

The Long-Term Costs of Job Displacement among Young Workers

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Abstract

One limitation of the recent research on the long-term costs of job displacement is its focus on individuals with established work histories. Using longitudinal data from the National Longitudinal Survey of Youth (NLSY), we estimate the long-term costs of job displacement for young workers. Similar to a number of recent studies we use a comparison group of nondisplaced workers and regressions that include individual-level fixed-effects to estimate post-displacement earnings losses for this group.

The rate of job displacement among this cohort was high during the 1980s and early 1990s. We find that the earnings costs of job loss for young workers are substantial and persistent, as others have shown for older and more established workers. In the fifth year following job loss, displaced men lose 8.4 percent and displaced women 13.0 percent in annual earnings, relative to expected levels. To improve our understanding of the causes of these long-term costs, we also examine the relative contributions of actual earnings losses and losses due to foregone earnings to total earnings losses for young displaced workers. We find a clear contrast between young and older workers in the causes of these losses. Unlike more established workers, young displaced workers do not experience a large decline in earnings following displacement. At the same time, their nondisplaced counterparts experience rapid earnings growth.

1. Introduction

The earnings costs of job displacement are sizeable and persistent. Recent studies find that five or more years after displacement, earnings remain from 10 to 18 percent below expected levels.¹ The persistence of earnings losses after job loss has implications for the design of assistance policies, as it raises concerns about the long-term earnings prospects of displaced workers.

One limitation of the recent research on the long-term costs of job displacement is its focus on individuals with established work histories. We know very little about the long-term consequences of job loss among young workers. This omission from the job displacement literature may stem from the presumption that young workers have less to lose from job displacement given their relatively short job tenures and time to invest in firm-specific human capital. In addition, young workers may be less likely than older workers to experience losses of industry or union rents following job loss. Finally, young workers at firms with promotion-from-within policies have less to lose from job loss than their older, more-tenured counterparts.

Each of these explanations focuses on the actual earnings or wage losses of those workers who experience a job displacement. They do not, however, address one important aspect of young adult labor markets: earnings grow rapidly early in careers, due to continued human capital acquisition (on-the-job training), learning about worker ability, and job matching.² For young workers, there may exist substantial costs associated with job displacement in the form of missed or delayed opportunities for rapid earnings growth. Therefore, displacement-induced earnings

¹See Topel 1990, Ruhm 1991, Jacobson, LaLonde, and Sullivan 1993a,b, Schoeni and Dardia 1996, and Stevens 1997.

²See Murphy and Welch (1990), Topel and Ward (1992), Klerman and Karoly (1995), and Farber and Gibbons (1996).

losses for young workers may not be primarily caused by losses of existing firm-specific capital, as is the case for older workers. Rather, young worker earnings losses may be due instead to the forfeiture of existing firm knowledge of worker ability or to the loss of opportunities to accumulate firm-specific and general human capital.

This speculation suggests that the construction of the appropriate counterfactual will be especially important in determining the long-term costs of job displacement among young workers. A few recent studies rely on the earnings profiles of nondisplaced workers to provide a prediction of what earnings would have been in the absence of displacement (Jacobson, LaLonde, and Sullivan, 1993a,b, Schoeni and Dardia, 1996, and Stevens, 1997). The use of nondisplaced workers as a comparison group in these studies is of value, but may not have a large effect on the estimates of earnings losses because of the fairly slow earnings growth among nondisplaced workers in their samples of all age groups.³ In contrast, the use of a comparison group of nondisplaced workers is likely to have a substantial effect on estimates of the long-term costs of job displacement among young workers.

Using longitudinal data from the National Longitudinal Survey of Youth (NLSY), we examine the long-term costs of job displacement for young workers. Similar to the recent studies cited above we use a comparison group of nondisplaced workers and regressions that include individual-level fixed-effects to estimate post-displacement earnings losses for this group. These results provide additional estimates of the long-term costs of job displacement at the national level and provide the first estimates of these costs for young workers. We also use earnings simulations

³For example, see Figure 3.1, p. 45 in Jacobson, LaLonde, and Sullivan (1993a) and Figure 3 in Schoeni and Dardia (1996).

to examine the relative contributions of actual earnings losses and losses due to foregone earnings to total earnings losses for young displaced workers.

2. Data

We use data from the National Longitudinal Survey of Youth (NLSY), a nationally representative sample of 12,686 men and women who were between the ages of 14 to 22 when they were first interviewed in 1979.⁴ Survey members have been interviewed annually since 1979. We exclude the subsample of 1,280 youth designed to represent the population who were enlisted in the four branches of the military as of September 30, 1978. By using sampling weights provided by the NLSY, our sample is representative of the civilian noninstitutionalized population in this age cohort.

The NLSY is relatively unexploited as a data source for studies of job displacement. It has several distinct advantages over the widely-used Displaced Worker Surveys (DWS). Because of its annual interviews, the NLSY has a short recall period for reporting job losses, in contrast to the three to five year retrospective period in the DWSs.⁵ Furthermore, the longitudinal nature of the NLSY provides detailed information on the characteristics of individuals and jobs both before and after the potential job loss, thus allowing examination of both the short-term and long-term consequences of job displacement. Finally, we can readily create a sample of comparison workers who do not suffer a job displacement to use in calculating displacement rates and relative earnings

⁴See Center for Human Resource Research (1993) for additional details on the NLSY sample.

⁵See Topel (1990), Farber (1993), and Evans and Leighton (1995) for discussions of the problems of recall bias in the DWSs.

losses.

The NLSY also has some advantages over the Panel Study of Income Dynamics (PSID) for our analysis. First, information in the PSID does not allow a distinction to be made between layoffs and discharges for cause (firings).⁶ Second, because the PSID is based primarily on household heads, there is a limited amount of information on women in the sample. Finally, sample sizes for young workers are much smaller in the PSID.

Our procedure for determining whether an individual experienced a job displacement in a given year is as follows.⁷ First, we exclude individuals who are enrolled in school during the year. Second, we use detailed employment information on up to five jobs held during the interview period (approximately one year) to identify whether the individual was at risk of a job displacement. The individual must have held a job for which he or she worked an average of 25 or more hours per week during the weeks worked on this job. Individuals meeting this requirement are considered at risk of displacement. If an individual was no longer working at a reported job and the reason for the job ending was "layoff" or "plant closing" then the job was a displacement.⁸ Following this determination, information from the following year on employer matches was used to determine if the respondent reported being (re)employed with that employer. If there was a match of employer, the "layoff" was considered temporary and not counted as a displacement.

⁶This is also a shortcoming of the administrative data sets for Pennsylvania and California used in Jacobson, LaLonde and Sullivan (1993a, 1993b) and Schoeni and Dardia (1996), respectively.

⁷See Kletzer and Fairlie (1996) for further details.

⁸The questionnaire did not distinguish between plant closing and layoff until the 1984 interview.

3. The Incidence of Job Displacement

Before estimating the long-term costs of job displacement, we examine the extent to which young workers experience job loss. We may be especially concerned about earnings losses for this group of workers if their likelihood of job displacement is high. In the first row of Table 1, we report average annual displacement rates for our sample of young male and female workers during the entire sample period (1984-93).⁹ We define the displacement rate as the number of workers reporting a displacement divided by the number of workers "at risk" of displacement (i.e. working or displaced). The estimates clearly indicate that young workers are at a high risk of experiencing job displacement. An average of 6.7 percent of working men and 3.9 percent of working women lost their jobs in each year during our sample period. Furthermore, previous studies using data for workers of all ages show that younger workers have higher probabilities of job loss than older workers (see Farber 1997).

An examination of male and female displacement rates over the sample period reveals that displacement rates declined from the early 1980s to the early 1990s (see Figure 1). This finding suggests that young workers may now be at a lower risk of job displacement than they were in the past. However, two important changes occurred from 1984 to 1993 to our sample of young workers: the natural course of aging for each sample member, and changes in the educational composition of the sample as its youngest members finished school and entered the work force.¹⁰

⁹We do not include observations from 1979 to 1983 because of changes to the possible responses to the reason left job question. Prior to 1984, temporary and permanent layoffs were grouped together.

¹⁰In 1984, sample members were ages 19-27 and by 1993, they were ages 28-36. In addition, 11.0 percent of our sample had graduated from college in 1984, whereas 23.1 percent had graduated from college in 1990. These changes resulted in an increase in our sample size from 4094 in 1984 to 6021

Returning to Table 1 in which we report displacement rates by age and education, it is evident that there is a negative relationship between each of the measures and the probability of displacement. These patterns suggest that compositional changes may have contributed substantially to the downward trend in observed displacement from 1984 to 1993 for this group.

We calculate adjusted displacement rates that remove the effects of these compositional changes. To calculate these adjusted displacement rates, we estimate a logit regression for the probability of job displacement that includes age, education and dummy variables for each year as independent variables. The regression estimates are reported in Kletzer and Fairlie (1996). We define the adjusted or predicted displacement rate for year t as:

$$(3.1) \quad D_t = \Lambda(\mathbf{X}\beta + \delta_t),$$

where Λ represents the logistic distribution, \mathbf{X} represents specific values for the age and education variables, β are the coefficient estimates on these variables, and δ_t represents the coefficient estimates on the dummy variable for year t . We choose \mathbf{X} to solve the following equation:

$$(3.2) \quad D_{93} = \Lambda(\mathbf{X}\beta + \delta_{93}),$$

where D_{93} is the displacement rate in 1993. Therefore, our choice of \mathbf{X} equates the ends of the unadjusted and adjusted time series in displacement rates. By choosing to calibrate the displacement rates series to the 1993 level, we are effectively using sample characteristics that reflect widespread school completion and adulthood.

Adjusted displacement rates using Equation (3.3) are displayed in Figure 2. As expected for both men and women, adjusted displacement rates are lower than unadjusted rates during our sample period. The adjusted rates indicate that young workers were not at a lower risk of

in 1990.

displacement in the early 1990s than in the early 1980s. This finding is consistent with more general trends in displacement reported in Farber (1997).

To conclude, our estimates indicate that young workers were at a high risk of experiencing a job displacement during the sample period and that this risk did not decline during the 1980s and early 1990s. We now examine whether the job displacements experienced by this group of workers resulted in large earnings losses.

4. Long-term Earnings Losses Following Job Displacement

A. Econometric and Measurement Issues

To estimate long-term earnings losses due to job displacement among young workers, we use the same regression specification as that used in Jacobson, LaLonde, and Sullivan (1993a,b), Schoeni and Dardia (1996), and Stevens (1997). In particular, we estimate the following equation:

$$(4.1) \quad Y_{it} = a_i + \gamma_t + X_{it}'\beta + D_{it}'d + e_{it},$$

where Y_{it} is individual i 's annual earnings in year t , a_i is an individual-level fixed effect, γ_t is a vector of time effects, X_{it} includes time varying individual characteristics, and D_{it} is a vector of dummy variables indicating each year before, after and during the individual's job displacement.¹¹ This regression model allows individuals to differ in both measurable characteristics that change over time and unmeasurable characteristics that do not change over time. For example, the model accounts for the possibility that displaced workers have lower earnings levels throughout their careers than nondisplaced workers. The vector of time effects are included to account for important economy-wide effects on earnings during the sample period.

¹¹We include age and age squared in X_{it} .

The inclusion of years since displacement dummy variables and the use of both displaced and nondisplaced workers to estimate (4.1) allows nondisplaced workers to contribute to estimating the rate of earnings growth during the sample period. Estimates of the costs of job displacement in annual earnings can be obtained directly from the time since displacement dummy variables.

Before discussing the findings for our estimates of (4.1), it is useful to briefly describe the sample criteria used to create our displaced and nondisplaced (comparison) groups. We include only those individuals who suffer a job displacement that immediately follows three years of work experience without experiencing a job displacement (i.e., a displacement in year t must be preceded by working and no displacements in years $t-1$, $t-2$, and $t-3$). This restriction guarantees that our displaced worker group does not consist of recent school attendees or workers suffering a recent job displacement. We only include the first observed job displacement for each individual (if one exists) during the survey period, and we include it only if it meets the work experience restriction. We do not separately include additional displacements for these individuals because we view future displacements as a cost of the initial displacement.¹² For our sample of displaced workers, we include measures of their earnings and independent variables in the two years prior to the displacement, the year of the displacement, and the five years following the displacement.¹³

Our sample of nondisplaced workers (the comparison or control group) includes all

¹²See Stevens (1997) for an analysis of the importance of multiple job losses in determining earnings losses among displaced workers.

¹³We do not include earnings from the first year of work experience (or three years prior to the displacement) because for many individuals these earnings are low due to working only part of the year. Also, the length of our survey does not allow us to reliably estimate earnings losses for more than five years after displacement.

workers who do not suffer a job displacement during the survey period. These individuals do not have a year of displacement reference, and thus we include the first observed 8-year period from the survey that meets the following restriction. The individual must have four years of work experience followed by five years of not experiencing a job displacement and not having a missing value for these measures. For both the displaced and nondisplaced samples we follow the approach taken in previous studies of excluding from our earnings calculations annual observations for which the individual was enrolled in school or had no reported earnings.¹⁴ The resulting sample contains 25,186 person-year observations representing 2756 nondisplaced workers and 861 displaced workers.

Our measure of earnings is total annual labor market earnings, which is the sum of wage and salary earnings, farm and business income, and military income (measured in 1993 dollars).¹⁵ We prefer the use of annual earnings to the wage rate because the former measure incorporates reductions in hours worked resulting from reemployment after job loss. Therefore, this measure allows us to capture the full costs of job displacement in the regressions.

B. Estimates of Earnings Losses

We report estimates from (4.1) in Table 2 for men and women. Specifications 1 and 3 use annual earnings as the dependent variable, and Specifications 2 and 4 use the log of annual earnings as the dependent variable. We first discuss the results for men. Earnings losses appear to

¹⁴Only 3.3 percent of all post-displacement observations for displaced workers were removed because of school enrollment.

¹⁵We use the CPI-U to convert labor market earnings to 1993 constant dollars.

be relatively small in the year prior to displacement using both measures. In the year of displacement and the years following displacement, however, earnings losses are large and persistent. For each of these years the estimates are highly significant. Even five years after displacement, the earnings of displaced young men are substantially lower than the earnings of nondisplaced young men. The estimates of earnings losses for this year are \$7437 (specification 1) or 8.0 percent (specification 2).¹⁶

Estimates of post-displacement earnings losses for women are smaller in actual dollars, but larger in percentage terms than for men. For example, in the fifth year following displacement, the earnings of displaced young women are \$2483 or 12 percent lower than the earnings of nondisplaced young women. Displaced women experience especially large earnings losses in the first through fourth years following displacement, ranging from 20 to 40 percent. Clearly, both displaced young men and women suffer substantial and persistent annual earnings losses relative to nondisplaced workers.

Overall, the estimated post-displacement earnings losses reported in Table 2 are similar in magnitude to those reported in Jacobson, LaLonde, and Sullivan (1993a,b), Schoeni and Dardia (1996), and Stevens (1997). Of these studies, only Stevens (1997) uses nationally representative data, drawn from the Panel Study of Income Dynamics (PSID). We compare our results for men in specification 2 of Table 2 to her results for household heads (specification 1 of Table 4, p. 175).¹⁷ Her results for the first to fourth years following displacement are quite similar to ours.

¹⁶The percentage effect on earnings is calculated from estimates of the log of annual earnings as $e^d - 1$.

¹⁷Her sample of household heads from the PSID is 84 percent male.

She finds earnings losses ranging from 11.3 to 15.1 percent for these years. Her estimate of earnings losses in the fifth year (2.7 percent) is smaller than ours, but may simply reflect sampling variability as her estimates of earnings losses in the sixth and seventh years following displacement are 7.3 percent and 12.4 percent, respectively. Our estimates differ from hers in that we find smaller losses in the year preceding displacement and in the year of displacement. To conclude, young displaced workers appear to experience earnings losses similar to displaced workers of all ages.

Additional Estimates

We estimate a few additional regressions to check the robustness of these results. First, we estimate (4.1) using a sample that adds back all zero earnings observations. These regressions use actual earnings as the dependent variable and are reported in specifications 1 and 3 of Table 3. As discussed above, the estimates reported in Table 2 do not include these observations, and thus may understate displacement-induced earnings losses if many displaced workers remain jobless in the years following displacement. For men, we find slightly larger earnings losses in the years following displacement (averaging \$397 per year). The results are less clear for women as losses are higher in some years and lower in others. Overall, the estimates of earnings losses do not appear to be overly sensitive to the exclusion of zero earnings observations.

We also estimate (4.1) excluding all earnings observations less than \$500 (reported in specifications 2 and 4 of Table 3). The results are similar to those reported in Table 2 suggesting that our estimates of substantial earnings losses among young workers are not being driven by a few displaced workers with very low earnings following displacement.

Similar to Jacobson, LaLonde, and Sullivan (1993a,b) and Stevens (1997), we estimate regressions that include individual-specific time trends with our sample of young workers.¹⁸ Both studies find that the estimates of earnings losses from these regressions are similar to those from their original fixed-effect regressions. Nevertheless, we estimate these regressions as a robustness check. In estimates not reported here, we find implausible coefficient estimates for the long-term effects of job displacement. For example, the coefficient estimates for the five years after displacement variable are \$6325 for men and \$2476 for women implying that job displacement substantially increases earnings in that year. Our difficulty with estimating an individual-specific time trend is likely to result from not having a long enough history of pre-displacement earnings. A long history of earnings observations is necessary to separately identify the time trend from the displacement dummy variables for displaced workers. In contrast to studies by Jacobson, LaLonde, and Sullivan (1993a,b) and Stevens (1997) that include 6-10 years of earnings prior to job loss, we can include only 2-3 years of earnings for our sample of young workers.¹⁹

As an alternative to including individual-specific time trends, we estimate regressions that include interactions between the linear time trend and both Armed Forces Qualifying Test (AFQT) scores and education levels. These interactions should capture some of the observed heterogeneity in earnings growth rates across workers, although this method is not as effective as including

¹⁸As discussed in Jacobson, LaLonde, and Sullivan (1993), the estimates of displacement induced earnings losses may be biased if the displaced and nondisplaced groups have different rates of earnings growth. Specifically, the negative effects of displacement will be overstated if displaced workers have lower average rates of earnings growth than the nondisplaced. A potential remedy for this problem is to include individual-specific time trends in (4.1).

¹⁹As noted above, approximately half of the sample period passes before a large share of the NLSY cohort finishes school and enters the labor market.

individual-specific time trends in accounting for unobserved worker heterogeneity. Results are reported in Table 4. As expected, we generally find faster growth rates in earnings for more educated workers and for workers with higher AFQT scores. For men, the estimated costs of job displacement are similar in the year before, the year during, and the first and second years following displacement. The estimates are smaller in the third, fourth and fifth years following displacement, but remain large and highly statistically significant. For women, the included time trend interactions with AFQT scores and education result in only minor changes in the estimates of earnings losses.

Unfortunately, these results and those for the regressions with individual-specific time trends do not provide conclusive evidence that our original estimates are free of the bias due to differential growth rates for displaced and nondisplaced workers. We acknowledge the possibility that differential rates of earnings growth may be more important for young workers than for older workers, particularly so in models of learning about worker ability and/or if ability influences the rate of human capital acquisition.

C. Predicted Earnings Patterns for Displaced and Nondisplaced Workers

We now examine the causes of the long-term earnings losses estimated above for our sample of young workers. Do the earnings of displaced workers fall or simply fail to rise as fast as the earnings of nondisplaced workers? The answer to this question may shed light on whether the large relative earnings losses are due to the loss of firm-specific capital or other firm-specific components, or are instead due to missed opportunities to advance earnings through the accumulation of firm-specific or general human capital. To explore these issues, we examine

predicted earnings patterns for young displaced and nondisplaced workers. In particular, we simulate earnings profiles using our estimates from equation (4.1). We predict two earnings streams for a representative individual - one for when the individual experiences a job displacement and the other for when the individual does not experience a displacement. We choose a representative male and female worker based on the age and year distributions in our sample. For both sexes, we use an individual who was 24 years old in 1984 and assume that if there is a displacement it occurs in 1986.²⁰ Finally, we assume that the male and female workers earn \$22,000 and \$15,000 in 1984, respectively. These levels of initial earnings are approximately equal to mean earnings for male and female nondisplaced workers.

The simulated earnings streams for the representative male and female workers are presented in figures 3 and 4. If our representative young man is displaced, his annual earnings remain roughly constant from two years prior to the displacement to the year of displacement. One year after displacement his annual earnings are \$1768 (8.0 percent) higher than in the year of displacement. Five years later, his earnings are \$5819 (26.5 percent) higher. These estimates suggest that displaced young men do not experience a decline in earnings following job displacement. However, the representative young man who does not suffer a job displacement experiences rapid earnings growth in the years preceding and following 1986. His earnings grow by \$13,242 (60.2 percent) from 1984 to 1991, a rate which is considerably faster than that for displaced workers.

The earnings patterns are fairly similar for our representative young woman (figure 4). The

²⁰We choose the midpoint of the age distribution for the NLSY in this year. Earnings losses 5 years after displacement are only estimated using displacements that occur between 1984 and 1988. Therefore, we choose 1986 for the year of displacement because it is the midpoint of this interval.

main difference is that her predicted earnings remain roughly constant for two years following the displacement. Similar to the findings for men, however, her earnings have grown \$1017 (6.6 percent) by the third year and \$2588 (16.8 percent) by the fifth year following displacement. In addition, if she does not experience a displacement her earnings increase \$5482 (36.5 percent) from 1984 to 1993.

The simulated earnings streams displayed in figures 3 and 4 indicate that the large and persistent earnings losses for displaced workers reported in table 2 are not due to a drop in actual earnings, but are instead due to missed opportunities for rapid early career earnings growth. The finding that young displaced workers are not suffering a decline in actual earnings indicates that the negative effect of losing their stock of firm-specific human capital or other factors providing a wage premium is more than offset by the positive effect of gaining experience in the labor market.

There is a clear contrast between the experiences of older and younger displaced workers. Jacobson, LaLonde, and Sullivan (1993a,b) report that older more established workers experience large earnings reductions following displacement and that nondisplaced older workers experience relatively slow earnings growth. The observed earnings paths of separators and stayers in Jacobson, LaLonde, and Sullivan's (1993b) sample of high-tenure manufacturing workers in Pennsylvania provide evidence of both of these patterns.²¹ For example, average quarterly earnings for separators fell 21.6 percent while for stayers they rose 8.3 percent over a period from two years prior to separation to four years after separation. Although Stevens (1997) does not provide estimates of earnings growth for nondisplaced workers, her estimates in Table 3, p. 174 indicate

²¹See their Figure 1. Similar patterns are shown in figure 3, p. 33 of Schoeni and Dardia (1996) for a sample of durable good manufacturing (primarily in aerospace sectors) workers in California.

large reductions in earnings among displaced workers from 2-3 years prior to displacement to several years after displacement. Her estimates suggest that even nine years after displacement the earnings of displaced workers are below their levels three years prior to displacement. These findings suggest that, unlike the patterns for young workers, the costs of displacement for older workers are due in large part to the substantial earnings reductions experienced by displaced workers in the years following displacement.

The causes of displacement-induced earnings losses clearly differ between young and older workers. First, young workers do not experience a large decline in actual earnings following displacement as older workers do. This finding suggests that young displaced workers may lose accumulated firm-specific human capital, but its loss is of little consequence because its negative effect on earnings is more than offset by the positive experience effect. This may be due to young workers not having time to make substantial investments in firm-specific human capital. Second, young nondisplaced workers experience much more rapid earnings growth than older nondisplaced workers. The losses due to missed or delayed opportunities for this earnings growth are large for young displaced workers. Apparently, the large relative earnings losses for this group are due to losing the opportunity, over a period of time, to accumulate specific skills and other firm-specific earnings components.

D. Earnings Losses by Educational Attainment

It is well known that college-educated workers experience substantially faster earnings growth than other less educated workers early in their careers.²² College graduates who

²²For example, see Ehrenberg and Smith (1994), pp. 296-97.

experience a job loss, therefore, may have a lot to lose in terms of missed opportunities for rapid earnings growth. In Tables 5 and 6, we report estimates of earnings losses for high school graduates and dropouts (12 years of schooling or less) and college graduates (16 or more years of schooling), respectively. The estimates in these tables clearly demonstrate that post-displacement earnings losses, measured in both levels and logs, are substantially larger for college-educated workers than for workers with a high school education or less, and this is especially true for men.²³ Earnings losses for displaced workers with 16+ years of schooling range from 27 to 50 percent for men and 32 to 109 percent for women in the years following displacement.

We also simulate earnings streams by educational attainment for representative displaced and nondisplaced workers (see figures 5 and 6). In each figure, starting earnings in 1984 are set at the nondisplaced mean for the relevant educational group. These figures illustrate a striking difference in earnings growth between college graduate and high school educated workers, particularly among men. This difference yields one possible explanation for the rise in earnings losses with educational status. Earnings growth for nondisplaced workers with less than 16 years of education was modest over this period, so that similarly educated displaced workers did not lose as much earnings growth.²⁴ Earnings growth for college educated workers was stronger, and displaced college graduate workers lost this growth. The finding that workers with relatively lower levels of education have relatively smaller (but still large) displacement costs suggests that such workers may have had relatively less to lose in terms of potential earnings growth.

²³Stevens (1997) also finds larger losses among more educated workers.

²⁴On this point, see Juhn, Murphy, and Pierce (1993).

5. Conclusions

The widespread permanent job loss of the 1980s and 1990s that is central to the current public perception of economic insecurity did not spare the baby boomers of the NLSY. The rate of job displacement among this cohort was high during the 1980s and early 1990s. In addition, the earnings costs of job loss for young workers are substantial and persistent, as others have shown for older and more established workers. In the fifth year following job loss, displaced men lose 8.4 percent and displaced women 13.0 percent in annual earnings, relative to expected levels.

There is a clear contrast, however, between young and older workers in the causes of these losses. We find that young displaced workers do not experience a large decline in earnings following displacement. Unlike the situation of older workers, for young workers earnings losses caused by a loss of accumulated firm-specific capital are entirely offset by the growth in earnings due to continued labor market experience. At the same time, their young nondisplaced counterparts experience rapid earnings growth. These two factors produce large relative earnings losses among young displaced workers, and they suggest that the relative earnings losses are more the result of lost opportunities to acquire firm-specific and general human capital rather than the loss of accumulated firm-specific capital or losses of wage premiums, possibly due to industry and union rents or internal labor markets.

Job mobility is often cited as an important part of early career labor market activity. For this cohort, involuntary job change appears to impose a critical barrier in the progression toward the earnings stability of mature careers.

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Table 1
Annual Displacement Rates
Men and Women (1984-1993)

	Men		Women	
	Displacement Rate	N	Displacement Rate	N
Total	6.7%	28301	3.9%	24846
Age				
Ages<25	10.3%	6012	5.0%	5403
Ages 25-30	6.2%	16953	3.9%	14775
Ages>30	5.2%	5336	2.8%	4668
Education (Years)				
Less than 12	11.7%	5420	7.0%	2500
12	7.2%	13699	4.8%	11976
13-15	6.6%	4632	2.8%	5714
16 or More	2.3%	4470	1.8%	4544

- Notes:
- 1) Samples include individuals who worked in non-agricultural industries and were not self-employed.
 - 2) Each observation represents a person-year.
 - 3) All calculations use NLSY sampling weights.

Table 2
Actual and Log Earnings Regressions with Individual Fixed Effects
Men and Women (1982-1993)

Dependent Variable Sample	Specification			
	(1) Earnings Men	(2) Ln(Earnings) Men	(3) Earnings Women	(4) Ln(Earnings) Women
Variable				
1 Year Before Displacement	-1440 (636)	-0.0340 (0.0309)	-207 (535)	0.0288 (0.0485)
Year of Displacement	-3691 (635)	-0.0985 (0.0309)	-1280 (536)	-0.0511 (0.0487)
1 Year After Displacement	-4775 (683)	-0.2037 (0.0332)	-2712 (585)	-0.3340 (0.0531)
2 Years After Displacement	-5508 (705)	-0.0962 (0.0343)	-3272 (621)	-0.2589 (0.0564)
3 Years After Displacement	-6190 (749)	-0.1259 (0.0364)	-2823 (652)	-0.1786 (0.0592)
4 Years After Displacement	-6781 (796)	-0.1125 (0.0387)	-3719 (709)	-0.2047 (0.0644)
5 Years After Displacement	-7437 (880)	-0.0766 (0.0428)	-2483 (804)	-0.1147 (0.0730)
Sample Size	12203	12203	12983	12983

- Notes:
- 1) Annual earnings are measured in 1993 dollars.
 - 2) All equations include individual fixed effects, time dummies (1983-93), age, and age squared as additional independent variables.
 - 3) Standard errors are in parentheses below the coefficient estimates.

Table 3
 Actual Earnings Regressions with Individual Fixed Effects
 Additional Specifications - Men and Women (1982-1993)
 Dependent Variable: Earnings

Sample	Specification			
	(1) Men	(2) Men	(3) Women	(4) Women
1 Year Before Displacement	-1539 (640)	-1501 (638)	497 (563)	-245 (534)
Year of Displacement	-3563 (641)	-3734 (638)	-378 (563)	-1256 (537)
1 Year After Displacement	-5329 (672)	-4710 (685)	-2650 (586)	-2516 (589)
2 Years After Displacement	-5892 (698)	-5574 (707)	-3045 (612)	-3302 (620)
3 Years After Displacement	-6617 (740)	-6149 (752)	-2359 (648)	-2566 (653)
4 Years After Displacement	-6930 (789)	-6810 (799)	-2944 (698)	-3719 (710)
5 Years After Displacement	-7906 (865)	-7460 (883)	-2477 (769)	-2408 (805)
Sample Size	12650	12166	14293	12851

- Notes:
- 1) Annual earnings are measured in 1993 dollars.
 - 2) All equations include individual fixed effects, time dummies (1983-93), age, and age squared as additional independent variables.
 - 3) Standard errors are in parentheses below the coefficient estimates.
 - 4) Specifications 1 and 3 include zero earnings observations, and Specifications 2 and 4 exclude earnings observations less than \$500.

Table 4
 Actual Earnings Regressions with Individual Fixed Effects
 and Time Trend Interactions
 Men and Women (1982-1993)

Variable	Specification	
	1	2
Dependent Variable	Earnings	Earnings
Sample	Men	Women
1 Year Before Displacement	-1482 (656)	-227 (534)
Year of Displacement	-3582 (656)	-1225 (537)
1 Year After Displacement	-4322 (706)	-2558 (586)
2 Years After Displacement	-4668 (732)	-3100 (620)
3 Years After Displacement	-4556 (780)	-2512 (651)
4 Years After Displacement	-4413 (833)	-3351 (716)
5 Years After Displacement	-4059 (925)	-1893 (805)
Sample Size	11532	12492

Notes:

- 1) Annual earnings are measured in 1993 dollars.
- 2) All equations include individual fixed effects, time dummies (1983-93), age, age squared, and time trend interactions with AFQT score and education level.
- 3) Standard errors are in parentheses below the coefficient estimates.

Table 5
Actual and Log Earnings Regressions with Individual Fixed Effects
Male and Female High School Graduates and Dropouts (1982-1993)

Variable	Specification			
	(1)	(2)	(3)	(4)
Dependent Variable	Earnings	Ln(Earnings)	Earnings	Ln(Earnings)
Sample	Men	Men	Women	Women
1 Year Before Displacement	-1126 (577)	-0.0460 (0.0384)	2 (540)	0.0293 (0.0609)
Year of Displacement	-2997 (577)	-0.1057 (0.0384)	-832 (543)	-0.0572 (0.0613)
1 Year After Displacement	-3301 (618)	-0.1900 (0.0411)	-2151 (597)	-0.3917 (0.0673)
2 Years After Displacement	-2939 (638)	-0.0394 (0.0424)	-3230 (628)	-0.2964 (0.0708)
3 Years After Displacement	-3324 (677)	-0.0715 (0.0450)	-2637 (653)	-0.2207 (0.0737)
4 Years After Displacement	-3103 (723)	-0.0295 (0.0481)	-2523 (715)	-0.2140 (0.0806)
5 Years After Displacement	-1993 (802)	0.0658 (0.0533)	-1499 (802)	-0.1719 (0.0904)
Sample Size	8218	8218	7629	7629

Notes: 1) Annual earnings are measured in 1993 dollars.
 2) All equations include individual fixed effects, time dummies (1983-93), age, and age squared as additional independent variables.
 3) Standard errors are in parentheses below the coefficient estimates.

Table 6
Actual and Log Earnings Regressions with Individual Fixed Effects
Male and Female College Graduates (1982-1993)

Variable	Specification			
	(1)	(2)	(3)	(4)
Dependent Variable	Earnings	Ln(Earnings)	Earnings	Ln(Earnings)
Sample	Men	Men	Women	Women
1 Year Before Displacement	-4472 (3498)	-0.0152 (0.0720)	-2950 (2151)	-0.0249 (0.1326)
Year of Displacement	-9853 (3451)	-0.0891 (0.0710)	-5534 (2156)	-0.1142 (0.1330)
1 Year After Displacement	-13678 (4028)	-0.3966 (0.0829)	-9113 (2327)	-0.4430 (0.1435)
2 Years After Displacement	-19294 (4117)	-0.4025 (0.0848)	-4242 (2507)	-0.3054 (0.1545)
3 Years After Displacement	-15885 (4894)	-0.2825 (0.1008)	-6460 (2649)	-0.4742 (0.1633)
4 Years After Displacement	-15719 (5226)	-0.2755 (0.1076)	-13717 (3134)	-0.7377 (0.1932)
5 Years After Displacement	-14147 (7328)	-0.2370 (0.1509)	-4975 (4303)	-0.2761 (0.2653)
Sample Size	1828	1828	2229	2229

- Notes: 1) Annual earnings are measured in 1993 dollars.
2) All equations include individual fixed effects, time dummies (1983-93), age, and age squared as additional independent variables.
3) Standard errors are in parentheses below the coefficient estimates.

Figure 1
Displacement Rates
Men and Women (1984-1993)

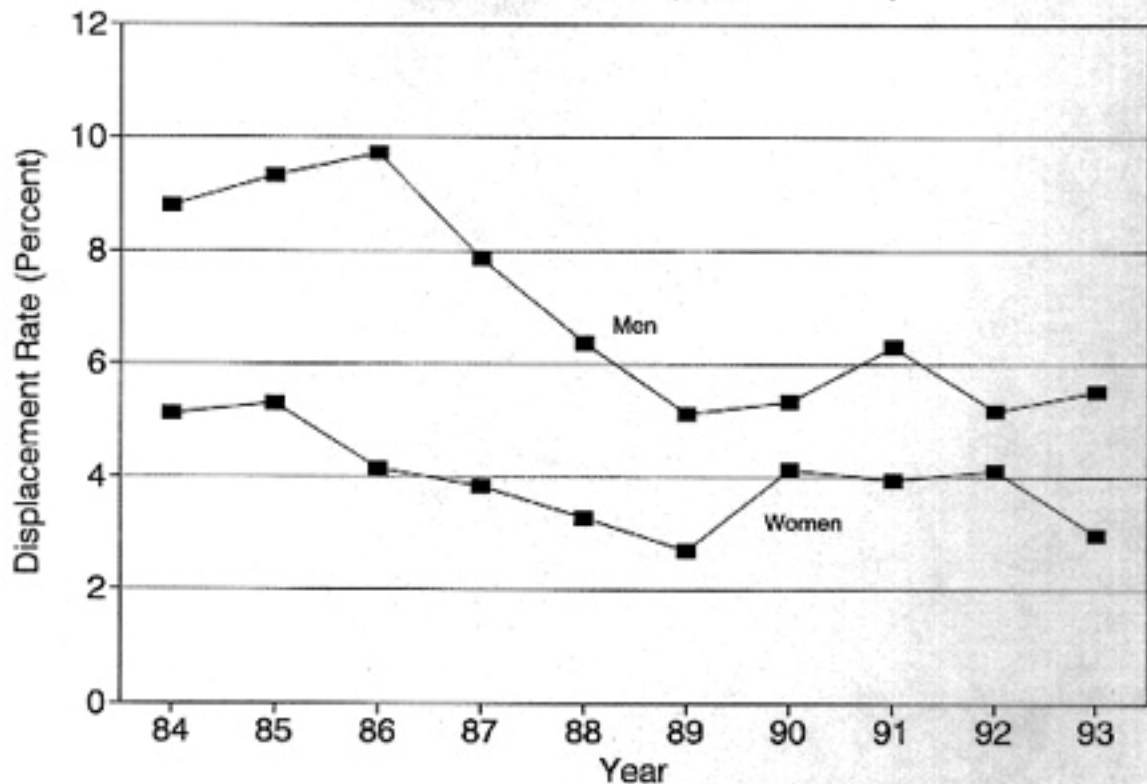


Figure 2
Adjusted Displacement Rates
Men and Women (1984-1993)

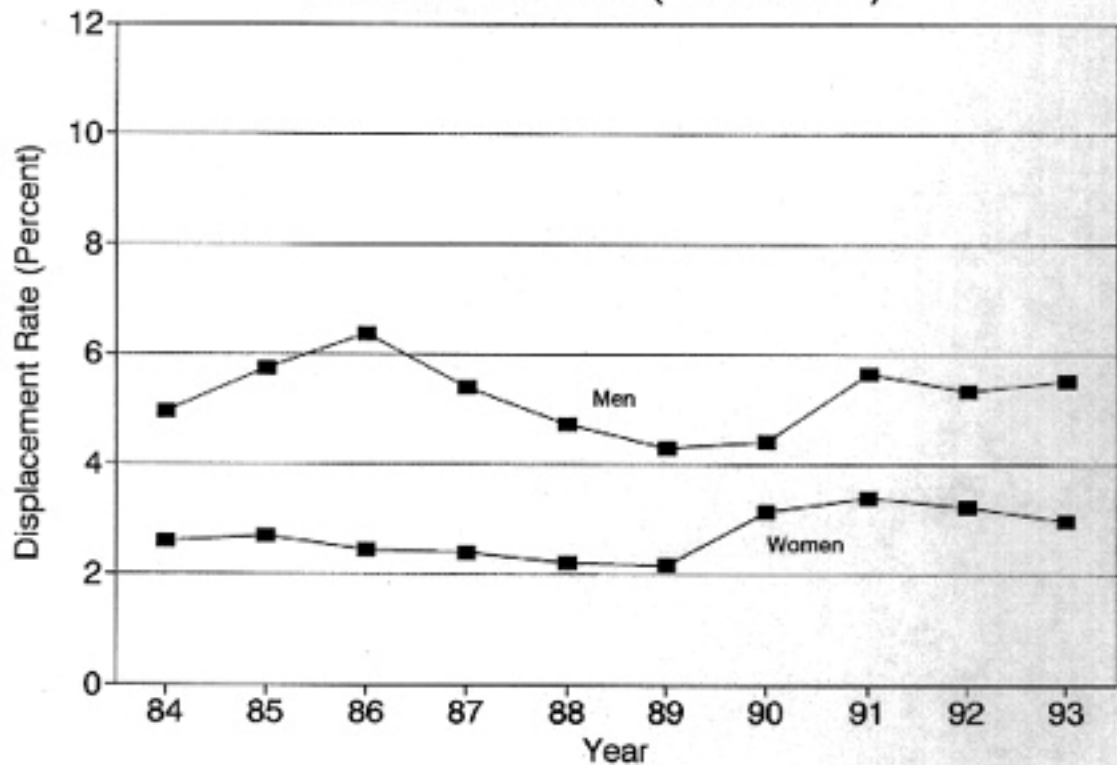


Figure 3
Predicted Earnings Patterns
24-Year Old Male in 1984

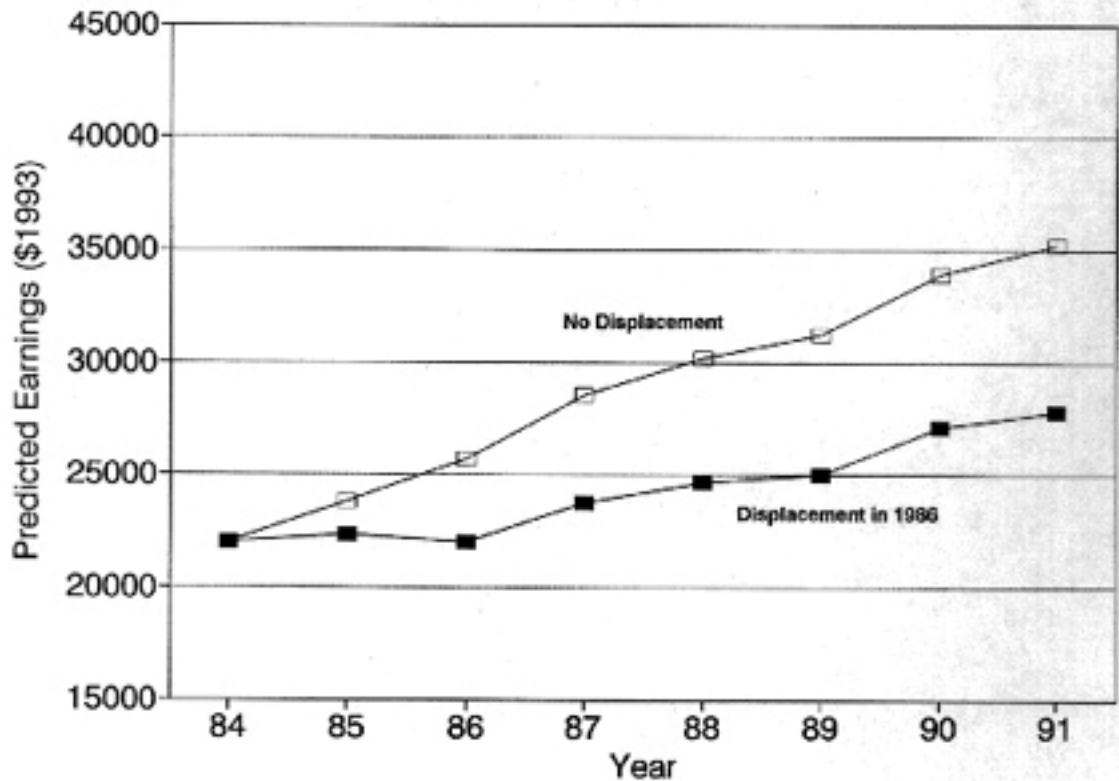


Figure 4
Predicted Earnings Patterns
24-Year Old Female in 1984

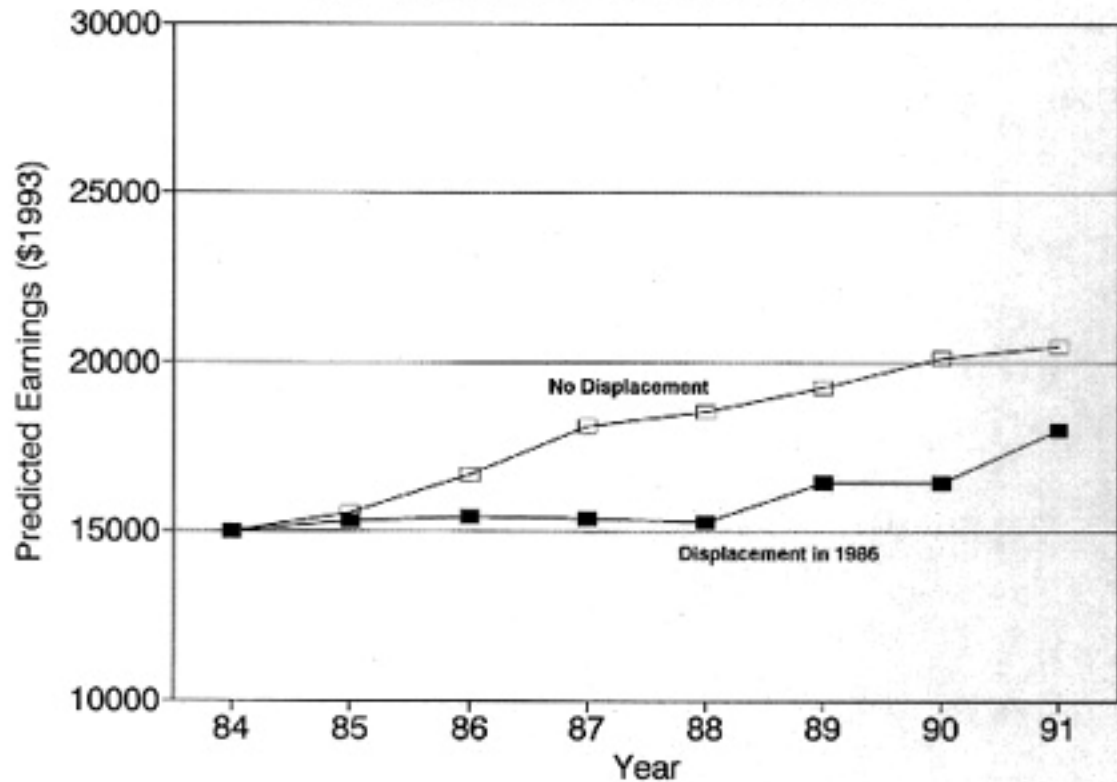


Figure 5.1
Predicted Earnings Patterns
Male HS Graduates and Dropouts

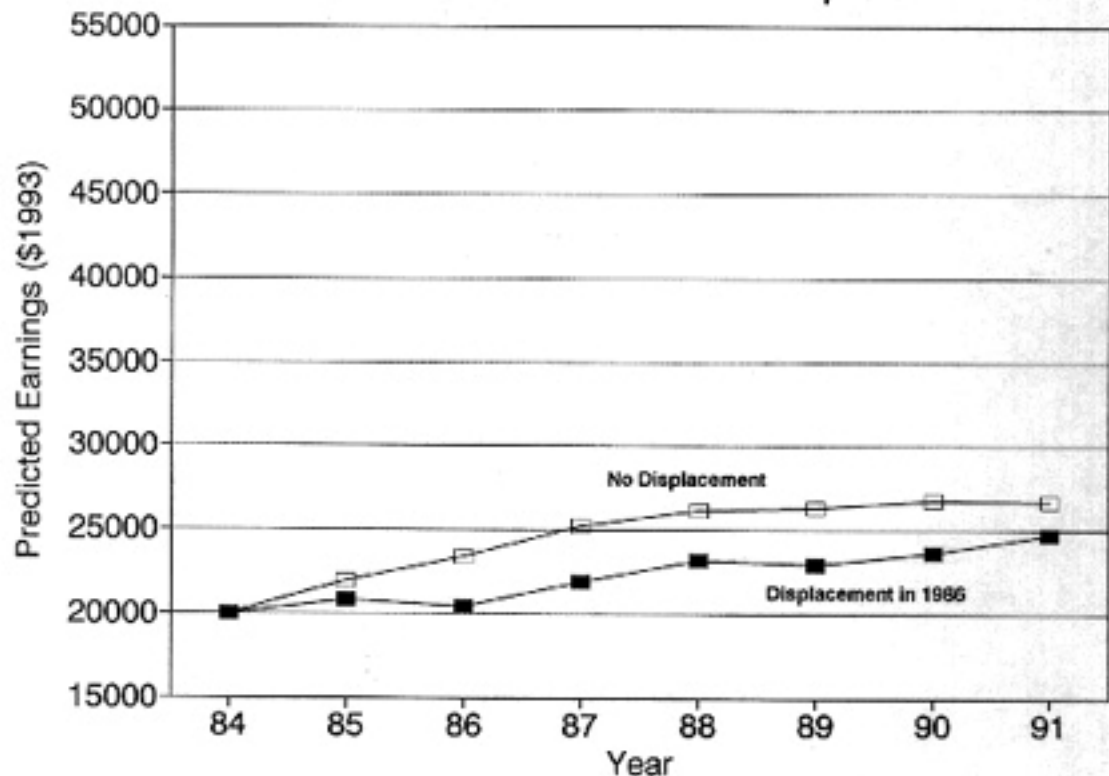


Figure 5.2
Predicted Earnings Patterns
Female HS Graduates and Dropouts

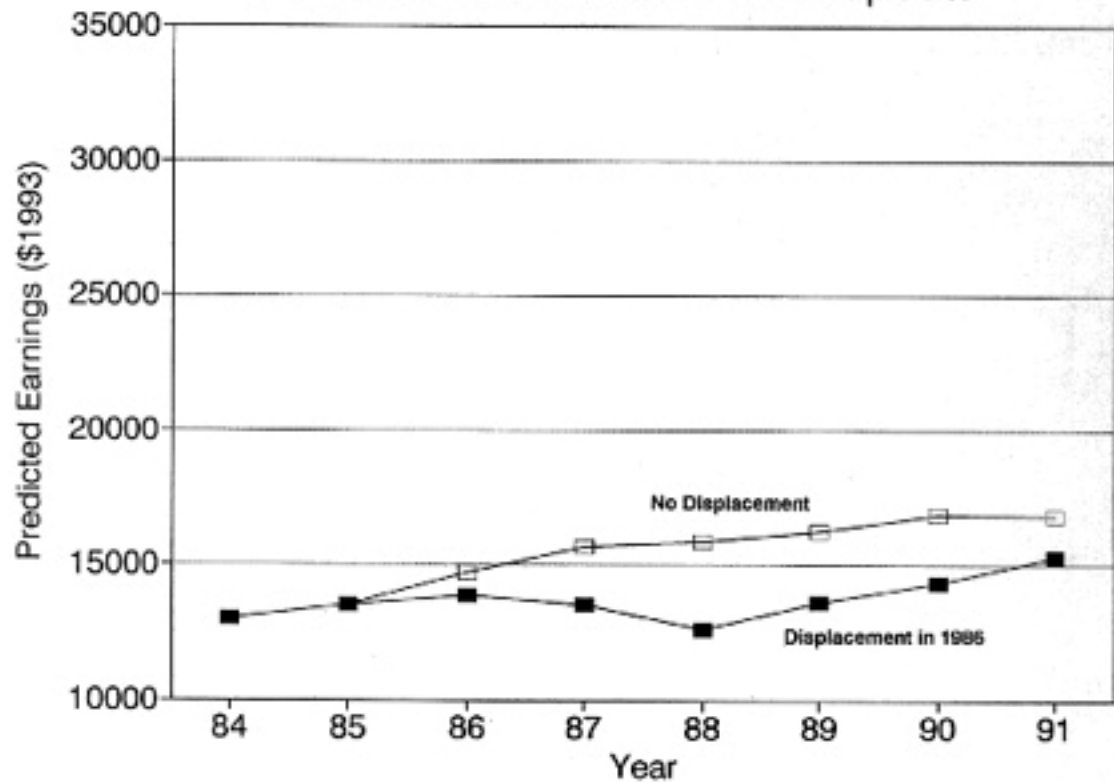


Figure 6.1
Predicted Earnings Patterns
Male College Graduates

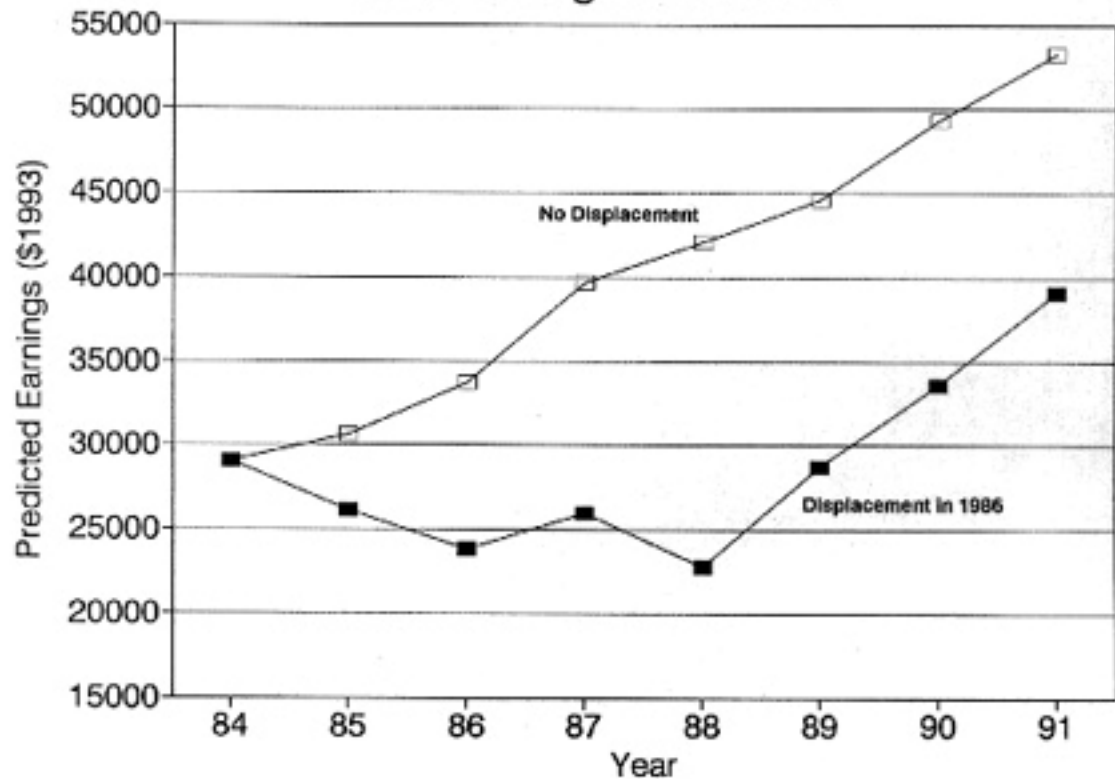


Figure 6.2
Predicted Earnings Patterns
Female College Graduates

