delta t),$$

where $\Delta t = t - t_0$ and the disturbance, $w(\Delta t)$, is the time integral of $v(t)$, which by assumption is normally distributed with mean equal to 0 and variance equal to $\theta^2\Delta t$. Multiplying both sides of this equation by $1/(\Delta t)^{1/2}$, we obtain:

$$\frac{\log \frac{S_t}{S_{t_0}}}{\sqrt{\Delta t}} = a\sqrt{\Delta t} + \mathbf{G}'\mathbf{X}_{t_0}\sqrt{\Delta t} + m(\Delta t)^{3/2} + w\sqrt{\Delta t},$$

where $m = (c/2)$.

The error term in this transformed equation is homoscedastic by assumption. In case this assumption does not hold, we estimate the transformed equation using GLS with person-specific random effects and White's (1980) robust standard errors.⁷

DATA

We model the various facets of organizational attainment using a sample of career histories from the California State Civil Service. (The sample is discussed in the appendix.) The data, described in table 1, include 80,148 job spells experienced by 40,134 full-time, active employees as they moved within and among some 32 different state agencies between 1979 and 1985. As noted in the appendix, employment history information is left-censored for people entering the California civil service before 1975 (when the state began automating their personnel files), so we omit those individuals from our analyses to avoid the statistical problems that accompany left-censoring (Tuma and Hannan 1984). Note that this sample restriction will eliminate the employees with the longest civil service tenure and therefore will produce a sample skewed toward more recently hired employees. This, in turn, should have a conservative effect on our estimates of career inequality for several reasons: (a) employees are known to do considerable job-hopping early in their careers, which may add noise to our data; (b) the pay and promotion advantages associated with being in a white male-dominated occupation are likely to be cumulative over the course of careers; and (c) after 1975, California undertook various initiatives aimed at redressing gender and race inequality within state govern-

⁷ We obtain estimates using only job spells lasting four months or longer. Spells of less than four months were omitted because we suspect that salary changes observed so soon after beginning a job assignment reflect anomalous processes, and their inclusion in the analysis would represent conspicuous outliers in the annualized (transformed) model.

TABLE 1
DESCRIPTIVE STATISTICS: POOLED CAREER HISTORIES OF A SAMPLE OF CALIFORNIA
CIVIL SERVANTS, 1979–85

Variable (metric)	Min	Max	Mean	SD
Monthly salary before change (1985 \$)	501.72	3,677.80	1,077.41	338.62
Log monthly salary before change (1985 \$)	6.218	8.210	6.940	.286
Monthly salary above prescribed ceiling (1985 \$)	0	564.00	4.78	22.07
Log of monthly salary above prescribed ceiling (1985 \$)	0	6.337	.260	1.025
Pay ceiling in current job	560.88	3,677.80	1,222.18	381.64
Log of pay ceiling in current job	6.330	8.210	7.066	.285
<i>N</i> of full-time employees in detailed occupational group	1	8,427	2,327	2,649
Log <i>N</i> of full-time employees in detailed occupational group	0	9.039	6.545	1.929
Salary grades in job	1	20	3.364	2.884
Time in same job class prior to last agency change	0	9.312	.082	.470
Time in same agency prior to last job class change	0	10.021	.937	1.554
Initial salary in civil service (1985 \$)	148.58	3,519.83	857.75	314.06
Log of initial salary in civil service (1985 \$)	5.001	8.166	6.695	.343
<i>N</i> of previous job class changes into classes where employee has worked before	0	16	.080	.425
<i>N</i> of previous job class changes into classes new to employee	0	10	1.082	1.288
<i>N</i> of previous agency changes	0	11	.341	.800
<i>N</i> of limited-term jobs held	0	9	.313	.536
Cumulative time separated from previous jobs	0	9.343	.190	.662
Time separated from current job	0	5.854	.039	.174
Male × cumulative time separated from previous jobs	0	9.343	.085	.472
Male × time separated from current job	0	5.854	.016	.115
Tenure in civil service (years)	0	10.109	2.963	2.261
Age	17.333	74.249	33.673	9.083
(Age) ² /100	3.004	55.129	12.164	7.165
Proportion white female in detailed occupational group	0	1	.261	.254
Proportion male “other minority”* in detailed occupational group	0	1	.133	.123
Proportion female “other minority”* in detailed occupational group	0	1	.094	.090

TABLE 1 (*Continued*)

Variable (metric)	Min	Max	Mean	SD
Proportion male Asian in detailed occupational group	0	1	.043	.054
Proportion female Asian in detailed occupational group	0	1	.036	.048
Male $\times$ proportion female in detailed occupational group	0	1	.107	.191

SOURCE.—California civil service records. Data include 80,148 job spells for 40,134 individuals.

* “Other minority” category consists of non-Asian, nonwhite (almost exclusively Hispanics and African-Americans).

ment, so our sample contains a disproportionate number of employees who entered the civil service after those antidiscrimination efforts commenced.

To summarize, the event models analyze the rate of three transitions: (a) job class changes (each unique civil service job title is known as a job “class”) within the same agency, (b) job class changes accompanied by movement to a new agency, and (c) lateral transfers, or changes in agency without a change in job title. We also model how job changes affect two aspects of pay: monthly salary and the monthly prescribed salary ceiling for the employee’s job title. Finally, we estimate models of the salary growth experienced by workers *within* their job classes. All salary variables were converted to the equivalent of 1985 civil service dollars, based upon the average annual civil service cost-of-living adjustments granted during the study period.

Independent Variables

With few exceptions, the independent variables are common to the event models and the salary change models. In the event models, all covariates are measured at the start of each job spell. This means that independent variables pertaining to characteristics of a job or occupation are measured for the job from which an employee is moving (the origin job).

Occupational demography.—The demography variables characterize the gender and race/ethnic composition of the occupational specialty of each employee’s origin job. Specifically, we measure the proportion of full-time workers in each employee’s detailed occupational group in the same state agency who are white females, Asian males, Asian females, minority (non-Asian) males, and minority (non-Asian) females; the omitted variable reflects the proportion of incumbents who are white males. All models also include an interaction between a gender dummy variable (1 = male) and the proportion of females in the employee’s detailed occu-

pational group, to explore the mobility and attainment effects of being a male in a female-dominated job.⁸

We obtained a database from the California State Personnel Board containing quarterly information on the gender and racial composition of every civil service job title in each state agency between 1979 and 1985. This was used to compute demography measures that were merged onto each employment spell in our analyses, using the quarter prior to the start of a given spell to characterize occupational demography for that spell. Our measures of occupational demography are based on the gender and ethnic composition of detailed occupational groups (rather than job titles) in agencies because small numbers of incumbents within a job title can produce misleading results, particularly given the large number of single-person job classes within the civil service. We used the most detailed occupational classification that the state itself employs in grouping job titles into families: 281 "schematic classes." For instance, within the major occupational category "office and allied services," the state's classification scheme distinguishes more specific sets of roles, such as "general," "typing," "stenography and secretarial," "personnel-clerical," and "machine operations." Within the latter category, the state distinguishes among "key data," "mailing," "microfilm," "duplication," and "general office." It is at this detailed level that we have characterized the gender and ethnic composition of occupations within each state agency. We based our demography measures on the gender and ethnic composition of each detailed occupation within the employee's agency, rather than throughout the civil service as a whole. This allows us to differentiate the effects of demography on job changes within versus between agencies; furthermore, occupational demography is known to vary significantly across organizational contexts (Bielby and Baron 1984; Petersen and Morgan 1995).

Control variables.—Human capital theory and devaluation arguments have distinct implications for the control variables to be included in our analyses. The human capital account implies that observed differences by sex, race, or occupational demography in promotion and transfer rates and in intrajob wage growth should be reduced significantly or eliminated after controlling for past job and wage history, age, family status, and employment continuity. These latter variables should capture an individual's past investments in general and specific human capital, prior

⁸ In supplementary analyses (available on request), we also included interactions between race and race composition (white/nonwhite $\times$ %nonwhite in the occupation). However, as noted below, these effects tended to be neither statistically significant nor to exhibit any systematic pattern, and therefore we eliminated these interactions from the results reported in the tables.

achievements, and current constraints that might bear on returns from human capital.

The devaluation account suggests that effects of occupational demography on promotion prospects and wage growth may largely reflect structural features of job and job ladders that influence opportunities to change jobs and to garner pay increases within a job. These characteristics include lower salary targets and fewer pay gradations in work roles dominated by women and nonwhites, a tendency for job titles done by white males to have fewer incumbents (Strang and Baron 1990), and a tendency for women and nonwhites to be concentrated in generic job classifications that span multiple organizations.

Fortunately, we are able to control for these attributes, as well as several other individual and job-level characteristics, thereby reducing the chances that any observed effects of gender, ethnicity, or job demography on attainment are spurious. Our statistical models control for the following individual characteristics: gender (1 = male); self-reported ethnicity (one variable denoting Asians, another denoting whites, with the omitted category representing non-Asian minorities); marital status (1 = unmarried); age (in years) at the beginning of each spell (as well as a quadratic age term); tenure (years of cumulative civil service employment as of the start of the spell); and duration in the current job.

To capture other possible sources of heterogeneity among employees and their career histories, our analyses include several occurrence dependence measures (Heckman and Borjas 1980). All models control for the number of job changes each employee had experienced in the civil service prior to the current spell. Because it is possible for civil servants to be reassigned to a different position for short periods of time (for instance, to fill in for a supervisor or coworker who is temporarily away from work), we include two separate measures of prior job changes: (1) number of repeated job changes (moves into classes in which the employee has previously worked) and (2) number of past distinct jobs (changes into job titles that were new to the employee). This allows us to distinguish individuals cycling repeatedly into and out of a few job classes from those who progress through a series of different jobs. Our models also control for the total number of prior agency changes in each employee's civil service career history before the start of the current spell. An additional endogenous count is the total number of "limited-term" jobs held in the civil service prior to the current spell. Limited-term jobs are usually either emergency work or employment spells with a fixed duration; such assignments might signal less labor force attachment and may provide fewer opportunities to build human capital.

We include two other controls for prior labor force continuity. First, we control for the total amount of time an employee was separated from

all previous civil service jobs (including maternity and sick leave, time off for education, and the like). Second, we control for time separated in the *current* job spell, which may bear more strongly on subsequent promotion and pay outcomes. We also interact each of these separation–time variables with employee gender to determine whether career disruptions have different effects for men and women.

Our analyses control for the number of salary grades in each employee's job class. In the civil service, job classes employing professionals typically have wider pay bands and many salary grades. Obviously, both the rate of job change and opportunities for pay advancement within a job will depend upon the number of salary gradations within a job title. The models also include the (log) number of full-time incumbents in each individual's detailed occupational group throughout the entire state civil service system. There are several reasons for expecting this variable to negatively influence job transition rates and salary increases. Very large occupations in the state civil service are likely to be service-wide work roles that involve general skills and occur across multiple state agencies, thus offering fewer opportunities for promotion. Moreover, occupations with many incumbents confront the employee with many competitors and fewer chances for molding career opportunities around idiosyncratic abilities or circumstances (Miner 1987). Therefore, we anticipate less frequent promotions and smaller salary increments associated with promotion for employees in large occupations.

The limited pay range within most civil service job classes means that highly compensated employees are more likely to need to change jobs to achieve continued salary growth. Moreover, because highly compensated employees are closer to their job-specific salary ceilings, intrajob salary growth is likely to be slower. To control for current-job salary potential, we include both the natural log of lagged salary and lagged salary ceiling as independent variables. Holding the salary ceiling constant, a higher salary indicates smaller potential for additional salary growth within a job. Conversely, with salary level controlled, a lower salary ceiling also means more limited salary growth potential. We expect that when an individual's intrajob salary potential is limited (due either to a relatively high salary or low ceiling), job changes are more likely to be pursued and granted. By contrast, if there is ample potential for salary advancement within the job, then job changes for the purpose of wage attainment are less likely and career moves are more likely to be limited to lateral changes within the same job class.⁹

⁹ In our models of intrajob salary growth, we include an additional control for whether a given spell represents the employee's first job within the civil service, to control for any differences in opportunities for salary growth between entry-level jobs versus higher-level positions in state government.

A small number of civil servants receive compensation in excess of the prescribed maximum for their job class. Accordingly, we include the (logged) amount of such compensation (\$1 is added to this variable to handle the cases in which the unlogged quantity is “0”). Individuals receiving such premium compensation have “maxed out” within their existing job. However, they were also unable to secure a promotion before surpassing the prescribed pay cap, suggesting they may have become trapped within their current jobs.

The full model in each table includes a vector of 19 job-family dummy variables, which distinguish among the major job families within the civil service system.¹⁰ The omitted job family is nonsupervisory clerical jobs. (The full models of within-job salary change include separate initial rates of salary growth for each of the 20 job families.) Including these job-family controls renders our results quite conservative because the parameter estimates reflect effects *within* job families. By holding constant the major types of work roles encountered in the civil service, we ensure that any effects of ascriptive characteristics, job demography, or other job attributes are not confounded by variation in types of job tasks.

One limitation of the database we analyze is that it does not provide information on two standard measures of human capital: years of education and total labor force experience. However, because California’s civil service system is highly rationalized, education and experience requirements are tightly linked to the prescribed pay rates assigned to particular jobs. Indeed, differences in the formal educational and experience requirements listed in job descriptions accounted for 84% of the total variation in the 1985 posted starting pay rates of civil servants’ jobs (Baron and Newman 1989, table 5-3). Therefore, we effectively are able to control for (pre-civil service) differences in education and labor force experience simply by knowing the characteristics of the specific civil service job classification in which individuals were initially employed. Accordingly, we control for an employee’s *initial* pay rate in California state government, which should capture differences in education- and experience-based human capital prior to entering the civil service that might affect subsequent career outcomes. Including this control also allows us to examine whether there are path-dependent “halo” effects of the type reported in other studies (e.g., Rosenbaum 1984), whereby individuals

¹⁰ These categories are supervisory clerical, semiskilled manual, craft/trade, supervisory craft/trade, professional, supervisory professional, subprofessional/technical, supervisory subprofessional/technical, law enforcement, supervisory law enforcement, field representative, supervisory field representative, administrative staff, supervisory administrative staff, administrative line, janitorial/custodial, supervisory janitorial/custodial, laborer, and “career opportunity development” positions.

who command a higher salary upon entering the civil service advance faster and farther than others, all else being equal.

RESULTS

Table 1 presents descriptive statistics for all variables. Table 2 offers a detailed breakdown of the transition rates and salary changes we analyze. Table 2 reveals that women and people of color are generally more likely than white males to make job changes of all types, but the differences in relative rates are particularly acute with respect to shifts that involve moving across agency boundaries. However, relative to white men, women and people of color generally receive less economic benefit from every type of career transition, both in terms of pay and pay ceiling, and they receive slower rates of pay advancement within their jobs. This latter effect outweighs the former, leaving women and people of color behind in terms of pay growth: even accounting for their higher rate of job shifts, women and people of color receive smaller annual increments in pay than do white males. For instance, combining within-job pay increases with pay increases attainable by changing jobs, the typical white male civil servant averaged a monthly pay increase of \$59.22 per year of service, compared to \$50.66 for the average white female.

Supplementary analyses (not shown in table 2) reveal broadly similar results if we compare differences in career outcomes as a function of *occupational sex and race composition* (details available on request). For instance, the rate of intra-agency job change was slightly lower among civil servants whose jobs are in the upper quartile of the distribution for percentage white male relative to jobs in the bottom quartile of the distribution (.211 per person-year vs. .249). However, the latter group of jobs experienced considerably smaller monthly pay increases associated with job shifts (\$46.77, compared to \$74.94 associated with job shifts from white-male-dominated jobs). This pattern is even more marked with respect to the effects of job shifts on pay ceilings: for a civil servant in a white-male-dominated occupation, a within-agency job change was associated with an increase of \$234.03 in the monthly pay ceiling, compared to an increase of only \$100.30 for incumbents of white-female-dominated occupations. Moreover, the types of job changes that are rare among incumbents of white-male-dominated occupations—job changes across agency boundaries—also happen to be the least lucrative job transitions. Thus, the average monthly pay increase resulting from job shifts across agencies was only \$36.81 for white-male-dominated jobs and \$35.65 for jobs in which women and nonwhites were most prevalent.

Occupational Gender Composition and Patterns of Job Mobility

Before examining how occupational demography affects career outcomes, it is informative to describe patterns of movement by civil service employees among jobs that vary in their demographic composition. Specifically, we consider whether job changes tended to move employees into settings where workers of the same gender were more, less, or equally prevalent. This analysis appears in table 3, which reports the distribution of job changes according to the gender composition of the origin and destination occupations involved in each job change. Listed down the far left-hand column in each section of table 3 are categories showing the percentage of males in the occupational group from which each job change emanated (the "origin"). Across the top of each column are corresponding categories of percentage male in the "destination" occupational group for each job change. The top section of table 3 reports these results for male job changers in terms of row percentages, so that each cell indicates the percentage of job changes from a given origin category occurring into a given destination category. The bottom section reports the same information for female job changers.

Cases falling on the diagonal represent job shifts in which the (categorical) gender composition of an employee's occupation remained unchanged. Cases to the left of the diagonal represent job changes that moved employees into an occupation with a lower proportion of men, whereas cases to the right represent moves into an occupation with a greater proportion of men. Increasing homophily is implied if a greater proportion of job changes by men appear on the right of the diagonal than on the left, or, for women, if a greater proportion of job changes are to the left of the diagonal than to the right.

The table vividly demonstrates three points. First, most job changes *did not* alter an employee's occupational gender mix: 77.4% of job shifts among men and 67.8% among women were into detailed occupations in the same gender composition range. Among men, 86.8% of job title changes were no more than one step from the diagonal, indicating only modest (if any) change in occupational gender composition; for women, the corresponding figure was 83.1%.

Second, the main difference between men and women concerns movement out of occupations with highly skewed sex ratios. Among men moving out of positions with 80%–100% male incumbents, 95.2% remained in occupations within that same demographic range. However, among male job changers whose origin occupation was *female dominated* (80%–100% female), only 72.5% stayed in that same demographic range, compared to 86.3% of female job changers in female-dominated occupations. Female tokens were more likely than male tokens to remain in

TABLE 3
DISTRIBUTION OF JOB CHANGES ACCORDING TO GENDER DEMOGRAPHY OF ORIGIN AND DESTINATION OCCUPATIONS

% MALE IN ORIGIN AND DESTINATION OCCUPATION GROUP		DESTINATION OCCUPATION										N
		0%–10%	10%–20%	20%–30%	30%–40%	40%–50%	50%–60%	60%–70%	70%–80%	80%–90%	90%–100%	
Male job changers:												
0%–10%	54.24	16.27	4.41	4.07	4.75	1.02	5.42	2.71	4.07	3.05	295	
10%–20%	7.43	66.67	3.41	2.61	2.61	1.61	6.22	2.41	4.02	3.01	498	
20%–30%	5.43	8.53	37.98	4.65	3.10	3.49	7.36	10.08	8.53	10.85	258	
30%–40%	1.46	2.93	6.83	38.05	12.20	4.39	10.73	5.37	11.71	6.34	205	
40%–50%	1.96	1.68	3.08	9.24	38.10	4.76	7.56	14.01	10.92	8.68	357	
50%–60%	.37	.74	2.21	4.04	5.51	50.37	6.99	16.54	5.15	8.09	272	
60%–70%	.40	.27	.27	.94	2.29	2.83	48.11	7.55	5.66	31.67	742	
70%–80%	.57	.49	.57	.66	1.64	.82	8.11	61.07	5.82	20.25	1,220	
80%–90%	.40	.46	.53	.86	.86	.53	3.38	8.16	68.04	16.78	1,508	
90%–100%	.11	.08	.21	.11	.30	.08	.51	.92	3.19	94.50	6,306	
N	245	436	189	194	280	227	673	1,134	1,471	6,812	11,661	
Female job changers:												
0%–10%	73.07	12.91	2.78	1.66	2.37	.50	2.26	1.66	1.82	.96	4,385	
10%–20%	21.88	65.00	2.78	2.02	2.31	1.01	2.06	1.39	1.01	.55	2,377	
20%–30%	9.92	12.64	57.44	4.16	1.92	2.24	3.52	2.88	2.24	3.04	625	
30%–40%	7.92	3.96	7.26	41.25	7.92	3.63	5.28	10.56	9.57	2.64	303	
40%–50%	6.69	5.07	1.42	11.36	42.19	4.46	7.71	11.16	6.49	3.45	493	
50%–60%	1.92	3.08	2.69	5.77	5.00	57.31	4.23	11.54	3.85	4.62	260	
60%–70%	1.57	1.18	.98	2.17	1.77	3.94	59.25	7.09	7.48	14.57	508	
70%–80%	.17	.00	1.57	.70	2.61	1.57	7.49	69.51	4.53	11.85	574	
80%–90%	4.60	.74	.92	1.84	.92	.74	7.37	11.79	64.64	6.45	543	
90%–100%	.77	.77	1.33	.44	.99	.11	1.22	1.10	4.75	88.51	905	
N	3,889	2,252	614	372	454	276	630	750	647	1,089	10,973	

NOTE. —Percentages sum to 100% across columns for each row.

occupations dominated by opposite-sex workers: 84.8% of women's job shifts out of male-dominated positions (0%–20% female) were to occupations with the same gender mix.

In these two respects, the patterns evident for civil service job changers in table 3 are similar to results for the U.S. labor force reported at a more aggregated level by Jacobs (1989, table 7.2). However, in contrast to Jacobs' findings, the marginals and off-diagonal cells of table 3 suggest that male-dominated occupations have strong drawing power for both sexes, especially men. This conclusion is suggested by the fact that: (1) a higher percentage of men than women were in occupations dominated by same-sex workers; and (2) the effect of job changes is to increase both men's *and* women's representation in male-dominated occupations (also see Rosenfeld 1983). The off-diagonal cells in table 3 document a strong tendency among male job changers to move into occupations that are more skewed toward men. The same tendency is evident for women, although less acutely, perhaps reflecting a tension for women between the greater economic rewards available in male-dominated occupations and the social and psychological burdens associated with gender atypicality.

Multivariate Analyses

Table 3 suggests that career dynamics may differ by sex and occupational composition within the California civil service. To explore such differences further, we turn to the multivariate analyses. Table 4 reports hazard models for intra-agency job changes, and the effects of those job shifts on changes in salary and salary ceiling are reported in table 5. Table 6 reports hazard models for interagency job changes; salary and salary ceiling changes resulting from these moves are modeled in table 7. Table 8 reports hazard models for purely lateral moves between agencies (which by definition have no immediate salary consequences). Finally, table 9 reports models of within-job salary growth. To simplify and structure the exposition, we organize our discussion of the results around sets of causal influences, rather than discussing each table separately. Note that each table presents pared-down model specifications, as well as a complete specification that includes all control variables.

Occupational demography.—Tables 4–9 reveal strong net effects of occupational demography on every facet of career attainment in the California civil service (recall that the effects of occupational demography are expressed relative to work roles consisting entirely of white males). These effects are all the more striking given that our models control for an extremely comprehensive array of individual and job-level characteristics, whose effects we discuss below. The full intra-agency job change specification, model 5 in table 4, reveals that civil servants in female- or mi-

minority-dominated occupations were significantly less likely to change jobs within an agency than otherwise comparable civil servants in occupations dominated by white males. Occupational demography also affected the monetary value of these job changes, according to the most comprehensive salary and ceiling change specifications (models 8 and 11 in table 5): positions with a higher proportion of white men garnered higher salary and salary ceiling increases as a result of intra-agency job changes. The only exception to this pattern was for occupations with a large fraction of female Asian incumbents, which experienced even larger increases in salary ceilings through intra-agency job changes than occupations dominated by white males. We return to this result in the conclusion.

Token males were insulated somewhat from the adverse effects of being in a female-dominated occupation. Although token males (represented by the interaction of male and proportion female) were no more likely to experience intra-agency job changes, they reaped significantly larger increases in salary and salary ceiling from such changes than did otherwise identical female colleagues.

Interestingly, tables 6 and 7 reveal the opposite pattern of demographic effects on job changes between agencies. In model 16 in table 6, with the full set of control variables, the likelihood of interagency job shifts increases significantly with the proportion of women and minorities in an occupation. Moreover, interagency job shifts also tended to produce larger increases in salary and salary ceiling for workers in occupations dominated by white women or nonwhite men (models 19 and 22 in table 7). According to table 8, the likelihood of lateral moves across agencies also increases sharply with the proportion of women and people of color in an occupation, consistent with the notion that these occupations may involve skills that transcend the boundaries of specific organizational settings and that workers in female- and minority-dominated occupations may pursue lateral moves because of limited opportunities for advancement in their current positions. In contrast, occupations dominated by white males exhibit significantly lower rates of lateral transfers.

The fact that moves across organizational boundaries in general (including purely lateral transfers) are more frequent for workers in female- and minority-dominated occupations may explain why job shifts across organizational units are more frequent and more lucrative for civil servants in those same occupations. Moves across agencies create social ties that span organizational boundaries. To the extent that such network ties confer information about job openings in other agencies or provide any advantage in competing for such openings, there may be a self-reinforcing process whereby the high degree of interorganizational mobility in female-

TABLE 4
DETERMINANTS OF WITHIN-AGENCY JOB CHANGE RATES

INDEPENDENT VARIABLE (metric) ^a	MODELS				
	1	2	3	4	5
Job characteristic:					
Log salary				.5412*	1.534*
Log pay ceiling				-2.560*	-4.093*
Log salary above ceiling				-.1212*	-.1027*
Log employees in occupation group				-.0667*	-.0639*
Salary grades in job				-.1439*	-.1183*
Career dynamics:					
Job tenure, pre agency change				.1166*	.0927*
Tenure in agency				.0533*	.0410*
Log initial salary				.6095*	.5779*
Previous repeat job changes				.1109*	.1111*
Previous new job changes				.0939*	.0818*
Previous agency changes				.0793*	.0736*
N limited-term jobs				-.0392*	-.0080
Time separated, previous jobs				.1297*	.1080*
Time separated, current job				-.0242	-.0529
Male × previous separation time				-.0046	.0025
Male × current job separation time				.0741	.1924
Tenure in civil service				-.1416*	-.1281*

Individual characteristics:									
Age	.....							-.0551*	.0058
(Age) ² /100	.....							.0377*	.0075
Unmarried (0/1)	.....							-.1136*	.0146
White (0/1)	.....	.1443*	.0155			.0193	.0159	.2008*	.0158
Asian (0/1)	.....	.3392*	.0299			.0389	.0313	.2157*	.0309
Male (0/1)	.....	-.2755*	.0141			-.0883*	.0281	-.0249	.0188
Demography of detailed occupations:									
Proportion white female	.....			-.2487*	.0467	-.3323*	.0559		-1.433*
Proportion male minority	.....			-4.150*	.1041	-4.133*	.1064		-5.907*
Proportion female minority	.....			-.0179	.1073	-.0801	.1110		-.8790*
Proportion male Asian	.....			.3194*	.1266	.3008*	.1306		-.5092*
Proportion female Asian	.....			.1568	.1675	.0807	.1706		-.6644*
Male x proportion female	.....					.0489	.0530		.0097
Log-likelihood ^b	.....	-76.084		-73.804		-73.761		-69.659	-68.309

NOTE.—Data include 20,143 job changes.

^a Each model also includes 11 job duration period effects; models 4 and 5 include controls for 19 job families.

^b The similar hazard-model specifications across tables 4, 6, and 8 are estimated jointly, so they share a joint log-likelihood.

* $P < .05$.

TABLE 5
DETERMINANTS OF CHANGE IN SALARY AND SALARY CEILING RESULTING FROM WITHIN-AGENCY JOB CHANGES

INDEPENDENT VARIABLE (metric) ^a	LOG SALARY MODELS					LOG CEILING MODELS					
	6	7	SE	8	SE	9	SE	10	SE	11	SE
Constant	.5852*	.7568*	.0295	.7149*	.0301	1.263*	.0346	1.648*	.0446	1.563*	.0446
Job characteristics:											
Log salary	.9273*	.8877*	.0049	.8310*	.0124					.2876*	.0196
Log pay ceiling				.0602*	.0118	.8530*	.0047	.7489*	.0070	.5053*	.0181
Log salary above ceiling		.0058*	.0006	.0060*	.0006			.0081*	.0009	.0074*	.0009
Log employees in occupation group		-.0048*	.0004	-.0046*	.0004			-.0079*	.0006	-.0083*	.0006
Salary grades in job		-.0013*	.0004	-.0021*	.0004			-.0128*	.0006	-.0099*	.0006
Career dynamics:											
Duration, current spell		.0016*	.0006	.0024*	.0006			.0039*	.0011	-.0003	.0011
Job tenure, pre agency change		.0019	.0010	.0024*	.0010			.0041*	.0018	.0012	.0018
Tenure in agency		-.0017*	.0006	-.0018*	.0006			-.0056*	.0010	-.0049*	.0010
Log initial salary		.0132*	.0033	.0141*	.0033			.0426*	.0052	.0178*	.0054
Previous repeat job changes		.0020	.0011	.0025*	.0011			.0016	.0016	.0007	.0016
Previous new job changes		.0006	.0007	.0001	.0007			.0012	.0011	.0017	.0010
Previous agency changes		-.0027*	.0008	-.0026*	.0008			-.0083*	.0014	-.0079*	.0014
N limited-term jobs		.0020	.0011	.0021*	.0011			.0051*	.0017	.0037*	.0017
Time separated, previous jobs		.0040*	.0009	.0035*	.0009			.0035*	.0015	.0069*	.0015
Time separated, current job		-.0025	.0056	-.0034	.0055			-.0132	.0079	-.0083	.0080
Male x previous job separation time		.0001	.0012	.0001	.0012			.0010	.0020	-.0002	.0020

Male × current job separation time	-.0048	.0073	-.0048	.0072	-.0114	.0113	-.0096	.0114
Tenure in civil service	-.0033*	.0006	-.0025*	.0006	.0004	.0010	-.0043*	.0011
Individual characteristics:								
Age	.0011*	.0004	.0011*	.0004	-.00005	.0006	-.0004	.0006
(Age) ² /100	-.0014*	.0005	-.0014*	.0005	-.0003	.0008	.0003	.0008
Unmarried (0/1)	-.0013	.0009	-.0013	.0009	-.0004	.0014	-.0002	.0015
White (0/1)	-.0007	.0010	-.0008	.0010	.0015	.0016	.0018	.0016
Asian (0/1)	-.0001	.0020	-.0002	.0020	.0005	.0029	.0003	.0030
Male (0/1)	-.0004	.0021	.0002	.0021	.0020	.0033	.0004	.0033
Demography of detailed occupation:								
Proportion white female	-.036*	.0050	-.0343*	.0050	-.0572*	.0080	-.0524*	.0080
Proportion male minority	-.0404*	.0098	-.0317*	.0099	-.1537*	.0155	-.1815*	.0155
Proportion female minority	-.0524*	.0088	-.0468*	.0089	-.1124*	.0146	-.1127*	.0146
Proportion male Asian	-.0761*	.0143	-.0768*	.0142	-.1027*	.0195	-.0770*	.0200
Proportion female Asian	.0181	.0128	.0207	.0127	.0469*	.0219	.0479*	.0221
Male × proportion female	.0199*	.0040	.0190*	.0040	.0113*	.0060	.0139*	.0060
χ ² (df) ^b	85,438	(29)	88,597	(30)	135,898	(6)	25,927	(29)
							26,513	(30)

NOTE.—Data include 20,143 job changes.

^a Models 7, 8, 10, and 11 include controls for 19 job families.

^b For models 7, 8, 10, and 11, the χ² statistics are compared to a model containing only the job family indicator variables.

* $P < .05$.

TABLE 6
DETERMINANTS OF BETWEEN-AGENCY JOB CHANGE RATES

INDEPENDENT VARIABLE (metric) ^a	MODELS					
	12	SE	13	SE	14	SE
Job characteristics:						
Log salary	-.8671*	.3736				
Log pay ceiling	-.1796	.3582				
Log salary above ceiling	-.2279*	.0333				
Log employees in occupation	-.1497*	.0130				
Salary grades in job	-.0394*	.0119				
Career dynamics:						
Job tenure, pre agency change	-.1143*	.0419				
Tenure in agency	-.2238*	.0225				
Log initial salary	.3169*	.1268				
Previous repeat job changes	.0015	.0524				
Previous new job changes	.0312	.0252				
Previous agency changes	.1235*	.0269				
N limited-term jobs	.0795	.0436				
Time separated, previous jobs	-.0481	.0414				
Time separated, current job	-.5152*	.2139				
Male × previous separation time jobs ...	.0052	.0580				
Male × current job separation time	.0689	.3672				
Tenure in civil service	.0920*	.0225				

Individual characteristics:									
Age									
(Age) ² /100									
Unmarried (0/1)									
White (0/1)									
Asian (0/1)									
Male (0/1)									
Occupational demography:									
Proportion white female									
Proportion male minority									
Proportion female minority									
Proportion male Asian									
Proportion female Asian									
Male x proportion female									
Log-likelihood ^b									

NOTE.—Data include 2,491 changes of both job and agency.
^a Each model also includes 11 job duration period effects; models 15 and 16 include controls for 19 job families.
^b The similar hazard-model specifications across tables 4, 6, and 8 are estimated jointly, so they share a joint log likelihood.
* $P < .05$.

TABLE 7
DETERMINANTS OF CHANGES IN SALARY AND SALARY CEILING RESULTING FROM BETWEEN-AGENCY JOB CHANGES

INDEPENDENT VARIABLE (metric) ^a	LOG SALARY MODELS						LOG CEILING MODELS					
	17	SE	18	SE	19	SE	20	SE	21	SE	22	SE
Constant	.6188*	.0581	.6008*	.1011	.3609*	.1266	1.093*	.0968	1.124*	.1678	1.074*	.1691
Job characteristics:												
Log salary	.9146*	.0080	.8973*	.0182	.7290*	.0486					.4359*	.0606
Log pay ceiling					.1949*	.0541	.8492*	.0132	.7848*	.0276	.4106*	.0683
Log salary above ceiling			.0033	.0047	.0042	.0046			.0127*	.0050	.0103*	.0050
Log employees in occupation			-.0016	.0013	-.0013	.0013			-.0016	.0018	-.0016	.0017
Salary grades in job			.0017	.0009	-.0005	.0010			-.0045*	.0015	-.0002	.0015
Career dynamics:												
Duration in current spell			.0023	.0019	.0048*	.0021			.0137*	.0031	.0075*	.0031
Job tenure, pre agency change			.0047	.0025	.0061*	.0026			.0112*	.0045	.0082	.0044
Tenure in agency			-.0023	.0017	-.0030	.0018			.0013	.0027	.0023	.0026
Log initial salary			.0178	.0095	.0201*	.0095			.0549*	.0134	.0140	.0132
Previous repeat job changes			.0070	.0039	.0092*	.0040			.0063	.0062	.0026	.0060
Previous new job changes			.0028	.0018	.0014	.0018			.0017	.0028	.0026	.0027
Previous agency changes			-.0055*	.0022	-.0057*	.0022			-.0021	.0034	-.0014	.0034
N limited-term jobs			.0034	.0033	.0030	.0033			.0032	.0048	.0027	.0048
Time separated, previous jobs			.0023	.0024	-.0005	.0025			.00005	.0039	.0074	.0039
Time separated from current job			-.0242	.0278	-.0254	.0271			-.0337	.0340	-.0333	.0345
Male × previous separation time			.0057	.0040	.0072	.0040			.0131*	.0063	.0083	.0061

Male × current job separation time	-.0108	.0481	-.0150	.0485	.0129	.0640	.0239	.0634
Tenure in civil service	-.0041*	.0017	-.0012	.0018	-.0022	.0025	-.0110*	.0027
Individual characteristics:								
Age	-.0010	.0015	-.0008	.0015	.0006	.0021	-.0008	.0020
(Age) ² /100	.0027	.0021	.0022	.0021	.0002	.0027	.0020	.0027
Unmarried (0/1)	-.00004	.0035	.0002	.0034	-.0040	.0050	-.0042	.0050
White (0/1)	-.0029	.0038	-.0032	.0038	-.0100	.0054	-.0095	.0053
Asian (0/1)	.0072	.0071	.0060	.0069	.0018	.0092	-.0005	.0093
Male (0/1)	-.0007	.0089	.0031	.0087	-.0003	.0126	-.0083	.0126
Demography of detailed occupation:								
Proportion white female	.0044	.0109	.0157	.0414*	.0204	.0162	.0460*	.0229
Proportion male minority	.0887*	.0231	.0640*	.0724*	.1686*	.0334	.0897*	.0362
Proportion female minority	-.0583*	.0246	-.0316	.0286	-.0733*	.0346	-.0468	.0370
Proportion male Asian	.1589*	.0449	.1102*	.0417	.1103*	.0399	.2323*	.0613
Proportion female Asian	-.0083	.0352	.0406	.0381	.0537	.0386	.0047	.0486
Male × proportion female	.0410*	.0151	.0361*	.0150	.0526	.0531	.0543	.0527
χ^2 (df) ^b	32,451	(6)	7,583	(29)	7,691	(30)	10,162	(6)
							2,039	(29)
								2,443
								(30)

NOTE.—Data include 2,491 changes of both job and agency.

^a Model 18, 19, 21, and 22 each includes controls for 19 job families.

^b For models 18, 19, 21, and 22 the χ^2 statistics are compared to a model containing only the job family indicator variables.

* $P < .05$.

TABLE 8
DETERMINANTS OF RATE OF AGENCY CHANGE (WITHOUT JOB-CLASS CHANGE)

INDEPENDENT VARIABLES (metric) ^a	MODELS					
	23	SE	24	SE	25	SE
Job characteristics:						
Log salary						
Log pay ceiling	-3.715*	.4073	-3.546*	.4089		
Log salary above ceiling	3.028*	.4128	3.542*	.4174		
Log employees in occupation	.1125*	.0182	.0831*	.0185		
Salary grades in job	-.1687*	.0140	-.1389*	.0143		
	.0337*	.0115	.0179	.0122		
Career dynamics:						
Job tenure, pre agency change	.1841*	.0302	.1854*	.0302		
Tenure in agency	-.2240*	.0255	-.2173*	.0256		
Log initial salary	-.3582*	.1321	-.3878*	.1313		
Previous repeat job changes	-.0591	.0617	-.0612	.0615		
Previous new job changes	.0449	.0260	.0432	.0261		
Previous agency changes	.0834*	.0254	.0782*	.0256		
N limited-term jobs	.0899*	.0447	.1140*	.0446		
Time separated, previous jobs	-.1207*	.0403	-.0948*	.0403		
Time separated, current job	-.1023	.1506	-.0829	.1512		
Male × previous separation time	.0332	.0685	.0230	.0688		
Male × current job separation time	-.5795	.4623	-.6295	.4631		
Tenure in civil service (years)	.0597*	.0244	.0333	.0246		

Individual characteristics:				
Age		-.0358*	.0162	-.0332* .0161
(Age) ^a /100		.0194	.0211	.0152 .0210
Unmarried (0/1)		.0765	.0427	.0705 .0428
White (0/1)	-.1656*	.0101	.0446	.0819 .0454
Asian (0/1)	-.1162 .0976	-.1479	.0989	-.1513 .0998
Male (0/1)	-1.382* .0471	-.0097	.0616	.0686 .1428
Demography of detailed occupation:				
Proportion white female	2.772* .1470	2.760*	.1857	1.162* .2261
Proportion male minority	.3008 .3834	.1936 .3892		.9405* .4093
Proportion female minority	4.630* .2142	4.602* .2424		2.767* .2799
Proportion male Asian	4.604* .3780	4.650* .3834		2.078* .4712
Proportion female Asian	5.611* .2639	5.608* .2850		3.616* .3117
Male x proportion female		.1917 .1763		.1587 .1939
Log-likelihood ^b	-76,084	-73,804	-69,659	-68,309

NOTE.—Data include 2,340 agency changes.

^a Each model also includes 11 job duration period effects and models 26 and 27 include controls for 19 job families.

^b The similar hazard-model specifications across tables 4, 6, and 8 are estimated jointly, so they share a joint log-likelihood.

* $P < .05$.

TABLE 9
DETERMINANTS OF WITHIN-JOB CHANGES IN SALARY

INDEPENDENT VARIABLE ^a	MODELS					
	28	SE	29	SE	30	SE
Job characteristics:						
Log salary, spell start	-.0427*	.0007	-.0453*	.0009	-.3190*	.0030
Log pay ceiling					.3078*	.0030
Log salary above ceiling						
Log employees in occupation					-.0021*	.0002
Salary grades in job					-.0012*	.0001
					.0037*	.0001
Career dynamics:						
(Job duration)1/2	.3495*	.0051	.3835*	.0069	.0731*	.0053
(Job duration)2/2/3	-.0069*	.0001	-.0074*	.0001	-.0057*	.0001
First job in civil service					-.0046*	.0001
Log initial salary					.0176*	.0006
Previous repeat job changes					-.0081*	.0010
Previous new job changes					-.0037*	.0003
Previous agency changes					.0016*	.0002
N of limited-term jobs held					-.0010*	.0002
N of part-time jobs held					.0040*	.0004
Time separated, previous jobs					-.0027*	.0002
Male x previous separation time					.0015	.0004
Tenure in civil service					.0003	.0006
					-.0008*	.0002
						.0048*
						.0002

Individual characteristics:									
Age	.....								
(Age) ² /100	.....								
Unmarried (0/1)	.....								
White (0/1)	.....								
Asian (0/1)	.....								
Male (0/1)	.....								
Demography of detailed occupation:									
Proportion white female	.....								
Proportion male minority	.....								
Proportion female minority	.....								
Proportion male Asian	.....								
Proportion female Asian	.....								
Male × proportion female	.....								
$\chi^2(df)^b$	.....	4,452	(4)	3,534	(6)	14,009	(7)	7,776	(26)
									14,839 (27)

NOTE.—Data include 55,854 job spells.

^a All independent variables are multiplied by (job duration^{1/2}). Models 31 and 32 include separate initial growth rates for each of the 20 job families.

^b χ^2 statistics calculated by comparing each specification to a baseline model containing only the initial salary growth rate and rate of salary decline.

* $P < .05$.

and minority-dominated jobs enables incumbents to have better information about possible promotions and attractive career opportunities in other organizations within the state government.

Tables 6 and 7 reveal that interagency job mobility is particularly frequent and rewarding in terms of salary and ceiling increases for male tokens in female-dominated work roles. Note from table 8, however, that male tokens are *not* significantly more likely than their female counterparts to transfer laterally across agencies (change agencies while remaining in the same job class). Thus, male tokens are not inherently more mobile than women in female-dominated jobs, but they do move more often when a change in job classification is involved (and, apparently, when larger pay increases are available). Recalling the relatively high rate of flight by male tokens out of female-dominated occupations (table 3), these results suggest that male civil servants in female-dominated occupations have stronger reasons or greater capacity than their female colleagues for changing jobs between agencies, and that they garner greater returns from doing so. This pattern is consistent with previous studies documenting career advantages for male tokens (e.g., Williams and Villemez 1993).

Although employees in female- or minority-dominated occupations were more likely to experience job changes between agencies and to benefit more from those moves, these results must be interpreted in context. Table 2 showed that there were more than eight times as many job changes *within* agencies than between agencies in our sample. This fact is important because the coefficients reported in tables 4, 5, 6, 7, and 8 affect each baseline transition rate multiplicatively; the coefficients are multipliers that increase or decrease the baseline rate. Therefore, if the baseline rate for a specific type of career transition (e.g., interagency job changes) is low, then a given multiplier is smaller in absolute terms than for a transition having a much higher baseline rate but a lower rate multiplier.

Furthermore, the descriptive statistics in table 2 show that job shifts between agencies yielded much smaller economic payoffs than did within-agency moves. The average job shift *within* a state agency yielded a monthly increase of about \$68 in salary and \$168 in the pay ceiling; the comparable increases achieved through job changes *between* agencies were only \$40 and \$70 per month, respectively. (Also compare the constants of models 8 and 11 in table 5 to those in models 19 and 22 in table 7.) Viewed in this light, our results suggest that employees in occupations with more women or minorities received a greater share of the less common and less lucrative types of job change.

Occupational demography also has strong effects on the rate of salary advancement within jobs. Most of the gross effects of occupational demography are negative (see model 29, table 9). However, contrary to our expectations, once the complete set of controls is added (model 32), oc-

occupations with a greater proportion of females or minorities actually experienced *faster* within-job salary growth than did occupations dominated by white males. A comparison of models 29–32 reveals that the reversal in the effects of gender and race composition between the pared down and full specifications is due largely to the inclusion of salary ceiling in the full model. Although white-male-dominated occupations enjoy faster salary growth than female-dominated occupations (model 29), this advantage operates indirectly through the higher salary ceilings available in the former (table 5 shows that employees in white-male-dominated occupations garnered large increases in pay ceilings when changing jobs). Once that source of advantage is held constant (models 30 and 32), however, occupations with a disproportionate representation of women or people of color actually display faster salary advancement in most cases. The existence of this unexpected source of net advantage underscores the value of examining the interrelated avenues of attainment within organizations, without which we would not have detected this effect. We return to the effects of demography on salary advancement in the conclusion.

It is interesting to compare the effects of occupational race and gender composition on attainment to the effects of employee race and gender. Looking across tables 4–9, the effects of occupational demography on organizational career attainment are generally strong and statistically significant. In contrast, the net main effects of employee gender and race typically are rather modest and frequently not significant, indicating that within California state government ascription operates primarily through the differential career opportunities associated with occupations of varying gender and race mix rather than through the personal characteristics of civil servants (also see Petersen and Morgan 1995). Where there are significant gross effects of employee race or gender on the likelihood of career transitions, they typically vanish after controlling for the powerful and consistent effects of occupational demography (compare models 1 and 3 in table 4, models 12 and 14 in table 6, and models 23 and 25 in table 8). A similar portrait emerges from supplementary analyses (available on request) of salary and salary ceiling changes, comparing the gross effects of sex and race and of occupational demography to their effects net of one another. For instance, there is a strongly positive gross effect of being male on the size of pay and pay ceiling changes that accompany job shifts, both within and between agencies. There is also a positive and significant gross effect of being white on the magnitude of salary ceiling changes associated with intra-agency job shifts. However, these effects vanish once we control for occupational demography, suggesting that ascription within the California civil service is relatively institutionalized, operating primarily through the differential opportunities associated with a job's sex and race composition.

It is also instructive to compare the relative *magnitudes* of the net effects of occupational demography versus the net effects of employee gender and race. For instance, consistent with some other studies of careers in government (Powell and Butterfield 1994; Kelly et al. 1991), we find that female civil servants are slightly more likely than men to garner intraorganizational job changes (table 4). Although this main effect of gender offsets the advantages of being in an occupation dominated by white males, the magnitude of the occupational demography effect swamps that of the individual's gender. Specifically, the main effect of gender in model 5 of table 4 implies that, all else equal, men (in occupations monopolized by white males, the reference category) change jobs within agencies at a rate about 10% lower than that of their female counterparts. But suppose we compare a civil servant in a job with no white females to one whose job has 25% white female incumbents. (This contrast corresponds to about a standard deviation increase in the proportion white female in an occupation.) According to model 5, this difference translates into an effect of $e = 0.699$, implying that the former employee's chances of a within-agency job change are about 43% higher than those of the latter civil servant. If we combine information on gender and gender differences in occupational demography, model 5 implies that the average white male is 12.4% more likely to change jobs within an agency than is the average white female, by virtue of the occupational demography effects, notwithstanding the main effect favoring women.¹¹

Indirect effects of demography on career outcomes.—The impact of occupational demography on career outcomes is even more significant when we take into account its indirect effects. Our modeling strategy uncovers indirect effects of demographic composition because the analyses incorporate recursive effects among the components of the attainment process. Consequently, occupational demography can indirectly affect a

¹¹ In deriving this estimate, we make use of data reported by Baron and Newman (1989, p. 118) that describe the occupational demography for typical workers in the California civil service. According to their estimates, the average full-time white male civil servant (in March 1985) was in an occupation with 60.57% white male incumbents, 12.68% white females, 13.32% male minorities (blacks and Hispanics), 4.68% female minorities, 6.66% "other" (Asian) males, and 2.09% "other" females. For the average full-time white female, the corresponding percentages were: 18.02%, 46.31%, 6.50%, 17.52%, 3.19%, and 8.47%. Taking the difference between each of these percentages and applying that difference to the corresponding coefficient in model 5 of table 4 yields 0.2166, to which the main effect of the male indicator dummy (−.1) must be added, yielding 0.1166. This amounts to an "average male multiplier" of $\exp(.1166) = 1.1237$, or a 12.4% higher job change rate for white males whose occupations have the demography profile typical of their gender and race than for a white female whose occupational demography is representative of her gender and race. For purposes of this calculation, we ignore the effect of the male $\times$ proportion female interaction in model 5, which is insignificant.

given career outcome, such as within-job salary growth, through its influence on a different facet of career attainment, such as the salary ceiling.

The most significant indirect influences arise from the effect of occupational demography on the salary ceiling increases associated with intra-agency job changes. According to model 5, civil servants in white- and male-dominated occupations obtain significantly larger increases in salary ceiling from within-agency job shifts. Table 9, in turn, shows that employees with higher salary ceilings enjoy more rapid salary growth in their jobs. They are also less likely to make subsequent job shifts within or between agencies (presumably because of the opportunities for intrajob salary growth that high ceilings provide); however, when they do change jobs, they receive larger increases in salary and pay ceiling (see tables 5 and 7). Civil servants in white-male-dominated occupations thus benefited not only from the direct advantages of occupational demography on their mobility chances and salary prospects, but also from these two indirect effects of having higher salary ceilings.

In contrast, employees in occupations dominated by women or people of color faced economically disadvantageous indirect effects of demography. Even the one attainment avenue through which female- and minority-dominated occupations were favored—job shifts across state agencies—entailed some adverse indirect effects: tables 5 and 7 show that a history of interagency movement reduces the salary and ceiling increases associated with subsequent job changes.¹² These lower salary ceilings, in turn, *reduce* prospects for salary advancement (table 9) and subsequent salary and ceiling growth from job changes (tables 5 and 7). The broader point is that job demography affects pay outcomes not only directly, but also indirectly—for instance, by influencing a civil servant's history of job changes, which in turn shapes the rate of pay growth within the current job and the magnitude of salary and ceiling increases associated with subsequent job shifts. Before concluding, we summarize some key effects of control variables.

Effects of lagged salary variables.—Civil servants who have experienced rapid wage growth in the past are significantly more likely to experience within-agency job changes. (See the positive effect of monthly salary in model 5, controlling for initial civil service salary and tenure.) Baker, Gibbs, and Holmstrom (1994) uncovered the same pattern in a large U. S. service firm, which they attribute to unobserved differences in ability

¹² A number of factors could explain the negative effect of prior moves between organizations. For instance, workers risk obsolescence of political capital when moving to a new work context. Having to forge a new set of political alliances and master a new set of institutional constraints may put the transferee at a significant disadvantage, as does the loss of organization-specific tenure, which may be considered in promotion and pay decisions.

that drive both wage growth and promotions. However, our analyses include an extensive set of controls that are likely to capture differences in individual ability. Consequently, we suspect the effect of wage growth on job changes reflects two factors: (1) “halo” effects, whereby civil servants on a fast salary progression are also afforded more frequent opportunities for beneficial job shifts and (2) the fact that high-salary civil servants are likely to be constrained by the salary ceiling in their job, necessitating mobility in order to achieve continued salary growth.

Effects of individual characteristics.—In addition to employee race and gender, we controlled for age and marital status. Older and unmarried employees were less likely to change jobs within an agency, and unmarried civil servants also experienced slower salary growth within jobs, perhaps reflecting a perception of low dependability. (The coefficients in model 5 imply decreasing age dependence throughout the observed range of age in our sample.) The salary gains from within-agency job shifts also varied with age, increasing until age 39, when the negative quadratic effect turns the curve downward and salary increases associated with intra-agency job changes begin to decline with age (model 8).

Effects of other job and occupational characteristics.—The results show that employees in large occupations experienced lower job change rates within and between agencies, lower salary and ceiling growth as a result of intra-agency job changes, and lower rates of lateral agency change. Table 9 indicates that workers in large occupations also experienced slower salary growth (model 31). However, this effect reverses after controlling for the fact that larger occupations tend to have lower pay ceilings (model 32). With this one exception, prospects for mobility and salary attainment were greater in all respects for individuals in less-populated occupations than for individuals who were merely one out of many within their work role.

Finally, according to table 8, the number of salary grades in an origin job increased the rate of lateral movement among agencies. Although we did not predict this effect, we can offer a possible explanation of it. Strang and Baron (1990) note that certain crafts and autonomous professions (e.g., physicians) resist job title proliferation, which potentially threatens their collective identity and control over their work.¹³ Those crafts and professions also tend to be practiced in diverse settings, with employees

¹³ Civil service regulations require applicants for promotion into most job titles to pass state-administered exams. Thus, craft and professional workers (and their unions) may resist systems of vertically differentiated job titles—and instead prefer broad job classifications that contain more salary gradations—because this limits opportunity for bureaucrats to inspect and certify their “brethren.”

moving frequently across organizational boundaries, anchored to their occupation rather than to a specific employer.

DISCUSSION

A cursory comparison of the descriptive statistics for men versus women in table 2 might lead to the conclusion that the distribution of career opportunities in the California civil service is fairly equal, at least in some respects. After all, although women and people of color benefited less from job changes than did white males, they garnered such changes more frequently; as a result of these opposing effects, the expected rate of salary advancement as a result of changing jobs is almost identical for women as for men.¹⁴ However, our approach to analyzing mobility and salary advancement within organizations reveals that this conclusion would be incomplete and misleading in several respects.

First, our results suggest that observationally similar salary outcomes for men and women may be achieved through rather different mobility regimes: less frequent job and agency moves for men, but accompanied with larger salary increases, versus more frequent shifts in work role or organizational affiliation for female civil servants, each of which yields smaller pay increases. Nominally equivalent outcomes across demographic groups may mask important differences in how opportunity is *structured*, which are only revealed by simultaneously examining job shifts within and between work settings, lateral moves across organizations, the changes in salary and salary ceilings associated with job shifts, and opportunities for salary advancement within a job.

This raises, in turn, several provocative questions. As one reviewer noted, men's and women's overall payoffs from job shifts are so similar within the civil service that it is hard to believe this is happening by coincidence. It suggests instead a bureaucratic process for "keeping score" (implicitly or explicitly) within the civil service that ensures that inequities in one element of the human resource system are counterbalanced elsewhere to ensure an aggregate level of parity in career outcomes for men versus women or whites versus nonwhites. By focusing explicitly on the multiple avenues of attainment within organizations, the approach we

¹⁴ Table 2 reports that men received an average monthly pay increase of \$78.50 for each within-agency job change, compared to \$57.29 for women. But recall that women had a higher average rate of such changes: 0.2097 per year, vs. 0.1571 for men. Thus, the expected annual pay increase obtained from a within-agency job change is: $(\$57.29 \times 12 \times .2097) = \144.16 for a typical woman, vs. $(\$78.50 \times 12 \times .1571) = \147.99 for an average man. Comparable calculations of expected annual pay increases from between-agency job shifts agencies yield \$10.68 for an average woman, vs. \$10.45 for an average man.

have taken in this article enables researchers to identify how and where such trade-offs may be occurring. Our approach opens up interesting possibilities for future research addressing how organizations ameliorate disadvantages wrought by one part of the human resource system by accommodations elsewhere.

These results raise another intriguing question meriting further study: do differences in the *routes* or *regimes* through which workers achieve a given level of status or earnings have distinctive effects on the workers or on their organizations? For instance, relative to a pattern of less frequent but more lucrative promotions, does a regime entailing more job changes but smaller salary increases per change increase employees' subjective sense of career accomplishment, by providing more frequent milestones, or does it instead produce frustration and career dissatisfaction by doling out numerous, modest raises? Do the regimes differ in the amount of politicking and self-promotion they encourage among employees vying for attractive assignments? These are examples of interesting questions that are brought into relief once we begin focusing on differences in the *avenues* of attainment experienced by subgroups within organizations, as well as differences in their *levels* of attainment.

Our findings suggest that it would be wrong to gauge gender equity within the California civil service simply by comparing women to men, because gender inequality within government bureaucracies appears to be institutionalized in the *gender demography of jobs*. Differences in career outcomes between men and women or between whites and nonwhites were relatively modest compared to the differences between occupations dominated by white males and those dominated by women or people of color. On balance, the devaluation model receives considerable support in our analyses; occupations with disproportionate numbers of women or people of color are disadvantaged in many facets of career attainment, relative to occupations dominated by white males. The persistent disadvantages associated with being in an occupation dominated by women or nonwhites, even after controlling for personal characteristics, suggest that bureaucratization and rationalization do not necessarily eradicate ascription; rather, they may simply institutionalize it in formal job descriptions, job ladders, patterns of pay progression, and the like.

The strength and consistency of these results is noteworthy, considering the comprehensive set of control variables in the analyses and the fact that personnel practices were highly rationalized and bureaucratized in the setting we analyzed. Moreover, egalitarian pressures in the California civil service were especially acute during the period covered by our data. The absence of strong competition for most government agencies presumably provided leeway for undertaking reforms aimed at equalizing career opportunities by gender and race. If anything, then, our results are

likely to understate the magnitude of these effects in other organizational contexts. We hope future research will assess how well our results generalize to other settings. It is encouraging that many of our results concerning salary growth and job shifts in the California civil service are consistent with other recent studies of careers and incentive structures, based on data from private sector companies or nationally representative labor force surveys (for a review, see Gibbons 1997).

Indeed, our findings regarding the career advantages experienced by male tokens in female-dominated positions seem to represent the “exception that proves the rule” regarding the transcendence of institutionalized over personalized ascription in the careers of California civil servants. Men in female-dominated occupations *were* judged on the basis of their personal characteristics (namely, gender) in the allocation of mobility opportunities and salary increases, but in ways that served to offset the disadvantages experienced by their female colleagues. The fact that male tokens moved more frequently across agencies and derived larger economic benefits from doing so than did otherwise-equivalent female colleagues in female-dominated positions suggests a tendency to devalue work done by women, rather than something inherent in the kinds of work roles involved. Otherwise, one would be hard pressed to explain why male tokens having observationally equivalent work histories confront superior career opportunities than their female counterparts. Therefore, not only do men (and whites) within California state government benefit from institutionalized sources of ascription that reduce career opportunities for workers in female- or minority-dominated occupations, but men who occupy sex-atypical roles also benefit from personalized ascription (favoritism relative to their female colleagues) in mobility contests and salary allocations.

Notwithstanding the pervasiveness of institutionalized ascription evident from our results, we identified some respects in which female- and minority-dominated occupations appeared systematically advantaged within the California civil service. First, their incumbents were more likely to change agencies when shifting jobs and to garner salary increases for doing so. This result is consistent with Bullard and Wright’s (1993) study showing that female heads of government agencies had experienced more interagency moves than their male counterparts. They assert, “While there is evidence of movement by some women through traditional barriers, a major component of female access to executive posts in state governments has been the bypassing or circumvention route. These alternative avenues . . . have been identified as (1) access to new agencies, (2) appointment by the governor, and (3) interagency mobility” (p. 200).

Our empirical results for female- and minority-dominated jobs are consistent with this interpretation. However, intra-agency job changes were

eight times more likely than interagency job shifts, and job moves within an agency yielded much larger salary and ceiling increases than did interagency moves. Therefore, the strategy of moving among organizations seems generally inferior to advancing within a particular state agency. Moreover, our dynamic models underscored an additional disadvantage of frequent moves across agency boundaries: a history of frequent agency changes diminished one's ability in the future to boost the salary ceiling, particularly via within-agency moves. Given the powerful effects of salary ceilings on opportunities for within-job salary growth, the long-term detrimental consequences of this should not be overlooked.

Another apparent exception to the simple devaluation hypothesis was our finding that "female Asian" occupations experienced larger net increases in salary and (especially) pay ceiling from job shifts within agencies (table 5). These findings are reminiscent of other studies reporting that Asian Americans are advantaged in some respects (or at least less disadvantaged than other minority groups), particularly within the civil service context (e.g., Parcel 1989; Kim and Lewis 1994; Cheng 1997). As Cheng (1997) notes, this evidence has been used to portray Asian Americans as a "model minority," a representation that presumably could be used to induce fractious rivalry and conflict among minority groups (Bonacich 1972).

However, examination of the jobs with large numbers of Asian women suggests an explanation for these seemingly anomalous findings.¹⁵ These jobs are concentrated in two collective bargaining units—"Office and Allied" and "Registered Nurse"—that incorporated language regarding comparable worth in their contracts beginning in 1982. Although Asian women represented only 5.3% of the state civil service labor force in 1985, they were 12% and 22% of the "Office and Allied" and "Registered Nursing" bargaining units, respectively; moreover, 52.3% of female Asian women worked in one of those two bargaining units in 1985, compared to only 20.5% of the rest of the full-time state government labor force. Occupations dominated by female Asians presumably benefited disproportionately from the upgrading of posted pay rates achieved through these comparable worth initiatives negotiated via collective bargaining. Thus, the apparent advantages associated with being in a "female Asian" occupation may simply reflect the fact that Asian women were fortunate

¹⁵ Among large job titles (300 or more incumbents in March, 1985), the ones having the highest percentage of female Asian incumbents were: Licensed Vocational Nurse (39.6% female Asian), Registered Nurse II (27.9%), Accountant I—Specialist (24.7%), Senior Legal Typist (21.2%), Key Data Operator (18.9%), Secretary (15.0%), Word Processing Technician (14.9%), Stenographer (12.7%), Office Assistant II—Typing (12.3%), Account Clerk II (12.3%), Office Technician—Typing (11.2%), and Staff Services Analyst—General (10.2%).

to belong to the collective bargaining units that were most proactive in redressing the historical underpayment of female-dominated jobs in the California civil service (Baron and Newman 1990).

Our analyses also revealed unexpectedly that, all else being equal, civil service positions dominated by women or people of color offer opportunities for more rapid within-job salary advancement than do positions dominated by white males (model 32, table 9). But this pattern was only evident after controlling for other employee and job characteristics, particularly the pay ceiling associated with a given job class. Indeed, the gross effects of occupational demography on within-job salary growth were largely in the other direction (model 29, table 9): consistent with past research on occupational demography and wage growth (England et al. 1988), female- and minority-dominated positions in the California civil service are generally characterized by less rapid salary advancement per unit of time. Given the lower salary ceilings attached to such positions (Baron and Newman 1989), these gross effects are hardly surprising. Although we might have expected controls for salary, salary ceiling, and other job characteristics to reduce or eliminate the gross effects evident in model 29, we did not expect that percentage female and percentage nonwhite would have (significant) *positive* net effects after introducing such controls.

We do not have a definitive explanation for this pattern of results, but we can suggest several possibilities. First, perhaps occupations dominated by women or people of color in the civil service differ with respect to unionization in ways not captured by our analyses. For instance, unions representing female- and minority-dominated work roles may have been more aggressive in negotiating salary opportunities for their members and function more like industrial unions, with a stronger emphasis on seniority rights (reflected in more rapid within-grade salary increases) than the more craft- and professional-oriented unions that prevail in work roles dominated by white males.

A second intriguing possibility concerns adverse selection. Model 32 controls for pay ceiling, so the demography effects in this model compare salary progression between white-male-dominated occupations and other occupations with similar ceilings. But recall that occupations dominated by white males generally have much higher pay ceilings. Consequently, in comparing occupations with equal pay ceilings but different demography, one is essentially comparing the lower-opportunity white-male-dominated occupations to female- and minority-dominated occupations that are average in terms of opportunity, or comparing typical white-male-dominated occupations to female- and minority-dominated occupations that are relatively abundant in opportunity. Those white men who have remained in the lower-opportunity occupations (despite the favorable

opportunity structure that white men generally face) are likely to be among the *least capable* among white male employees. Conversely, women and minorities who have managed to advance to the exceptional, potentially lucrative female- and minority-dominated occupations are likely to be among the *most capable* female and minority employees. For this reason, the net effects of occupational demography on wage growth in model 32 may be emphasizing patterns among some of the least capable white men and some of the most capable women and minorities.

Having noted these anomalous results, it is worth recalling (from table 2) that male and white state civil servants nonetheless garnered larger within-job pay increases per unit of time than did women and people of color: 21.0% larger for men than for women, 12.7% larger for whites than for Asians, and 1.2% larger for whites than for other minorities. Moreover, the advantages of being male and white persist (in table 9) even after controlling for occupational demography, job characteristics, and individual work histories. This suggests that—in contrast to our results concerning job and agency changes and their effects on salaries and pay ceilings, where ascription operated primarily through the sex- and race-typing of jobs—there is more *personalized* ascription when it comes to allocating pay increases within a job, favoring individual men over women and whites over nonwhites. These unexpected positive net effects of occupational demography on within-job salary advancement underscore the benefits of disaggregating the various avenues of attainment as we have done in this article. Future research will hopefully gauge whether these results are robust and, if so, what factors explain why—given an initial salary level and pay ceiling—occupations dominated by women or people of color apparently exhibit faster salary advancement, relative to occupations dominated by white males.

Researchers have increasingly acknowledged the importance of studying organizational variations in gender and racial inequality (Anderson and Tomaskovic-Devey 1995; Petersen and Morgan 1995; Huffman and Velasco 1997), and we believe our approach will prove useful to investigators seeking to disentangle the sources of career inequality by studying other samples and other independent variables. For instance, in future research on the California state government, we plan to link differences in career opportunities for women and people of color to variations in the organizational context—agency size, age, and structure; the demography of agency elites and supervisors; unionization; the presence of formal affirmative action and EEO programs; growth versus decline; autonomy versus governmental dependency in agency budgets; external labor market influences; and gubernatorial regimes. We expect that differences among agencies in these respects will affect not simply the *amount* of opportunity available for women and people of color, but also how

state agencies elect to respond to the EEO pressures they have faced internally and externally. To illustrate, one might hypothesize that state agencies whose budgets were hurt most by tax reform and the fiscal crises that plagued California state government in recent years responded to egalitarian pressures in more symbolic and superficial ways—such as maintaining (or possibly even increasing) “promotions” among women or people of color, while simultaneously reducing the economic gains associated with those moves—relative to agencies with more discretionary resources available.

Our modeling strategy is well-suited to testing such hypotheses. Moreover, our approach provides a technology that can be used to estimate how a particular source of disadvantage (e.g., denial of a promotion or a lower salary ceiling early in the career) can be expected to influence long-term career outcomes. We believe that analyses like the ones we have reported in this study provide a stronger foundation on which to base assessments of organizational equity and the need for continued egalitarian initiatives in the workplace than does much of the previous literature.

Another advantage of our modeling strategy is that it provides a means of operationalizing the concept of career ceilings, which has received so much attention in discourse on organizational careers. For instance, we demonstrated that civil servants in female- or minority-dominated jobs not only have fewer opportunities for within-agency job shifts that provide pay increases, but their intraorganizational mobility also channels them into positions having lower salary ceilings, which in turn reduces future opportunities for within-job salary advancement. The models and methods we have employed provide a means for beginning to isolate quantitatively the distribution, determinants, and consequences of the different career ceilings faced by particular occupations and demographic subgroups in the labor market.

Our findings regarding the benefits of job shifts across agency boundaries for people in female- or minority-dominated jobs illustrate the value in modeling moves within and between organizational units within the same study, which previous studies have seldom done.¹⁶ Prior research has documented that women and people of color tend to have work-related social ties that transcend their immediate work group and organizational setting more so than do the network ties of white males (Ibarra 1995, 1997; Thomas 1990). If the pattern we have documented proves to generalize to other organizational settings, it would be useful to examine

¹⁶ Obviously, the state agencies in our sample are all part of a common larger enterprise (the California state government), so it would be preferable to extend this approach to study mobility of individuals within and between completely distinct organizations.

whether these differences by occupational demography in the rate and economic consequences of within- versus between-organization mobility reflect differences in the structure and composition of informal networks by race, gender, or occupational demography.

Finally, our findings open an additional avenue for research. Our results suggest that two of the best things an individual seeking a career in the California civil service can do to have abundant opportunities for mobility and salary growth are (a) enter the civil service in a job dominated by white males and (b) remain in a white-male dominated line of work (or, for those starting out in female- or minority-dominated jobs, migrate toward white male lines of work). Although we encountered abundant job segregation by race and sex within the California civil service, the segregation was far from complete (see table 3). Given the powerful effects of occupational composition on career outcomes, the stability of occupational demography among job changers, and the enduring effects of starting salaries on civil servants' careers, research looking at how organizational arrangements and employee preferences segregate individuals into jobs that vary in their sex- and race-typicality, especially upon organizational entry, would be very illuminating.

APPENDIX

Sample Construction from the California SCO Data Files

We analyze several data files obtained from the California State Controller's Office (SCO). The first describes the staffing patterns of every job within every state government agency, on a quarterly basis, from 1979 to 1988. The second file contains the career histories of 153,000 civil servants employed in 32 of those agencies between 1975 and 1985. The 32 agencies included in our sample were selected (by us) to be representative of the distribution among state agencies with respect to size, growth, occupational mix, and labor force demography. Although the agencies all belong to the same state government system, they vary substantially on important dimensions, and there is considerable diversity *within* agencies. In some agencies, each geographic and administrative unit functions with considerable autonomy, whereas other agencies are centrally controlled. Nevertheless, generic personnel rules and procedures do apply throughout the civil service. Therefore, there is probably less variance in personnel policies and practices in our sample than there would be in a sample of independent private sector organizations.

The career history database describes all changes in employment status for the workers in our sample (job changes, pay changes, maternity and sick leaves, transfers, etc.), as well as basic employee characteristics such

as race/ethnicity, sex, age, and marital status. Several potential limitations of the career history database should be noted. First, information on employees who joined the civil service prior to 1975 is left-censored. When state agencies automated their personnel systems in 1974–75, the SCO chose not to incorporate employment records prior to 1975 into their computer files. Consequently, civil servants already employed when the personnel system was automated have left-censored career histories. For those individuals, we cannot compute endogenous variables, and we do not know the start date of the job they held as of 1975. Given the statistical problems introduced by including left-censored cases in an event history framework (Tuma and Hannan 1984), we chose to omit left-censored individuals from the analyses. These individuals are included, however, in computing the demographic composition of occupations.

A second potential limitation of the career history data reflects the way the SCO created the sample we requested for the 32 agencies. The archive includes civil servants who remained in one of the 32 sampled agencies, those who left the state civil service from one of those 32 agencies, and those who transferred from an agency *not* in the sample of 32 organizations to another agency that *is* in the sample. If a civil servant's last observed position was not in one of the sampled agencies, however, then that employee is not included in the career archive, even if a previous civil service position was in one of the 32 sampled agencies.¹⁷ This omits one group of transferees from the data file: individuals who transferred *from* one of the 32 agencies in our sample *to* an agency not in the sample and who either remained in an agency not in our sample or who left the civil service from that agency. Civil servants transferring from a nonsample agency into one of the 32 sampled agencies are included in the sample, as are, of course, individuals who moved among the 32 sampled agencies. Recall also that the 32 agencies were deliberately chosen to represent the range of California state agencies. We therefore believe that our findings and inferences are unaffected by this feature of the SCO data file.

We use several screens to eliminate sources of heterogeneity among workers and jobs that could potentially confound the interpretation of our results. In addition to excluding employees with left-censored career histories, we restrict our analyses to full-time employees and we omit "limited-term" spells (these spells are typically either emergency work or appointments with a fixed duration and therefore are qualitatively different from regular job assignments). Also, we study only employees in "active" status, reflecting our assumption that only employees who are not on an extended separation from their current jobs are at risk of a job

¹⁷ These idiosyncrasies were imposed by SCO programmers in extracting records for us.

status change. Although these various restrictions reduce significantly the number of employees available for analysis, our final sample nonetheless includes career histories for 40,134 civil servants. Of these employees, 10,037 left the civil service and did not return before the end of the sample period. In 1,079 cases, career histories end in our data with the employee changing to either temporary or part-time employment and remaining in that state until the study period ends.

Each employee's career history is divided into distinct job spells, and the entire sample includes 80,148 spells. Of these, 20,143 ended in a change of job class without changing agencies. (14,429 individuals experienced at least one of these events.) 2,491 spells ended in a change of job class and agency. (2,123 individuals experienced at least one of these changes.) Another 2,340 spells ended in a change of agency *without* changing job class. (1,943 individuals experienced these events.) We use these three types of events to estimate hazard models in tables 4, 6, and 8. Additionally, 3,229 spells ended with the employee becoming a temporary or part-time worker. Another 22,986 spells ended with the employee exiting the civil service. The 28,959 right-censored spells account for the remainder of the job spells.

In analyzing salary and salary ceiling change in tables 5 and 7, two sets of job spells were relevant. We analyzed salary and salary ceiling change for the 22,634 spells in which job class changed. To analyze intra-job salary change (table 9), we looked at salary growth during 55,854 spells in which a given individual occupied a given job class. This figure excludes those cases where an individual occupied a job class for less than 4 months. We were concerned that these extremely short spells would carry undue weight in the analysis after the data were annualized.

We model career transitions only during the period from March, 1979, to March, 1985, because this is the interval during which we possess career history information and measures of occupational demography. For employees who entered the civil service between 1975 and 1979, we incorporate information on their pre-1979 civil service work histories (job duration, civil service tenure, promotions, transfers, employment separations, etc.) in the employment history measures included in our models. For purposes of analyzing intrajob salary advancement, the 80,148 job spells were broken into 269,348 segments. This approach allows us to update independent variables as they change over time. Spells were segmented at least once per calendar year, and more often if a person's salary changed more than once in a given year.

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