Monthly Labor Review

January 2014

Job promotion in midcareer: gender, recession, and "crowding"

Data from the National Longitudinal Survey of Youth 1979 indicate that, between 1996 and 2010, women, on average, lost some of the promotion momentum they had achieved at the beginning of midcareer, although they outperformed men in this regard. For both genders, the economic downturn of 2001 and the Great Recession of 2007–2009 contributed to reduced promotion probabilities. In the case of women, however, cohort effects, rather than the business cycle, seem to explain the promotion experience during the Great Recession. Promotions translate into higher real-wage increases, especially when coupled with growth in job responsibilities. Crowding effects, if not necessarily a thing of the past, are no longer manifested in reduced female promotion rates or earnings.

John T. Addison
ecceaddi@moore.sc.edu

John T. Addison is professor of economics at the University of South Carolina and professor of economics at Durham University, U.K.

Orgul Demet Ozturk
odozturk@moore.sc.edu

Orgul Demet Ozturk is assistant professor of economics at the University of South Carolina.

Si Wang
si.wang@moore.sc.edu

Si Wang recently completed her Ph.D. degree in economics at the University of South Carolina.

In an article published in the *Monthly Labor Review* in 1999, Deborah Cobb-Clark and Yvonne Dunlop investigated the role of gender in job promotions with the use of National Longitudinal Survey of Youth 1979 (NLSY79) data for 1989–1990 and 1996.[1] The authors concluded that, although the qualitative characteristics of promotions appeared to be much the same for men and women, there was clear evidence of a gender gap in promotion that favored men at the start of the period. Nevertheless, this gap was markedly smaller by 1996.[2] The sample examined by Cobb-Clark and Dunlop comprised workers at the beginning of their careers. By contrast, the present study analyzes these workers' promotion prospects first in 1996 and then in subsequent years of the survey, ending in 2010. The use of subsequent rounds of the NLSY79 can reveal whether the promotion patterns observed in early career apply in the case of workers in mid- and peak career.

Cobb-Clark and Dunlop also considered the role of the business cycle in the promotion process.[3] They found scant evidence that either industry employment growth or local labor market conditions played a role in determining promotion rates. However, the present article, whose sample period ends in 2010, allows for an expanded investigation in which one can study the effects of the 2001 economic downturn and also examine whether more substantive changes in promotion patterns were occasioned by the 18-month Great Recession. (According to the National Bureau of Economic Research, the recession began in December 2007 and ended in June 2009.)

Finally, in contextualizing their approach, Cobb-Clark and Dunlop noted that differential opportunities for promotion might reflect occupational segregation, also known as crowding, implicit in notions of "women's work." However, the authors did not examine whether gender differences in promotion and other labor market outcomes—most notably wages—were influenced by crowding effects.[4] This article provides some evidence on this topic as well.

Apart from offering new perspectives on midcareer, major recession, and occupational segregation, the present treatment follows Cobb-Clark and Dunlop's approach to examining the role of gender in the promotion process. Accordingly, the treatment focuses on the characteristics of promotion and on who gets promoted.

The data

The data used in this study are taken mainly from the 1996, 2006, and 2010 rounds of the NLSY79.[5] The survey, which is sponsored by the Bureau of Labor Statistics and was initiated in 1979, provides a nationally representative panel of data for the cohort of individuals who were 14 to 22 years of age in that year. For those rounds of the survey that are of interest here, there are no oversamples of poor Whites and those in the military; however, in addition to the core cohort, there are oversamples of Blacks and Hispanics. Each of these cohorts is retained and sampling weights are used to adjust the summary statistics throughout the article. The analysis excludes those individuals who were self-employed or who worked without pay. Indeed, the focus is on those individuals who have worked in the previous calendar year and who were working at least 30 hours a week at the time of the interview. The sample used to analyze the wage increases resulting from promotions is further restricted to those who have worked more than 35 hours a week. This restriction is imposed to exclude wage increases caused by transitions between part-time and full-time jobs. Moreover, the wage analysis includes only individuals who have not changed employers since the date of last interview. This filter is applied to avoid the inclusion of those displaced workers who, upon reemployment, are both underemployed in the new job (and receive lower wages than the wages reported on the date of last interview) and overqualified for it (and more likely to be promoted). In short, the analysis seeks to eliminate promotions associated with wage decreases.

The NLSY79 has a number of advantages over other surveys. One is that it allows obtaining an individual's actual labor market experience from the number of weeks worked since the last interview. Because women may work more discontinuously than men, capturing that experience corrects for the potential measurement error in the standard indicator based on age and education. Another advantage of the survey is that it contains detailed information on promotions. The survey questions related to promotions always concern *in-house* promotions, namely, those with the current employer. Specifically, the survey asks respondents (who are not self-employed) for information on up to five jobs, as follows: "Since [date from which information about employer will be collected (start date or date of last interview if last interview employer) (jobs 1–5)], have you experienced a promotion, a demotion, or any other type of position change?" If multiple promotions are recorded, subsequent questions regarding the nature of the promotion are asked for the most recent promotion in any given job. In this study, only the workers who have experienced a promotion with their current employers (that is, employers for job

1 in NLSY79, in any round) are counted as promoted. The appendix illustrates that promotions of this type constitute the vast majority of cases.[6]

Although labor market activity has been surveyed in great detail in the NLSY79 from the outset, occupation codes have not been recorded consistently across different waves of the survey. Between 1979 and 2000, occupations were coded on the basis of 1970 census occupation codes. Since 2002, however, occupations have been identified with the use of an updated classification system that captures new and emerging occupations.[7] In the present analysis, occupation codes were mapped in order to enable comparisons of 1996 occupations with occupations in the 2006 and 2010 rounds of the survey (as well as those in all rounds for some of the analyses). Specifically, crosswalks provided in the literature were used to match all NLSY79 occupation codes to the 1990 census occupation codes.[8]

The characteristics of promotions

In 1996, when NLSY79 respondents were between 31 and 39 years of age, their careers were most likely to be taking off. In 2006, these same respondents, now ages 41 to 49, were at the peak of their careers. Table 1 captures differences in the promotion characteristics of workers at these two points in career development. Do the returns to promotion increase as one moves up the career ladder? Do later promotions come with more responsibility, if not necessarily more pay? And do the answers to these questions vary by gender? Besides addressing these questions, the present investigation attempts to gain some insight into the effects of adverse macroeconomic conditions on the promotion experiences of men and women by comparing NLSY79 round 2010, which encompasses the Great Recession, with round 2006. Moreover, in order to strengthen the discussion of the effects of the business cycle on promotions, the analysis subsequently utilizes all rounds of the survey and compares the age-specific experience of a younger cohort of respondents (those 31 to 35 years of age in 1996) with that of an older cohort of respondents (those 36 to 39 years of age in 1996) over the entire data period, but with a focus on the economic downturn of 2001 and the Great Recession of 2007–2009.

Table 1. Characteristics of promotions at the current job, 1996–2010 (Percent)

Characteristic	Year									|t|-statistics			
	1996			2006			2010			1996 vs. 2006		2006 vs. 2010	
	Women	Men	|*t*|-*statistics*	Women	Men	|*t*|-*statistics*	Women	Men	|*t*|-*statistics*	Women	Men	Women	Men
Workers promoted (number)	493	590	–	290	300	–	208	150	–	–	–	–	–
Workers promoted	19.8	19.5	*0.24*	13.5	12.8	*0.61*	9.9	6.9	*3.03*	*4.94*	*5.68*	*3.17*	*5.72*
Increase in job responsibilities													
Promoted workers	55.6	61.2	*1.59*	68.2	69.4	*.28*	67.6	68.0	*.08*	*3.09*	*2.09*	*.12*	*.25*
Workers who were not promoted (but had a position change)	21.1	29.9	*1.62*	32.8	39.8	*.88*	30.8	23.0	*1.12*	*1.96*	*1.30*	*.30*	*2.08*
Increase in real wage[(1)]	82.2	74.8	*2.06*	67.1	68.6	*.28*	69.3	75.8	*1.01*	*3.47*	*1.36*	*.39*	*1.18*
Reason for promotion[(2)]													
Reorganization	14.9	16.4	*.60*	15.3	13.4	*.56*	16.7	13.9	*.60*	*.16*	*.99*	*.34*	*.11*

See footnotes at end of table.

Table 1. Characteristics of promotions at the current job, 1996–2010 (Percent)

Characteristic	Year									|t|-statistics			
	1996			2006			2010			1996 vs. 2006		2006 vs. 2010	
	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	Women	Men
Automatic	7.5	7.7	*.08*	8.5	7.5	*.38*	3.5	5.8	*.95*	*.41*	*.09*	*2.22*	*.59*
Job performance	67.8	69.4	*.47*	56.6	64.3	*1.62*	58.2	64.1	*.97*	*2.69*	*1.28*	*.30*	*.03*
Self-requested	16.8	13.6	*1.23*	17.6	12.8	*1.43*	20.0	14.1	*1.30*	*.25*	*.28*	*.60*	*.35*
Change of ownership	.8	1.3	*.90*	1.7	1.6	*.02*	.9	.0	*1.35*	*.94*	*.33*	*.73*	*1.70*
Company growth	13.1	15.9	*1.12*	4.0	9.3	*2.19*	5.9	4.6	*.45*	*4.07*	*2.44*	*.83*	*1.56*
Company laid off others	3.7	2.0	*1.36*	.9	1.2	*.33*	1.3	.9	*.38*	*2.46*	*.83*	*.53*	*.23*
Other	10.3	8.2	*.99*	13.9	9.1	*1.57*	12.5	7.9	*1.32*	*1.26*	*.37*	*.40*	*.40*
Believe that more promotions are possible	70.8	74.5	*1.12*	58.1	72.6	*3.12*	63.2	65.4	*.35*	*3.00*	*.49*	*.97*	*1.29*
Reason for belief that no more promotions are possible													
No further promotion potential	59.7	55.7	*.57*	60.2	62.3	*.24*	56.9	59.8	*.27*	*.06*	*.79*	*.35*	*.24*
Waiting for someone to leave	22.4	33.6	*1.78*	22.6	22.2	*.06*	17.1	20.9	*.44*	*.04*	*1.53*	*.73*	*.15*
Need additional training	12.5	8.8	*.83*	10.5	11.2	*.13*	16.1	9.6	*.92*	*.41*	*.46*	*.91*	*.25*
Company reorganization	4.5	.7	*1.82*	6.1	4.3	*.45*	6.7	5.9	*.16*	*.45*	*1.17*	*.12*	*.36*
Change of ownership	.9	1.2	*.22*	.6	.0	*.99*	3.2	3.8	*.13*	*.29*	*1.01*	*1.03*	*1.02*

Notes:

(1) Data are shown only for workers who have not changed employers since the date of last interview.

(2) Respondents could choose all applicable categories.

Note: |t|-statistics are generated with the use of the *svy* and *lincom* commands in STATA 11.2 with sampling weights.

Source: NLSY79 and authors' calculations.

Turning to results, table 1 shows that promotion probabilities declined over the decade from 1996 to 2006 by about 6 percentage points for both men and women.[9] This is not unexpected: as workers age, they move up the career ladder and enjoy fewer opportunities for further promotion. From 2006 to 2010, there was an additional reduction in promotions—a reduction of about 4 percentage points for women and about 6 percentage points for men—which likely reflects the impact of the Great Recession. (See below for further discussion of recession effects.)

Compared with promotions in 1996, a higher percentage of promotions in later years came with increased job responsibilities. For workers reporting a change in position but no promotion, job responsibilities also increased, although at a rate that was roughly half that of promoted workers. For their part, wages increased as a result of promotions, but not in all cases. In 1996, three-quarters or more of promoted workers experienced real-wage increases as a result of promotions. By 2006, this ratio had

declined by 15 percentage points for women and by 6 percentage points for men. The share of workers receiving increases in real wages actually rose modestly in 2010.

Starting in 1996, survey respondents have been asked about the reason(s) for their promotion. The NLSY79 identifies seven such reasons: “reorganization of the company,” “change in ownership,” “company growth,” “others are laid off,” “my job performance,” “it was automatic,” “I requested it,” and a composite “other reasons” category. Most promotions were self-attributed to job performance, with slightly more men than women citing performance as the primary reason for their promotion. Company growth, reorganization, and worker requests were the other main reasons cited. Between 1996 and 2006, there were a number of significant shifts in the reasons for promotion reported by men and women. For women, job performance, company growth, and the layoff of others all declined in importance; for men, the role of company growth diminished. After 2006, automatic promotions for women declined by more than half; however, no other significant shifts in promotion reasons can be observed.

When asked about their perceptions of the prospects for further promotion, a little more than 70 percent of respondents gave optimistic responses in 1996. This percentage declined over the next decade, significantly so for women but not for men. Surprisingly, the percentage for women *increased* over the next 4 years (i.e., the interval encompassing the Great Recession), but the shift was statistically insignificant. This shift might reflect a greater displacement of women and their relocation to jobs for which they were overqualified; overqualification, in turn, presents greater prospects for promotion. Against this interpretation is the fact that the recession was marked by higher unemployment for men than for women, at least initially.

Finally, individuals who were pessimistic about their promotion prospects stated the lack of further promotion potential as the main reason for their attitudes. However, the case remains that clear majorities of each gender expressed positive feelings about the possibility of future promotions.[10]

The characteristics of the promoted

Table 2 presents promotion rates by ethnic and racial background, calculated over 2 years for each of the 1996, 2006, and 2010 rounds of the survey. Although women, as a whole, exhibited marginally higher promotion rates than did men, each series trends downward significantly. By the end of the period, however, all female groups other than those with Hispanic background had distinctly higher promotion rates than did male groups. Among men, Hispanics had the highest promotion rates in 2010, followed by nonblack, non-Hispanic, and, finally, black workers, whose promotion rates had fallen the fastest. Among women, all racial groups had the same promotion rates in 2010, much as was the case at the start of the period; however, rates in 2010 were half those in 1996. More important, the promotion gap between men and women, as well as between male and female racial groups, was the widest after 2006. In short, the Great Recession would appear to have impacted men more severely.

Table 2. Promotion rates, by gender and race, 1996–2010 (Percent promoted)

Gender and race characteristic	Year			*|t|-statistics*	
	1996	2006	2010	1996 vs. 2006	2006 vs. 2010
Sample size (number)	5,616	4,603	4,233	–	–
All workers	19.6	13.1	8.3	*7.51*	*6.27*
Men	19.5	12.8	6.9	*5.68*	*5.72*
Hispanic	19.0	14.3	9.8	*1.85*	*1.82*

See footnotes at end of table.

Table 2. Promotion rates, by gender and race, 1996–2010 (Percent promoted)

Gender and race characteristic	Year			*|t|-statistics*	
	1996	2006	2010	1996 vs. 2006	2006 vs. 2010
Black	19.5	11.0	5.4	*4.30*	*3.32*
Nonblack, non-Hispanic	19.5	12.9	6.9	*4.70*	*4.97*
Women	19.8	13.5	9.9	*4.94*	*3.17*
Hispanic	20.0	14.0	10.4	*2.19*	*1.39*
Black	18.4	11.3	10.1	*3.72*	*0.68*
Nonblack, non-Hispanic	20.0	13.9	9.8	*3.95*	*2.93*

Source: NLSY79 and authors' calculations.

Table 3 shows promotion rates by demographic and human capital characteristics of the workers, as well as characteristics of the job and the workplace (such as tenure, occupation, and firm size). Two basic observations stand out. First, at any given point in time, 31- to 35-year-old male and female workers had distinctly higher promotion rates than did their 36- to 39-year-old counterparts. Second, and related, as each cohort aged, promotion probabilities declined for both men and women. Table 3 shows that gender differences by cohort were statistically significant in 2010, whereas trend differences for each gender cohort were statistically significant throughout the study period.

Further, women who were never married were more likely to be promoted than were their male counterparts, although the difference was not statistically significant. Except for 1996, female promotion rates among divorced, widowed, or separated women were higher as well, significantly so in 2010. Moreover, 2010 is the only year in which women without children and married women in families with a spouse present recorded higher promotion rates than did men with corresponding demographic characteristics. For most of the period, women with grown children and women with preschool children had higher promotion rates than did their male counterparts.

Table 3. Promotion rates, by worker, job, and workplace characteristics, 1996–2010 (Percent promoted)

Characteristic	Year									*|t|-statistics*			
	1996			2006			2010			1996 vs. 2006		2006 vs. 2010	
	Women	Men	*|t|-statistics*	Women	Men	*|t|-statistics*	Women	Men	*|t|-statistics*	Women	Men	Women	Men
Sample size (number)	2,548	3,068	–	2,239	2,364	–	2,125	2,108	–	–	–	–	–
Age													
31 to 35 years in 1996	21.1	20.0	*0.63*	15.6	14.5	*0.65*	11.4	8.4	*2.01*	*3.05*	*3.41*	*2.55*	*4.12*
36 to 39 years in 1996	18.4	19.0	*.31*	11.3	11.0	*.20*	8.3	5.2	*2.31*	*3.92*	*4.60*	*1.98*	*4.03*
Marital status													
Never married	21.6	17.3	*1.55*	10.6	9.5	*.40*	8.1	6.3	*.70*	*3.63*	*.90*	*.90*	*1.27*
Married with spouse present	19.8	20.7	*.49*	13.9	13.7	*.12*	9.8	7.3	*1.96*	*3.52*	*4.57*	*2.65*	*4.86*
Other	18.4	17.7	*.24*	13.9	11.8	*.87*	10.6	5.7	*2.63*	*1.88*	*2.24*	*1.57*	*2.89*
Has no children	18.2	17.8	*.17*	12.2	11.8	*.21*	11.5	5.8	*3.66*	*2.74*	*3.42*	*.33*	*3.93*

See footnotes at end of table.

Table 3. Promotion rates, by worker, job, and workplace characteristics, 1996–2010 (Percent promoted)

Characteristic	Year									|t|-statistics			
	1996			2006			2010			1996 vs. 2006		2006 vs. 2010	
	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	Women	Men
Has children	20.5	20.7	*.13*	14.2	13.5	*.50*	8.8	7.8	*.77*	*4.00*	*4.58*	*3.86*	*4.03*
Has children who were													
5 years old or younger in 1996	18.8	22.1	*1.39*	14.5	14.4	*.07*	9.6	7.2	*1.42*	*1.82*	*3.59*	*2.39*	*3.89*
6 to 13 years old in 1996	21.1	18.7	*.93*	14.0	13.3	*.33*	8.6	7.0	*.87*	*3.18*	*2.13*	*2.88*	*2.82*
14 years old or older in 1996	23.3	18.6	*.79*	9.3	8.6	*.15*	17.0	4.1	*2.86*	*3.43*	*1.58*	*1.76*	*.92*
Occupation													
Management, professional, technical, financial, sales, and public security	22.9	25.9	*1.36*	17.2	16.6	*.31*	12.3	10.3	*1.15*	*2.74*	*4.34*	*2.62*	*3.34*
Administrative support and retail sales	19.9	20.4	*.15*	10.9	16.5	*1.75*	9.5	4.7	*2.32*	*4.23*	*.98*	*.80*	*3.60*
Low-skill service	18.7	18.4	*.07*	10.9	13.6	*.62*	7.1	2.1	*2.25*	*2.29*	*.92*	*1.31*	*2.85*
Precision production and craft	26.5	24.4	*.23*	16.7	8.5	*1.19*	6.9	7.2	*.05*	*.92*	*3.49*	*1.23*	*.35*
Machine operators, assemblers, and inspectors	6.0	13.9	*2.60*	8.2	8.6	*.09*	3.0	3.0	*.02*	*.50*	*1.56*	*1.14*	*1.92*
Transportation, construction, mechanics, mining, and agriculture	10.4	11.9	*.37*	2.6	7.9	*2.27*	.0	4.7	*4.50*	*1.77*	*2.34*	*1.30*	*2.02*
Education													
Less than high school	17.7	15.7	*.54*	11.7	7.9	*1.27*	12.5	5.2	*2.10*	*1.51*	*3.14*	*.19*	*1.24*
High school graduate	21.2	15.0	*2.83*	12.3	10.2	*1.03*	10.5	7.2	*1.70*	*3.82*	*2.62*	*.83*	*1.75*
Some college	21.4	20.3	*.40*	15.0	12.9	*.79*	9.7	4.3	*2.85*	*2.45*	*2.70*	*2.28*	*3.77*
College graduate	17.5	26.3	*3.32*	13.2	16.4	*1.32*	9.9	9.0	*.47*	*1.78*	*3.68*	*1.48*	*3.28*
Postgraduate schooling	18.0	26.7	*1.55*	19.2	18.9	*.06*	6.9	5.9	*.33*	*.23*	*1.43*	*3.15*	*2.99*
Hours of work													
Full time	20.1	19.6	*.40*	14.0	12.7	*1.02*	10.3	6.9	*3.32*	*4.60*	*5.78*	*3.03*	*5.62*
Part time	16.1	12.9	*.52*	8.3	18.2	*1.12*	4.9	6.7	*.41*	*1.97*	*.53*	*1.05*	*1.24*
Size of firm													

See footnotes at end of table.

Table 3. Promotion rates, by worker, job, and workplace characteristics, 1996–2010 (Percent promoted)

Characteristic	Year									|t|-statistics			
	1996			2006			2010			1996 vs. 2006		2006 vs. 2010	
	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	Women	Men
Fewer than 100 employees	19.6	18.0	*.95*	13.8	10.9	*1.79*	9.7	6.0	*2.79*	*3.31*	*4.79*	*2.56*	*3.83*
100 to 499 employees	22.4	20.4	*.71*	9.8	15.1	*2.23*	7.6	8.5	*.46*	*5.11*	*2.02*	*1.16*	*2.85*
More than 500 employees	19.8	25.6	*1.82*	17.5	15.6	*.64*	13.2	7.5	*2.25*	*.75*	*3.24*	*1.43*	*3.22*
Tenure with employer													
Less than 2 years	16.7	17.4	*.33*	9.1	13.1	*1.74*	8.9	7.1	*.79*	*3.62*	*1.90*	*.04*	*2.55*
2 to 5 years	28.6	25.3	*1.06*	20.1	16.8	*1.06*	10.4	9.0	*.58*	*2.57*	*2.92*	*3.35*	*2.91*
5 to 10 years	18.6	22.0	*1.29*	16.1	12.1	*1.57*	12.2	6.9	*2.31*	*.95*	*3.85*	*1.48*	*2.28*
10 to 15 years	16.5	14.9	*.50*	12.3	10.9	*.45*	9.3	5.0	*1.86*	*1.25*	*1.37*	*.98*	*2.31*
More than 15 years	19.2	13.9	*1.17*	10.0	11.2	*.54*	8.3	6.2	*1.16*	*2.39*	*.88*	*.79*	*2.60*
Work experience before job with current employer													
Less than 5 years	16.5	17.5	*.41*	8.0	10.3	*.86*	7.2	10.2	*1.03*	*3.43*	*2.75*	*.29*	*.03*
5 to 10 years	22.3	20.9	*.62*	10.9	10.9	*.02*	9.1	4.3	*1.93*	*4.68*	*3.93*	*.70*	*2.69*
10 to 15 years	21.1	21.0	*.04*	16.6	15.2	*.48*	8.1	5.3	*1.33*	*1.68*	*2.21*	*3.34*	*3.80*
More than 15 years	16.4	16.2	*.05*	14.5	13.2	*.77*	11.2	7.0	*3.04*	*.60*	*1.24*	*1.97*	*4.44*
Participated in training since last interview	27.7	30.3	*.87*	22.4	18.4	*1.18*	15.1	14.2	*.26*	*1.65*	*3.72*	*2.26*	*1.20*
Did not participate in training since last interview	17.0	16.4	*.44*	11.4	11.7	*.29*	8.8	5.8	*2.98*	*4.14*	*3.76*	*2.15*	*5.61*

Note: Occupations are classified with the use of occupation codes provided in David Dorn, "Essays on inequality, spatial interaction, and the demand for skills" (Ph.D. dissertation, University of St. Gallen, September 2009).

Source: NLSY79 and authors' calculations.

Few notable occupation-specific differences can be observed outside the areas of transportation, construction, mechanics, mining, and agriculture, where male promotion rates consistently exceeded those of women over the sample period. In occupations such as machine operators, assemblers, and inspectors, in which men dominated women in promotions in 1996, male and female promotion rates had moved toward equality by 2010. However, in 2010, female promotion rates in two areas —(1) administrative support and retail sales and (2) low-skill services—clearly exceeded those of men.

With respect to educational characteristics, human capital theory predicts that more highly educated individuals will enjoy more opportunities for promotion. The data in table 3 generally confirm this prediction for men, even though the relation is not consistently monotonic. For women, the pattern is opaque. Moreover, although promotion rates for men in the upper educational echelons dominated the corresponding female rates in 1996, after that year female promotion rates were higher in

most educational categories. Over the study period, but most noticeably between 1996 and 2006, there was some tendency for promotion rates to decline by educational category.

Among women, full-time workers were consistently more likely to be promoted than were part-time workers. For men, this relationship holds true only for 1996; thereafter, promotion rates for full- and part-time male workers moved toward equality or reversed positions. Again, these results are only partly consistent with human capital theory.

Finally, the analysis turns to the potential promotion roles of firm size, labor market experience, tenure with the current employer, and training. For its part, firm size is positively correlated with promotions, although female workers in 1996 and male workers in 2010 who were employed in medium-sized firms did either as well as or better than did their counterparts in large- or small-sized firms. If large firms do tend to offer better promotion prospects, there is no indication that men benefit more from the internal promotion opportunities offered by such firms. Tenure with the employer and experience in the labor market also bear interesting relationships with the likelihood of promotion. In all years other than 2010, the highest probability of promotion occurred within the 2- to 5-year tenure range, falling thereafter for both genders and also trending downward over the study period, albeit in a somewhat more differentiated pattern by gender. Since the NLSY79 follows a cohort of individuals through their careers, work experience gained before that with the current employer is expected to capture the labor market attachment of the individual. By 2006, individuals with less than 5 years of previous experience had recorded the lowest probability of promotion. In 1996, male and female promotion rates reached their highest levels among those with 5 to 10 years of experience. In 2006, peak promotion rates were recorded among workers of both genders who had 10 to 15 years of previous experience. For women, the relevance of experience continued to increase in the 2010 round of the survey, with female promotion rates peaking among workers in the highest experience categories. The picture was different for men, however, with male workers in the highest experience category recording only the second-highest promotion rates. With respect to worker tenure, in 2010, promotion rates had peaked for female workers in the 5- to 10-year tenure category and for male workers in the 2- to 5-year tenure category. Finally, training would appear to play a crucial role in promotions, given that promoted individuals were almost twice as likely to have participated in training as were the nonpromoted. Gender differences in promotion rates were muted for this characteristic.

Although promotion questions were included in some, but not all, earlier rounds of the NLSY79—specifically, rounds 1984, 1988, 1989, and 1990—these questions have been asked continuously in all rounds since 1996. This permits an assessment of the promotion effects of the business cycle and, in particular, those of the Great Recession and the more moderate economic downturn of 2001. As noted earlier, respondents in the sample for this study are divided into two groups by age: workers ages 31 to 35 in 1996 (the younger cohort) and workers ages 36 to 39 in that same year (the older cohort). Comparing the younger cohort's experience in 2002 and then in 2010 with the older cohort's experience in 1998 and 2006, respectively, can go some way toward isolating the promotion effects of recession from those of aging in the career process. (See table 4.)

Table 4. Promotion and macro indicators, by gender and cohort, 1996–2010

Year	All		Women				Men				Macro indicators	
	Number promoted	Percent promoted	Number promoted	Percent promoted	Younger cohort (percent)	Older cohort (percent)	Number promoted	Percent promoted	Younger cohort (percent)	Older cohort (percent)	Unemployment rate	Employment-to-population ratio
1996	1,083	19.6	493	19.8	21.1	18.4	590	19.5	20.0	19.0	4.2	64.2
1998	1,076	20.3	498	19.7	21.2	18.1	578	20.9	21.7	19.9	3.4	65.1
2000	969	18.4	482	19.7	20.1	19.3	487	17.3	17.9	16.6	3.0	65.3
2002	636	13.2	316	13.8	14.6	12.9	320	12.8	12.6	13.0	4.7	64.1
2004	492	10.9	232	10.3	10.5	10.2	260	11.5	13.5	9.3	4.4	64.0
2006	590	13.1	290	13.5	15.6	11.3	300	12.8	14.5	11.0	3.6	64.8
2008	476	10.8	258	11.7	12.9	10.5	218	9.9	11.7	7.9	4.6	64.3
2010	358	8.3	208	9.9	11.4	8.3	150	6.9	8.4	5.2	8.3	61.0

Note: The |t|-statistics for the promotion-rate differences across cohorts in 2002 and 2010 are 4.57 and 0.01 for women and 3.69 and 1.72 for men, respectively.

Sources: NLSY79 and authors' calculations. Macro indicators are downloaded from https://www.bls.gov/cps/data.htm. Quarterly, seasonally adjusted data are converted to annual averages for individuals ages 25 and over.

Table 4 presents promotion rates for each biennial survey, beginning in 1996. As before, promotion rates are provided separately by gender. The new wrinkle is the provision of separate cohort promotion rates for each gender, for each survey year. As seen earlier, the table shows broadly declining promotion rates over time and, for later survey rounds, mostly higher promotion rates for women than for men. Also shown in the table are the relevant cohort comparisons for the economic downturn of 2001 and the Great Recession of 2007–2009. For the 2001 economic downturn, the yellow-color-coded entries for women indicate that the promotion rate in 2002 for the younger cohort should have been 3.5 percentage points higher, had there not been a recession. In other words, the recorded promotion rate of 14.6 percent should have been 18.1 percent on the basis of aging alone. The 3.5-percentage-point reduction in the promotion rate is therefore the *indicative estimate* of the effect of the 2001 economic downturn. In the case of men, the yellow-color-coded values point to a doubling of this effect, namely, a 7.3-percentage-point fall in the promotion rate.

No less interesting are the green-color-coded entries relevant to the computation of the potential promotion cost of the Great Recession. The upshot is that, for women, there was no retardation in promotion caused by the recession. The expected promotion rate was 11.3 percent, while the actual promotion rate was a statistically equal 11.4 percent. For men, however, the expected promotion rate (on the basis of aging) was 11 percent, whereas the actual promotion rate was 8.4 percent. Thus, the indicative estimate of the effect of this recession was a further retardation of the male promotion rate by 2.6 percentage points.

The improvement in the promotion position of women relative to men during the Great Recession confirms the interpretation of the latter as a "mancession," even though the present promotion-based analysis provides only a partial view of that experience. Moreover, because the NLSY79 data end in 2010, the analysis is unable to trace promotion dynamics in the aftermath of the Great Recession, although it should be noted that the existing data hint at cohort and gender catchup in the wake of the economic downturn of 2001.[11]

Crowding and promotion

The analysis next considers the relationship between the promotion probabilities of each gender in so-called women's and men's occupations for each of the selected sample years. Table 5 distinguishes among *traditionally male jobs*, *traditionally female jobs*, or *traditionally mixed jobs* for occupations that were consistently less than 34 percent female, more than 66 percent female, or 34 to 66 percent female, respectively, over the two decades between 1990 and 2010.[12]

Table 5 shows that, although men enjoyed higher promotion rates in traditionally female jobs in 1996 and 2006, male and female promotion rates in this job category were virtually identical in 2010. In traditionally male and traditionally mixed jobs, female rates exceeded those of men throughout the study period; however, only in 2010 was the difference in rates statistically significant. Promotions in traditionally mixed jobs occurred at significantly higher rates for both genders when compared with promotions in traditionally male jobs. Promotion rates in the former category also were significantly higher than those in traditionally female jobs, but only for women.

Table 5. Crowding and percent promoted, by gender, 1996–2010

Year	Gender	Job type			*|t|-statistics*		
		Traditionally male jobs	Traditionally mixed jobs	Traditionally female jobs	Traditionally female vs. traditionally male jobs	Traditionally male vs. traditionally mixed jobs	Traditionally female vs. traditionally mixed jobs
1996	Men	17.8	22.6	23.4	*1.56*	*2.37*	*0.20*
	Women	18.1	23.0	18.5	*.16*	*1.58*	*2.07*
	|t|-statistics	*.08*	*.14*	*1.34*	–	–	–
2006	Men	9.9	16.9	15.1	*1.37*	*3.67*	*.46*
	Women	10.1	17.9	10.8	*.27*	*2.81*	*3.55*
	|t|-statistics	*.07*	*.41*	*1.14*	–	–	–
2010	Men	5.4	9.4	7.5	*.74*	*2.63*	*.61*
	Women	9.8	13.3	8.0	*.72*	*1.24*	*2.88*
	|t|-statistics	*1.83*	*1.93*	*.18*	–	–	–
|t|-statistics (1996 vs. 2006)	Men	5.40	2.42	1.66	–	–	–
	Women	2.33	2.15	4.47	–	–	–
|t|-statistics (2006 vs. 2010)	Men	3.69	3.61	1.66	–	–	–
	Women	.09	2.03	1.85	–	–	–

Source: NLSY79 and authors' calculations.

The consequences of promotion

Table 6 presents the wage returns to promotion. In this article, wage growth is defined as the percent change in real earnings (in 2008 dollars) from full-time employment over the 2-year period since the date of last interview for employees who had not changed their employer. For this particular group of workers, the backdrop was a higher probability of promotion among women—a probability that was statistically significant in 2006 and 2010.

Not surprisingly, promoted workers received higher wage increases than did the nonpromoted. This difference was in the order of 9.6 (6.9) percentage points for women (men) in 1996, 7.3 (13.4) percentage points in 2006, and 3.1 (5.4) percentage points in 2010. Female wage growth from promotion exceeded that of men at the start of the period; however, male and female wage growths were virtually identical at the end of the period.

Table 6. Promotion and wage growth, by gender, type of promotion, and reason for promotion, 1996–2010 (Percent)

Characteristic	Year									|t|-statistics			
	1996			2006			2010			1996 vs. 2006		2006 vs. 2010	
	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	|t|-statistics	Women	Men	Women	Men
Promotion rate	21.1	20.4	*0.39*	14.8	12.1	*1.79*	10.2	6.9	*2.74*	*3.72*	*5.52*	*3.14*	*4.28*
Wage growth by promition status													
Promoted workers	16.4	13.0	*1.57*	10.4	15.7	*1.36*	9.3	9.8	*.13*	*2.09*	*.79*	*.31*	*1.52*
Nonpromoted workers	6.8	6.1	*.52*	3.1	2.3	*.70*	6.2	4.4	*1.50*	*2.68*	*3.30*	*2.58*	*1.74*
Wage growth by type of promotion													
Increased responsibility	17.2	12.5	*1.61*	11.2	12.0	*.22*	10.9	8.8	*.54*	*1.78*	*.16*	*.08*	*.84*
No change in responsibility	10.0	9.1	*.36*	4.4	14.8	*1.51*	6.1	2.2	*1.10*	*1.59*	*.88*	*.44*	*1.87*
Wage growth by reason for promotion													
Reorganization	18.5	8.7	*1.65*	10.8	19.5	*.55*	18.1	(1)	(1)	*.96*	*.73*	*.77*	(1)
Change of ownership	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Company growth	22.3	19.8	*.47*	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Company laid off others	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Job performance	16.3	13.8	*.97*	11.9	18.6	*1.28*	5.7	7.3	*.37*	*1.20*	*1.06*	*1.32*	*2.33*
Self-requested	18.5	13.0	*.97*	3.1	20.1	*1.58*	3.9	13.8	*1.56*	*2.66*	*.66*	*.14*	*.58*
Automatic	17.0	15.5	*.15*	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Other	17.8	7.6	*2.03*	15.3	6.2	*1.01*	13.0	(1)	(1)	*.30*	*.21*	*.23*	(1)

Notes:

(1) Cells have fewer than 15 observations.

Note: The table records only full-time employees who have held only one job since the date of last interview.

Source: NLSY79 and authors' calculations.

The wage increases resulting from a promotion also may reflect changes in the tasks and job responsibilities associated with that promotion. Table 6 indicates that increased responsibilities implied higher wage returns to promotion throughout the study period. Perhaps a more interesting result is the absence of greater rewards to promotion from taking on increased responsibilities during the Great Recession.

The wage returns to promotion also may differ by reason for promotion. Although the number of observations available for the present analysis is insufficient to construct a full picture for each of the eight promotion reasons identified earlier, some interesting patterns are present in the data. Consider promotions attributed to reorganization, self-request, or job performance. For women who stated reorganization as the main reason for their promotion, wage returns declined between 1996 and 2006; during the same period, men who cited the same promotion reason experienced wage increases. However, the Great Recession failed to materially reduce the returns to reorganization-generated promotions for women. A broadly similar pattern holds for

promotions that were requested by the worker. The Great Recession seems to have played a more substantial role in promotions that were attributed to job performance, but the decline was only statistically significant for men.

Table 5 showed that women were more likely to be promoted in traditionally male jobs, whereas men were more likely to be promoted in traditionally female jobs, at least early in the study period. Table 7 explores the implications of crowding for wages in general, while table 8 focuses on the wage returns to promotion by gender composition of the occupation. The general result is that any claim of lower wage growth among women in traditionally female jobs did not hold beyond 1996. That said, despite the tendency toward a higher probability of promotion among women in traditionally male and traditionally mixed jobs, there is little to suggest that this tendency was reflected in higher wage growth, except for female wages in traditionally mixed jobs at the start of the period. Likewise, the higher promotion rates among men in female-dominated jobs did not translate into higher wage growth—at least in those cases where sample size allows comparisons to be made.

Table 7. Crowding and percent wage growth, 1996–2010

Year	Gender	Job type			*|t|-statistics*		
		Traditionally male jobs	Traditionally mixed jobs	Traditionally female jobs	Traditionally female vs. traditionally male jobs	Traditionally male vs. traditionally mixed jobs	Traditionally female vs. traditionally mixed jobs
1996	Men	6.2	8.8	9.4	*0.85*	*1.65*	*0.16*
	Women	10.3	10.1	6.8	*.84*	*.04*	*1.84*
	|t|-statistics	*.99*	*.70*	*.69*	–	–	–
2006	Men	2.2	6.6	3.5	*.33*	*2.07*	*.75*
	Women	2.3	5.2	3.8	*.74*	*1.29*	*.75*
	|t|-statistics	*.03*	*.59*	*.09*	–	–	–
2010	Men	4.7	4.4	2.6	*.74*	*.18*	*.59*
	Women	5.1	7.1	7.3	*.83*	*.72*	*.12*
	|t|-statistics	*.14*	*1.31*	*1.59*	–	–	–
|t|-statistics (1996 vs. 2006)	Men	*3.23*	*.98*	*1.15*	–	–	–
	Women	*1.83*	*2.60*	*1.71*	–	–	–
|t|-statistics (2006 vs. 2010)	Men	*1.80*	*.91*	*.19*	–	–	–
	Women	*.95*	*.95*	*2.06*	–	–	–

Source: NLSY79 and authors' calculations.

Table 8. Crowding and percent wage growth for promoted workers, 1996–2010

Year	Gender	Job type			*|t|-statistics*		
		Traditionally male jobs	Traditionally mixed jobs	Traditionally female jobs	Traditionally female vs. traditionally male jobs	Traditionally male vs. traditionally mixed jobs	Traditionally female vs. traditionally mixed jobs
1996	Men	13.0	13.4	11.6	*0.24*	*0.10*	*0.28*
	Women	15.1	21.0	11.6	*.88*	*1.61*	*2.61*
	|t|-statistics	*.61*	*2.19*	*.00*	–	–	–
2006	Men	10.6	16.5	(1)	(1)	*.95*	(1)
	Women	(1)	12.2	9.7	(1)	(1)	*.49*
	|t|-statistics	(1)	*.65*	(1)	–	–	–
2010	Men	4.7	13.5	(1)	(1)	*1.78*	(1)
	Women	(1)	11.7	6.5	(1)	(1)	*.89*
	|t|-statistics	(1)	*.33*	(1)	–	–	–
|t|-statistics (1996 vs. 2006)	Men	*.77*	*.50*	(1)	–	–	–
	Women	(1)	*2.12*	*.41*	–	–	–
|t|-statistics (2006 vs. 2010)	Men	*1.45*	*.44*	(1)	–	–	–
	Women	(1)	*.09*	*.63*	–	–	–

Notes:

(1) Cells have fewer than 15 observations or insufficient data for calculation.

Source: NLSY79 and authors' calculations.

THIS ARTICLE USED DATA from the 1996, 2006, and 2010 rounds of the NLSY79, along with information from the Census Bureau and crosswalks that link various occupational classifications associated with these data, to explore the role of gender in the promotion process. The article focused on promotions in mid- and peak career, thus complementing an earlier study published in the *Monthly Labor Review*. The analysis also drew on all NLSY79 rounds that have been conducted since 1996 to offer some indicative results on the impact of the economic downturn of 2001 and the Great Recession of 2007–2009 on promotions. Finally, the article examined the nexus between promotions and earnings and considered occupational crowding and its consequences for promotion and wages.

It was found that promotion probabilities declined for both genders over the 1996–2006 period—an expected result, given that individuals move up the career ladder as they age. This decline was followed by a further reduction in promotions in the period leading up to the Great Recession and ending in 2010. In addition, and as expected, an increasing proportion of promotions came with increased job responsibilities. Real-wage increases accompanied promotions, albeit generally at a decreasing rate over time. In the majority of cases, promotions appear to have been awarded on the basis of job performance, although the importance of this justification declined over the sample period for both genders. While there is some indication

that the percentage of workers who were optimistic about their promotion prospects declined between 1996 and 2006, any such trend did not persist for women; however, this latter result might prove to be a data artifact caused by female displacement and overqualification on new jobs.

Consistent with earlier findings of a reduction in the gender promotion gap over time, in 2010, all female racial groups enjoyed higher (or in one case equal) and more uniform promotion rates than did their male counterparts. A narrower focus on worker and job characteristics—such as demographic, human capital, and workplace attributes—revealed some generally expected, if not always consistent, relationships between those characteristics and promotion probabilities, as well as the declining promotion rates for both genders in midcareer (and recession) observed earlier. Change is, however, perhaps the more obvious regularity. Thus, for example, while more highly educated individuals were more likely to be promoted, there was a steady narrowing of the gender gap among, say, college-educated workers over the study period. And while large firms continued to offer more opportunities for promotion, any advantage once held by men in this respect had disappeared by the end of the period. Similarly, while training apparently played an important role in the promotion process, gender differences in this regard were muted.

Because worker aging and recession processes occurred simultaneously, it is difficult to attribute changes in promotion rates to macroeconomic conditions. To gain greater insight into the effects of the business cycle, the analysis divided respondents into two age cohorts and compared their respective experiences at different points in time in order to isolate the promotion effects of adverse economic conditions. The results of this exercise suggest that, although both genders were affected by the economic downturn of 2001 (albeit men more severely than women), in the case of the Great Recession women suffered no decline in (expected) promotion rates while men experienced an additional retardation in promotion rates on top of aging effects.

In historical perspective, some of the biggest promotion differences between the genders have been occupation specific. This phenomenon was explored by examining occupational crowding. Overall, the results were statistically insignificant. In particular, although men in traditionally female jobs enjoyed higher promotion rates than did women in traditionally female jobs, gender promotion rates in this category were virtually identical in 2010. Further, while women enjoyed higher promotion rates in male-dominated and traditionally mixed jobs, this advantage was only significant in 2010.

Among those full-time employees who had not changed their employer since the date of last interview, promoted workers earned considerably more than did the nonpromoted. On this measure, women enjoyed higher promotion rates than did men, but much the same wage growth from promotion by the end of the period. Increased job responsibilities were associated with higher returns to promotion throughout the sample period.

Finally, how have female earnings been influenced by occupational crowding? Abstracting from promotions, occupational crowding has not been associated with lower wage growth among women, except at the beginning of the sample period. And as far as the promotion–earnings nexus is concerned, neither has crowding brought about any change in that relationship.

Appendix: a note on the promotion rate

The promotion rate variable used in this study is based on promotions received in the current job since the date of last interview. The raw data are given in table A–1 for all NLSY79 rounds between 1996 and 2010. Taking the year 1996, for example, one can see that 1,140 workers received a single promotion since their last interview, 62 were promoted in 2 of the jobs they had held since their last interview, and 6 were promoted in 3 of the jobs held since their last interview. Further, as can be seen in table A–2, 4,536 (= 4,411 + 122 + 3) workers received no promotion on the current job, although 125 of them

(122 + 3) had received 1 or more promotions on other jobs since the date of last interview. By restricting the calculation of promotion rates to promotions (or nonpromotions) on the current job since the date of last interview, the analysis loses information on these 125 promotions. Table A–2 shows how many promotions are lost for each survey round between 1996 and 2010. Abstracting from weighting considerations (recall that the data used in this article are weighted throughout), a rough idea of the consequences of this loss of data can be obtained from focusing on promotions received on the current job. Had the analysis used the data on all promotions, one would have a promotion rate of 21.5 percent (= 1,208/5,619 x 100) rather than a promotion rate of 19.3 percent (= 1,083/5,619 x 100), which is the rate based on the current job.

Table A–1. Number of workers, by promotion status and number of jobs with promotions since the date of last interview, 1996–2010

Year	Not promoted in any job	Promoted in one job	Promoted in two jobs	Promoted in three jobs
1996	4,411	1,140	62	6
1998	4,351	1,170	46	2
2000	4,348	1,046	37	1
2002	4,450	683	19	1
2004	4,294	528	7	0
2006	4,097	621	14	0
2008	4,130	519	10	0
2010	3,985	369	7	2

Note: There were no individuals with more than three promotions since the date of last interview.

Source: NLSY79 and authors' calculations.

Table A–2. Number of workers, by current job promotion status and number of promotions since the date of last interview, 1996–2010

Year	Not promoted in current job—			Promoted in current job—	
	or any other jobs	but promoted in one other job	but promoted in more than one other job	but no other jobs	and at least one other job
1996	4,411	122	3	1,018	65
1998	4,351	136	6	1,034	42
2000	4,348	111	4	935	34
2002	4,450	66	1	617	19
2004	4,294	43	0	485	7
2006	4,097	45	2	576	12
2008	4,130	51	2	468	8
2010	3,985	21	0	348	9

Source: NLSY79 and authors' calculations.

SUGGESTED CITATION

John T. Addison, Orgul Demet Ozturk, and Si Wang, "Job promotion in midcareer: gender, recession, and “crowding”," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, January 2014, https://doi.org/10.21916/mlr.2014.2.

NOTES

[1] Deborah A. Cobb-Clark and Yvonne Dunlop, “The role of gender in job promotions,” *Monthly Labor Review*, December 1999, pp. 22–38.

[2] The narrowing of the gender gap in promotions has been charted in most studies of the phenomenon, even though the implications of gender for earnings have been contested. For an extensive review of the empirical literature, see John T. Addison, Orgul Demet Ozturk, and Si Wang, “Promotion and pay: gender, unionism, and sector,” discussion paper 6873 (Bonn: Institute for the Study of Labor, September 2012).

[3] The evidence on the role of macroeconomic conditions in the promotion process is sparse. (See, for example, James E. Rosenbaum, “Organizational career mobility: promotion chances in a corporation during periods of growth and contraction,” *American Journal of Sociology*, July 1979, pp. 21–48.) However, there has recently occurred an explosion of interest in the related theme of wage behavior over the business cycle. For a state-of-the-art treatment of the topic, see Anabela Carneiro, Paulo Guimarães, and Pedro Portugal, “Real wages and the business cycle: accounting for worker, firm, and job title heterogeneity,” *American Economic Journal: Macroeconomics*, April 2012, pp. 133–152.

[4] On the crowding hypotheses, see Barbara R. Bergmann, “Occupational segregation, wages and profits when employers segregate by race and sex,” *Eastern Economic Journal*, April/July 1974, pp. 103–110. The key empirical analyses on wages are Francine D. Blau and Andrea H. Beller, “Trends in earnings differentials by gender, 1971–1981,” *Industrial and Labor Relations Review*, July 1988, pp. 513–529; Elaine Sorensen, “The crowding hypothesis and comparable worth,” *Journal of Human Resources*, winter 1990, pp. 55–89; Barry Gerhart and Nabil El Cheikh, “Earnings and percentage female: a longitudinal study,” *Industrial Relations*, winter 1991, pp. 62–78; Erica L. Groshen, “The structure of the female/male differential: is it who you are, what you do, or where you work?” *Journal of Human Resources*, summer 1991, pp. 457–472; and Elizabeth A. Paulin and Jennifer M. Mellor, “Gender, race, and promotion within a private-sector firm,” *Industrial Relations*, April 1996, pp. 276–295.

[5] Note that the discussion of the effects of the business cycle on promotions presents information on all survey rounds.

[6] Because the NLSY79 became biennial in 1994, calculated promotion rates should be adjusted appropriately when compared with rates from earlier rounds of the survey.

[7] According to NLSY79 attachment 3 (Industrial and Occupational Classification Codes), three-digit 2000 census codes are used in the 2002 survey, four-digit 2002 census codes are used in the 2004 survey, and four-digit 2003 census codes are used in the 2006, 2008, and 2010 surveys. Based on the codes in the attachment, dividing the four-digit codes used between 2004 and 2010 by 10 gives the same three-digit codes as those used in the 2000 census, except for the unemployed, the military, those not in the labor force, and uncodable items not included in the sample for this article. Instead of using one-digit occupation codes, the present study uses three-digit codes for the 2002–2010 period and then employs crosswalks to make these codes comparable to 1970 census codes. Attachment 3 of the NLSY79 can be found at http://www.nlsinfo.org/content/cohorts/nlsy79/other-documentation/codebook-supplement/nlsy79-attachment-3-industrial-and.

[8] In particular, the analysis followed the crosswalks provided in David Dorn, "Essays on inequality, spatial interaction, and the demand for skills" (Ph.D. dissertation, University of St. Gallen, September 2009) and David H. Autor and David Dorn, "The growth of low-skill service jobs and the polarization of the U.S. labor market," *American Economic Review*, vol. 103, no. 5, 2013, pp. 1553–1597. These two papers provide three-digit occupation codes, or occ1990dd codes, that can be used as a link between the occupation codes of the 1970, 1990, and 2000 censuses. The analysis first used the crosswalk between the 1970 census occupation codes and occ1990dd codes and then the crosswalk between the 2000 census occupation codes and occ1990dd codes to code all occupations in the sample on a consistent occ1990dd basis. The crosswalk between the 1990 census occupation codes and occ1990dd codes also was used to integrate feminization measures from the Integrated Public Use Microdata Series (IPUMS) into the study’s dataset (see below). Further, Autor and Dorn’s aggregation was used to group all occupations to the one-digit level. These occupation codes were downloaded from Dorn’s website at http://www.cemfi.es/~dorn/data.htm. In the mapping of the 1970 census codes to occ1990dd codes, there were 66 occupations not observed in NLSY79 and 13 occupations that could not be directly mapped. For one of these

occupations, namely occ1990dd occupation "274," the code 280 from the 1970 census codes was assigned with the use of occupational definitions contained in Peter B. Meyer and Anastasia Osborne, "Proposed category system for 1960–1970 census occupations," working paper 238 (U.S. Bureau of Labor Statistics, September 2005) and the appendix in Dorn, "Essays on inequality." Altogether, the analysis lost only 10 observations from unsuccessful mapping. Similar problems were encountered in mapping the 2000 census codes to occ1990dd codes. Specifically, 20 occupations were not observed in the NLSY79, while 18 occupations could not be mapped. To minimize observation loss after mapping (to 10 or fewer observations), the sources cited above were used to assign the approximate occ1990dd codes for 16 occupations in the 2000 census.

[9] Table 1 records as promoted only those individuals who have been promoted in their most recent job.

[10] The question was asked of all respondents, irrespective of their promotion status. Among the nonpromoted, 51.40 percent believed a promotion was possible in the next 2 years; among those who did not believe a promotion was possible, 69.04 percent identified "no further promotion potential" as the principal reason for their attitudes, 14.49 percent pointed to "waiting for someone to leave," and 11.92 percent indicated "need additional training."

[11] For wider discussions of the Great Recession and its aftermath, see Aysegul Sahin, Joseph Song, and Bart Hobijn, "The unemployment gender gap during the current recession," *Current Issues in Economics and Finance*, February 2010, pp. 1–7; Rakesh Kochar, "In two years of economic recovery, women lost jobs, men found them," *Pew Research Center Social and Demographic Trends*, July 2011, pp. 1–25; and Marianna Kudlyak and David A. Price, "The increased role of flows between nonparticipation and unemployment during the Great Recession and recovery," Federal Reserve Bank of Richmond, June 2012, pp. 1–5.

[12] These measures of occupational feminization are created as the weighted ratio of women in each occupation in the 1990 census 5-percent state sample and the American Community Survey 2010 sample, using data downloaded from the IPUMS website. The IPUMS website uses an integrated version of the 1990 census codes; these codes were mapped to original 1990 census codes with the use of the crosswalk provided at https://usa.ipums.org/usa/volii/occ_ind.shtml. See Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek, *Integrated Public Use Microdata Series: Version 5.0*, machine-readable database (Minneapolis: University of Minnesota, 2010). Feminization measures were merged with the article's dataset with the use of the mapping provided at Dorn's website; the procedure ensures that all occupation codes are in occ1990dd codes, as are the NLSY79 sample occupations. Originally, this exercise was performed with 1980 as the starting year in order to capture the "historical" gender composition of occupations. However, a switch was made to 1990 because that year more closely reflects the occupational distribution of female respondents in their early careers. During the decade between 1980 and 1990, there was an influx of female workers into traditionally male and traditionally mixed jobs; as a result, by 1990, most of these jobs were either female dominated or mixed.

RELATED CONTENT

Related Articles

Earnings by gender: evidence from Census 2000, *Monthly Labor Review*, July 2007.

Job mobility and wage growth: evidence from the NLSY79, *Monthly Labor Review*, February 2005.

Women at work: a visual essay, *Monthly Labor Review*, October 2003.

The role of gender in job promotions, *Monthly Labor Review*, December 1999.

Related Subjects

Men | Compensation | Job mobility | Women | Recession