

Job Displacement

Lori G. Kletzer

In the late 1970s and early to mid-1980s, changes in technology, consumer demand, international competition, and some deep recessions all contributed to large-scale blue-collar job displacement. More recently, corporate downsizing has added large numbers of white-collar workers to the group of dislocated workers. A public perception has grown that worklife in the 1990s is more precarious (New York Times, 1996).

The past decade and a half has seen a veritable explosion of research in the area of permanent job loss. My discussion here is not intended to be an exhaustive survey of that literature; interested readers can find that in Fallick (1996) and Kletzer (1995b). Instead, this paper will discuss the state of knowledge on the issues and questions of job displacement. How has the incidence of displacement changed from the 1980s to the 1990s? How do the characteristics of displaced workers compare to the characteristics of other workers who experience unemployment? What are the consequences of displacement? How important is the loss of firm-specific human capital for a displaced worker? How do earnings of displaced workers change? What is the appropriate public policy response for displaced workers?

Who Gets Displaced: The Characteristics of Permanent Job Loss

Up to the early 1980s, estimates of the size and degree of job displacement in the U.S. economy differed widely and were often speculative. This situation

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changed in 1984 with the administration of the first Displaced Worker Survey (DWS), a nationally representative sample of displaced workers. These biennial surveys are a special supplement to the Current Population Survey (CPS) designed to identify characteristics of displaced workers. The survey was most recently conducted in February 1996.

The definition of a displaced (or dislocated) worker in the survey attempts to implement the common understanding of this term. Displaced workers are understood to be individuals with established work histories, involuntarily separated from their jobs by mass layoff or plant closure (rather than because of individual job performance¹), who have little chance of being recalled to jobs with their old employer. Thus, the Displaced Worker Survey counts as “displaced” individuals who responded that their job loss (over a three-year recall period) was due to “a plant closing, an employer going out of business, a layoff from which he/she was not recalled.” Other causes of job loss, such as quits or firings for cause, are not considered displacements.²

This operational definition and the survey as a whole are ambiguous in some ways. For example, an individual displaced from a job and rehired into a different job with the same employer is still considered “displaced.” The job loss must be permanent, not temporary. The distinction between quits and displacements can become blurry in a situation where wage changes induce some workers to quit, and thus not be counted as displaced, while others opt to stay with the firm and later end up displaced. If workers who stay on with the firm until displacement tend to face worse alternative labor market outcomes, then the displaced sample will be potentially nonrandom and will overstate the costs of job loss. The survey collects information on only one job loss for each individual, but over several years, multiple job losses are possible and not unusual (Stevens, 1997; Kletzer and Fairlie, 1997), meaning that the survey will understate the amount of job displacement.³ People are asked to recall their job history over the past three years, which raises the likelihood of errors in recall.⁴ Individuals are surveyed just once, providing information

¹ This understanding characterizes virtually all studies of job displacement. One exception is the approach in Gibbons and Katz (1991), who analyze the consequences of displacement in the context of an adverse selection model. They reason that when employers have some discretion over whom to lay off, workers displaced due to “slack work” (layoff without recall) are subject to selection and therefore are potentially less productive. In the 1984 and 1986 Displaced Worker Surveys, they find that workers displaced under “slack work” conditions experience longer jobless durations and lower post-displacement earnings than do workers laid off when a whole plant closes and selection possibilities are absent.

² To be specific, this is the definition used in the 1994 and 1996 surveys. In the 1984–92 surveys, the official BLS count (and follow-up) of displaced workers included individuals who responded that their job loss was due to the end of a seasonal job or the failure of a self-employed business, or other similar reasons.

³ See Topel (1990), Farber (1993, 1997), Evans and Leighton (1995), and Fairlie and Kletzer (1996) for discussions of retrospective bias in the Displaced Worker Surveys.

⁴ The 1994 and 1996 surveys ask about the most recent three years, while the 1984 to 1992 surveys had a five-year recall period. As with the definitions discussed in note 2, this change raises issues of comparability.

on one post-displacement point in time, rather than about their experiences over time.

While these concerns need to be kept in mind, the Displaced Worker Survey also has many strengths. As part of the Current Population Survey, it draws upon a large, random sample of 60,000 households, which is weighted to be representative of the U.S. work force. The Displaced Worker Survey has become the “industry standard” in research on job displacement (Seitchik, 1991, p. 51).

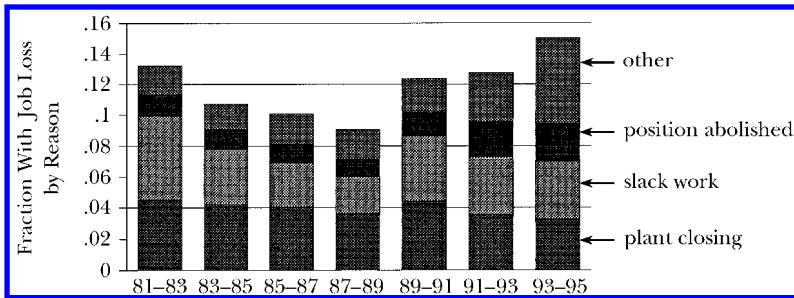
In the rest of this section, I rely heavily on recent work by Henry S. Farber to describe the size and characteristics of the displaced worker population as measured in the 1984–96 Displaced Worker Surveys. My discussion here will be brief; those interested in details and a more complete discussion of these matters might begin with Farber (1997), and then move on to Flaim and Seghal (1985), Horvath (1987), Herz (1990, 1991), Gardner (1993, 1995), and U.S. Department of Labor (1994). Once the descriptive characteristics of the displaced worker population are established, I will compare the displaced to other groups of unemployed workers.

Figure 1 presents three-year job loss (displacement) rates computed by Farber from each of the seven DWS’s from 1984–96. These rates are calculated by dividing the number of workers who have lost at least one job by the number of workers “at-risk” of losing a job during the relevant time period.⁵ The total height of the bars provide information on the overall job loss rates and the shaded segments provide information on job loss rates by reason. Four categories are presented (from bottom to top): 1) plant closing; 2) slack work; 3) position or shift abolished; and 4) other, which includes “seasonal job completed,” “self-operated business failed,” and “some other reason.” A strong cyclical pattern appears. Job loss rates fell steadily from the 1981–83 rate, which encompassed the recession of 1981–82, through the expansion period of 1983–89. Job loss rates then rose again in 1989–91 as the economy weakened. The latest job loss figures are surprising. In the midst of a sustained (if uneven) expansion, 1993–95 job loss rates are the highest of the 14-year period: about 15 percent of U.S. workers were displaced from a job at some time during this three-year period. These high rates of job loss are consistent with public perceptions of rising job insecurity. The displacement data stands in contrast to the mixed evidence of declining job stability in the economy overall. Readers interested in the question of declining job stability might start with U.S. Department of Labor (1995) and Cassidy (1996).

Figure 1 also exhibits some striking changes over time in reason for job loss.

⁵ The DWS does not provide information about the at-risk group, so Farber uses the number of workers employed at the survey date as a proxy for the pool of workers at risk of job displacement. See Kletzer (1995b) for an alternative measure of the number of “at-risk” workers. In addition, direct comparability across surveys requires adjusting for the change in the recall period from five years to three starting with the 1994 survey, as mentioned in note 4. Based on his own calculations of multiple job loss captured in the Panel Study of Income Dynamics, Farber calculated adjusted three-year job loss rates for the 1984–92 surveys.

Figure 1

Fraction of Workers with Job Loss in a Three-Year Period, by Reason for Job Loss

Source: Farber (1997), Figure 1.

The rate of job loss by plant closing, perhaps the stereotypical cause of job loss, shows little variation over time or over the business cycle (it is down a bit in the latest survey). Not surprisingly, job loss due to “slack work” shows a strong countercyclical pattern. “Position or shift abolished” is appreciably more prevalent in the 1990s than it was in the 1980s. However, the high rates of job loss of the 1990s are not due to these three reasons; all the drama of the 1990s is found in “other” as a reason for job loss. Without “other,” job loss rates would be essentially flat from 1989–91 to 1993–95: all the increase is in that category of job loss.

When these rates are broken down by level of education and by gender, some predictable patterns emerge. Table 1 shows that less educated workers are much more likely to be displaced than are more educated workers. For men with a high school diploma, in four of the seven surveys, the job loss rate exceeds 15 percent. The job loss rate for female high school graduates was lower, but consistently near or greater than 10 percent. The gap between female and male high school graduate job loss rates narrowed considerably in the most recent survey, with a 15.7 percent female rate and a 16.4 percent male rate. For workers with a college degree, a larger fraction of jobs were lost in the 1990s than in the 1980s (Farber, 1993, 1997). Job loss rates for college graduates were higher in the expansionary labor market of 1993–95 than during the deep 1981–82 recession or 1990–91 recession. Evidence drawn from the Panel Study of Income Dynamics finds similar patterns (Boisjoly, Duncan and Smeeding, 1994). For job loss rates by age, see Farber (1997).

The job displacement numbers can also be broken down by occupation and industry; although since the 1994 and 1996 surveys contain no information on lost occupation and industry for workers displaced for “other” reasons, this can be done only for job losses that occurred for the other three reasons. The most notable observation about occupation from Table 1 is that, over the past 15 years, job loss has been and remains a burden borne heavily by production workers. Job loss rates for craftsmen, operatives and laborers are considerably higher than for workers in

Table 1
**Percent of Workers with Job Loss in Three-Year Period, by Education,
 Occupation, and Industry**

	1981-83	1983-85	1985-87	1987-89	1989-91	1991-93	1993-95
<i>Education</i>							
High School Graduates							
Men	17.5	13.9	12.8	10.8	15.9	15.4	16.8
Women	12.1	10.1	9.0	9.1	11.2	11.6	15.3
College or higher degree							
Men	8.5	7.0	7.3	6.5	9.9	10.9	11.9
Women	5.9	5.4	5.2	5.2	7.3	7.9	10.6
<i>Occupation</i>							
Managers, Executives	8.2	7.0	7.4	6.4	9.3	9.7	7.8
Professional & Technical	5.1	5.3	4.3	3.5	5.4	5.5	5.9
Sales & Administrative Support	8.5	6.7	7.5	6.9	9.2	9.1	9.3
Service	5.9	5.7	5.6	4.8	6.8	6.5	7.3
Crafts, Operatives, Laborers	21.2	16.8	12.8	11.1	17.3	13.7	13.5
<i>Industry</i>							
Manufacturing	21.0	17.4	12.2	10.7	15.6	13.8	11.8
Transportation, Communications, Public Utilities	9.9	9.2	6.0	5.1	7.4	7.4	8.3
Wholesale & Retail Trade	10.1	7.7	10.1	9.2	11.5	11.2	11.0
Finance, Insurance & Real Estate	4.0	3.3	5.8	5.8	9.1	9.1	9.5
Nonprofessional Services	12.7	11.3	8.7	7.7	12.7	10.7	10.8
Professional Services	2.6	2.3	2.8	2.4	3.8	3.9	4.6

Note: Taken from Farber (1997), Appendix Tables 4a, 4b, 5, 6.

other occupational groups. Job loss for this group is also distinctly cyclical. In the 1990s, however, the burden of job loss has spread more evenly across occupations. Crafts, operatives and laborers are the only occupational group with lower job loss rates in the 1990s than in the 1980s. The rates of job loss for managers, professional and technical workers, and sales and administrative workers show little cyclical pattern in the 1990s; that is, they have not fallen with the recovery since 1992.

The last six rows of Table 1 present job loss rates by industry; again, because of the survey design, this cannot be done for workers displaced for “other” reasons. In the early 1980s, workers in goods-producing industries (mining, construction, and manufacturing) faced a higher risk of displacement than did workers in service-producing industries. Job loss has been considerably less concentrated in manufacturing since 1985. The secular trend in job loss rates for goods-producing industries is downward; in contrast, the trend for trade, finance, insurance and real estate is

upward, and these industries account for an increasing share of displacement over the period (Podgursky, 1992).

A final way of dividing the data on displaced workers is to look at racial differences (U.S. General Accounting Office, 1994). Studies using the early Displaced Worker Surveys and state-level administrative data found large differences between blacks and whites in the incidence and consequences of displacement (Kletzer, 1991; Ong, 1991b; Ong and Mar, 1992). In exploring the source of these differences, Fairlie and I found that black men were nearly 30 percent more likely to experience job displacement than white men during the period 1982–91 (Fairlie and Kletzer, 1997). Differences in occupation and educational attainment explain a sizeable share of the racial difference in displacement. The black disadvantage in displacement narrowed over the 1980s and vanished by 1992–93. In the early 1980s recession, the two-year displacement rate for black men employed full-time was 7.0 percent, far higher than the white male displacement rate of 4.9 percent (Fairlie and Kletzer, 1996). In the early 1990s recession, the black male displacement rate was 5.1 percent, still somewhat higher than the white rate of 4.4 percent. But in 1992–93, the black displacement rate was 4.0 percent and the white rate was 4.1 percent. More than two-thirds of the decline in the aggregate racial displacement rate gap was due to a narrowing of the difference between black and white displacement rates within occupations, educational categories, regions of the country, and industries. In addition, the partial shift in job displacement from lower skilled, blue-collar jobs in the 1980s to higher skilled, white-collar jobs in the 1990s helped generate a relative improvement for blacks over this period.

How Do Displaced Workers Compare to Other Unemployed Workers?

Displaced workers often go through a spell of unemployment, but there is little reason to expect them to be representative of all the unemployed. Table 2 reports summary statistics on a variety of demographic and labor market characteristics of unemployed workers according to cause of unemployment: displaced, temporary layoff, and job leaving (quits). Remember, temporary layoffs and quits are categories that do not overlap with displacement. The last column of the table reports the same characteristics for a sample of employed workers. The samples were drawn from Current Population Survey data and are described in the note under Table 2.

Across this limited number of dimensions, displaced workers appear quite different from workers on temporary layoff. Women, Hispanics, and blacks account for a larger share of the displaced. Displaced workers are more educated than temporary layoff workers and a larger share have lost a white-collar job (such as manager or administrator or administrative support). This might be expected given

Table 2

Characteristics of Displaced Workers, Other Unemployed Workers, and the Employed Labor Force, 1991–92

	<i>Displaced</i>	<i>Temporary Layoff</i>	<i>Job Leaver</i>	<i>Employed</i>
<i>Demographics</i>				
Age (years)	37.0	36.0	32.2	37.4
Female	33.7%	18.8%	50.6%	46.4%
Hispanic	13.1%	8.9%	11.2%	7.6%
Black	17.2%	9.8%	18.6%	9.9%
<i>Educational attainment</i>				
High school graduate or less	64.7%	80.4%	62.3%	50.1%
Some College	20.7%	15.3%	26.0%	28.2%
Bachelor's Degree or Higher	14.5%	4.3%	11.7%	21.5%
<i>Industry</i>				
Mining	1.1%	1.3%	0.1%	.9%
Construction	15.7%	41.6%	7.5%	5.6%
NonDurable Goods Mfg.	12.5%	7.1%	8.1%	10.2%
Durable Goods Mfg.	18.5%	22.6%	8.4%	13.9%
Transport, Communications & Utilities	6.4%	5.2%	3.1%	7.8%
Wholesale & Retail Trade	19.0%	10.5%	38.7%	23.8%
Financial & Prof. Services	14.2%	2.6%	14.7%	27.7%
NonProf. Services	12.2%	9.1%	18.9%	10.0%
<i>Occupation</i>				
Managerial & Prof. Specialty	15.6%	3.2%	10.2%	23.2%
Technicians	3.8%	0.7%	2.0%	4.3%
Sales	7.3%	3.9%	14.2%	12.8%
Administrative Support	15.5%	4.1%	15.6%	17.3%
Service	8.8%	6.9%	25.6%	11.8%
Prec. Prod, Craft, Repair	22.5%	32.1%	11.3%	12.5%
Operators, Fabricators, Laborers	26.5%	49.2%	21.1%	18.1%
Mean Weeks of Unemployment	17.94	7.24	15.81	N/A
Sample Size (weighted)	1,192,000	766,000	652,000	75,505,000

Notes: Author's calculations from CPS. All samples include nonagricultural private sector wage and salary workers, ages 20–65. Displaced workers identified from January 1992 Displaced Worker Survey as those displaced in 1991 and unemployed at the January 1992 survey date. Temporary layoffs and job leavers (quits) were unemployed at the January 1992 survey date. Employed sample was drawn from March 1992 CPS Annual Demographic File. Weeks of unemployment refer to incomplete, ongoing spells. All observations weighted by CPS final sampling weights.

the historical pattern of employment security that protected white-collar workers from temporary layoff. Similarly, displaced workers lost jobs in the “wholesale and retail trade” and “financial and professional services” industries in a higher proportion than temporary layoff workers. Not surprisingly, displaced workers report

considerably longer spells of unemployment than laidoff workers (17 weeks versus 7.2 weeks).⁶

In contrast, job leavers or “quits” are (obstensibly) voluntary job changers, and they are younger, more female and more educated than “involuntarily” displaced workers. More than half of quits are from the “wholesale and retail trade” and the “financial and professional services” industries, while only about one-fourth of displaced workers are from those two industries.

Displaced workers do appear different from other unemployed workers. As discussed in the previous section, the characteristics of displacement have changed (older, more educated, more white-collar). These characteristics also increasingly describe the workforce (U.S. Department of Labor, 1994, 1995). As a last comparison, column 4 of Table 2 reports characteristics of the employed. Women account for a smaller share of the displaced than of the workforce as a whole, and blacks and Hispanics are overrepresented in the displaced group. Displaced workers are less educated than the employed workforce (a considerably larger share of the displaced have a high school diploma or less than is the case for the employed) and are far more likely to be blue-collar workers. Thus, despite the changing image of displacement towards white-collar jobs, it is still an experience that affects blue-collar goods-producing workers disproportionately.

How Costly is Job Displacement?

Displacement involves a combination of losing an established job and the need to seek reemployment. This creates the possibility of losses of job-specific or firm-specific human capital, and the risk of permanently lower wages for workers. Measuring the magnitude of the individual costs of displacement, including their patterns of re-employment and earnings, has been an active area of research for more than a decade.

The Prior Job Tenure of Displaced Workers

Anecdotes about displaced workers often seem to focus on individuals with established work histories. Many displaced workers, however, do not have particularly long job tenure. The average job tenure for the sample of displaced workers summarized in column 1 of Table 1 was just over four years. Moreover, displacement affects many workers with very little job tenure: 26 percent of the sample of displaced workers in Table 1 reported “0” years of job tenure on the lost job and 58 percent reported job tenures of less than three years. However, there is a large variation in reported tenure on the lost job; 14 percent of this sample had held

⁶ These unemployment spells are incomplete, as they were reported by workers unemployed at their survey date.

Table 3

Percent Employed at the Survey Date, by Year of Displacement

1981–83	1983–85	1985–87	1987–89	1989–91	1991–93	1993–95	All Years
58.0	62.6	67.0	68.9	59.8	65.7	70.9	64.9

Source: Farber (1997), Table 6.

their jobs at least ten years. Overall, a relatively short job tenure makes it less likely that a displaced individual is locked into firm-specific or job-specific skills.

Reemployment Following Displacement

Post-displacement employment is most commonly measured in the Displaced Worker Surveys as employment at the survey date. Of course, this measurement is not ideal; for example, it may not represent the first job that followed displacement. However, Table 3 presents the percentage of displaced workers who were reemployed at the survey date, broken down by year of displacement. The reemployment probabilities are noticeably cyclical: workers displaced during 1981–83 experienced the lowest reemployment probabilities, then employment probabilities rose with overall economic health in the 1980s, and fell during the early 1990s recession.

Multivariate analysis reveals that the probability of employment is monotonically increasing with the level of educational attainment (Farber, 1993, 1997; Swaim and Podgursky, 1989). Over the 1981–95 period, Farber (1997) finds that a displaced worker with a college degree is 16 percentage points more likely to be employed at the time of the survey than an otherwise equivalent worker with a high school diploma. The reemployment advantage associated with a college degree has been basically constant since the early 1980s. Displaced women are 9 percentage points less likely to be employed at the time of the survey as men; nonwhites are 15 percentage points less likely to be employed at the survey date as whites.

Post-Displacement Earnings in the Short Run

The Displaced Worker Surveys provide a snapshot view of short-term earnings losses, defined as the simple difference between pre- and post-displacement weekly earnings. Over the period 1981–95, real weekly post-displacement earnings were 13 percent lower than pre-displacement earnings (Farber, 1997). This average masks considerable heterogeneity: approximately one-third of workers report earnings losses of 25 percent or more, while 30–40 percent report earning more on their post-displacement job than on their pre-displacement job. For some groups of workers, earnings fall prior to displacement, so the DWS may

understate the amount of earnings loss (Jacobson, LaLonde and Sullivan, 1993; Stevens, 1997).

An important part of earnings changes following job loss is the inability to find a new full-time job. Across the surveys, just 12 percent of displaced workers were displaced from part-time jobs, while 17 percent of displaced workers were employed at the survey date in part-time jobs (Farber, 1997), which seems to imply a movement from full-time to part-time employment. While some of this observed survey date part-time status may be due to individual labor-supply decisions, it seems likely that an inability to find full-time work characterizes many displacement experiences. Since the Displaced Worker Surveys do not provide information on hourly wages, it is impossible to sort out the extent to which changes in earnings are due to changes in hourly pay or to changes in hours worked. As one approach to this question, researchers have focused on the subsample of workers displaced from and reemployed in full-time jobs. Although earnings losses are smaller on average for this group than for displaced workers as a whole, they are still a sizeable 9 percent over time (Farber, 1997).

Measuring Earnings Changes Over the Long Run

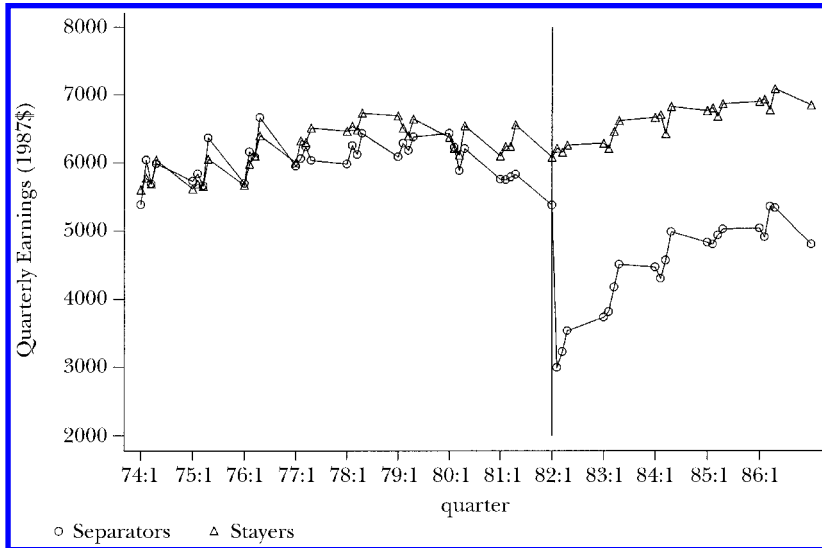
The Displaced Worker Surveys lack information on both longer-term earnings changes and on how earnings would have grown if the displaced had not lost their jobs. However, studies using longitudinal data from national surveys and state administrative sources have provided useful insights on these issues.

The methodology of Jacobson, LaLonde and Sullivan (1993) has had a significant impact on the way economists study earnings losses following displacement. Using unemployment insurance tax reports and quarterly firm reports on employment levels for the state of Pennsylvania, they constructed a longitudinal sample of displaced and nondisplaced workers over a period that included six pre-separation years and up to seven post-separation years. They limited their sample to prime-age workers whom they call “high attachment”; those with six or more years tenure by the beginning of 1980 and for whom positive wage or salary earnings were available during each calendar year. With a strongly attached, experienced group of workers, they identified a group for whom great concern is often expressed. Not surprisingly, this sample is not representative of all displaced workers, but as Jacobson, LaLonde and Sullivan (pp. 47–50) show, the Pennsylvania sample looks similar to high-tenure, prime-age Displaced Worker Survey respondents.

The earnings path of displaced Pennsylvania “high attachment” workers, relative to what nonseparators earned, is presented in Figure 2. For the displaced workers, the separation occurred during the first quarter of 1982. For these workers, earnings fell slightly in the year prior to separation. After 1982:1, earnings fell sharply relative to the earnings of workers who remained with their firms through the end of 1986. Four years after separation, the earnings of displaced workers were nearly \$2,000 per quarter less than their nonseparated counterparts.

Figure 2

Quarterly Earnings of High-Attachment Workers Separating in 1982:1 and Workers Staying Through 1986:4



Source: Jacobson, LaLonde, and Sullivan (1993), Figure 3.3.

Jacobson, LaLonde and Sullivan (1993) sharpen their focus on established workers when they identify a group of “mass layoff separators.” These are workers who separate from firms where employment declined by more than 30 percent from a late-1970s peak. They chose this group in part because the state administrative data do not distinguish directly between quits (voluntary separations) and layoffs (involuntary separations). They presume that mass layoff separators left jobs involuntarily and for reasons unrelated to individual performance. Although this group may be a minority of the displaced, it is also likely to include workers for whom the employment relationship was valuable. For the mass layoff separators, the first costs of displacement occur about three years before separation, when their quarterly earnings decline by \$1,000 relative to expected earnings due to hours reductions, real pay cuts, and temporary layoffs. After displacement, quarterly earnings of these workers fall by another \$2,000 to \$3,000 below expected levels. Even after five or six years, quarterly earnings remain between \$1,000 and \$2,000 below expected levels. These losses equal approximately 25 percent of predisplacement earnings. Similar patterns of earnings losses are found for this group across gender, age, and industrial sector, although the picture does vary to some extent according to the strength of the regional economy.

One limitation of the Jacobson, LaLonde and Sullivan (1993) analysis is its use

of Pennsylvania data, since displacement in a traditional industrial state may not be representative of the nation as a whole. However, Schoeni and Dardia (1996) followed up by using California administrative data for the period 1989–94 and found earnings losses on the order of 17 to 25 percent for a sample of workers from durable goods manufacturing, relative to what displaced workers would have earned if they had not been displaced.⁷ For the period prior to job loss, however, Schoeni and Dardia did not find the substantial declines in quarterly earnings that characterize the Pennsylvania sample.

In a national sample of experienced displaced workers drawn from the Panel Study on Income Dynamics, Stevens (1997) found large and persistent earnings losses. In her sample, annual earnings fall approximately 25 percent in the year prior to job displacement. One year after displacement, earnings remain 15 percent below the earnings of the nondisplaced, and are highly variable. The losses are persistent; during the period seven or more years following job loss, annual earnings are 6 to 12 percent below expected levels.⁸ Annual earnings fall both because of a decline in hours and a decline in wages. One year prior to displacement, hourly wages decline 8 percent below expected levels, and one year following displacement they remain 12 percent below expected levels. The hourly earnings declines are also persistent: seven years after job loss, average hourly earnings are approximately 9 percent below expected levels, and similar sized losses are found at ten years after displacement.

Both Schoeni and Dardia (1996) in their evidence from California and Stevens (1997) with a national data set find that the number of separations is an important component of long-term earnings losses. For example, 41 percent of Stevens's sample reports at least two job displacements over a 20-year sample period. Whereas average annual earnings reductions six years after job loss are approximately 12 percent, if only a single job loss has been suffered, average earnings losses are approximately 4 percent. These findings would be consistent with a pattern in which hourly wages fall significantly with the first job loss due to the loss of specific skills and rents, but wages do not fall much with subsequent job loss because workers are less likely to accumulate specific skills or earn rents on their post-displacement jobs. Thus, multiple job losses reduce annual earnings further not because they reduce wages further, but instead because they make a reduction in future hours of employment more likely.

Due largely to the presumption that inexperienced workers have little firm-specific human capital to lose, long-term studies have overlooked young workers.

⁷ Their sample consists of all workers who were employed in the aerospace sector and a random sample of 20 percent of non-aerospace durable goods manufacturing workers. They do not have a long enough time period to restrict the sample to workers with six or more years tenure, but they can define a group of workers similar to the "mass layoff separators" as defined by Jacobson, LaLonde and Sullivan (1993).

⁸ Ruhm (1991b) and Topel (1990) are earlier studies of the long-term costs of displacement using the PSID.

Kletzer and Fairlie (1997), in a recent study using data from the National Longitudinal Survey of Youth, found large earnings losses for displaced young workers: losses on the order of 8 to 13 percent relative to similar nondisplaced workers. College educated young workers experience the largest relative earnings losses: about 25 percent in the fifth year following job loss. In contrast to more established workers, young workers' earnings losses are due to missed opportunities for rapid early career earnings growth rather than to actual earnings declines caused by losses of firm-specific skill.

What Explains Large and Persistent Earnings Losses?

Understanding the reasons behind earnings losses is a complex problem that requires drawing on theories of human capital and wage determination. The evidence shows that displaced workers typically earned more in their previous job than they could have earned from other employers. The challenge is to isolate which factors are responsible for the earnings premia, and therefore, for the earnings losses. Some of the likely candidates for such wage premiums are the development of nontransferable human capital in a job, unionization, good job matches, efficiency wages, internal labor markets, and incentive pay mechanisms.

In human capital models, such capital is often divided into "general," which is widely applicable with many employers, and "specific," which can be unique to a certain employer or job. In particular, firm-specific human capital is valued only by the current employer, and is not transferable across employers. Workers acquire these specific skills through on-the-job training or in classroom training provided by the employer, and as the stock of these skills rises with tenure with the firm, earnings also rise. If firm-specific skills are an important determinant of earnings, then workers displaced from their jobs are likely to experience large and perhaps persistent earnings losses. Of course, the line between specific and general human capital is not completely firm; specific capital may also be transferable to a limited degree. This notion of specific, yet partially transferable, human capital has been around in the human capital literature for some time. For example, Becker (1975, p. 26) wrote: "Much on-the-job training is neither completely specific nor completely general but increases productivity more in the firms providing it and falls within the definition of specific training."

Thus, the questions of whether and why earnings rise with tenure are important for understanding the reasons for the costs of job displacement. Hamermesh (1987) provided one of the first estimates of the social costs of displacement that was tied to the loss of firm-specific human capital. He constructed a measure of this loss from wage-tenure profiles for a sample of displaced workers drawn from the Panel Survey of Income Dynamics. If workers lose the returns to tenure, their starting wages on the postdisplacement job should depend only on years of experience, education, and other non-firm-specific characteristics. Hamermesh estimated that

the present value of lost job-specific capital for the average worker is \$7000 (in 1980 dollars).

There have been a number of challenges to the interpretation that rising earnings-tenure profiles represent the importance of specific skills (Abraham and Farber, 1987, 1988; Altonji and Shakotko, 1987), which in turn have raised some skepticism about the magnitude of these estimates of lost human capital. There are a variety of difficult-to-measure differences across individuals and firms, the existence of which provides reason to suspect that the positive relationship between job tenure and earnings is either overestimated or a statistical artifact. For example, because an individual's abilities influence both the decision to remain with a firm (and thus job tenure), as well as earnings, it is difficult to discern whether earnings rise with tenure because the individual is accumulating firm-specific capital, or because there is a good match between employer and employee.

Interestingly, job displacement offers a natural control for some of the difficult-to-measure factors that may be producing an upward bias in the returns to job tenure. The practical question here is the extent to which job tenure is useful in explaining patterns in predisplacement and postdisplacement earnings. Studies using the Displaced Worker Surveys reveal that tenure affects both types of earnings, although its impact is quantitatively smaller following displacement (Addison and Portugal, 1989a, b; Crossley, Kuhn, and Kukuk, 1994; Kletzer, 1989, 1991a; Ruhm, 1991a; Topel, 1991). For example, before displacement, a blue-collar worker with the average amount of predisplacement tenure (5.9 years) earned about 20 percent more than a similar worker with zero years of tenure. Postdisplacement, the worker with 5.9 years predisplacement tenure earned 6.4 percent more than the worker with zero years tenure. For a skilled white-collar male worker with average tenure of 6.1 years on the job lost, the predisplacement earnings difference over a similar worker with zero years tenure was 22.5 percent and the postdisplacement earnings difference was 19.1 percent (Kletzer, 1989). The far larger dropoff in the contribution of predisplacement tenure to postdisplacement earnings for blue-collar workers reveals the importance of factors such as specific human capital and job match effects for these workers. In contrast, individual ability and transferable skills are a more important part of the returns to tenure for the skilled white-collar group.

Another way to look at these issues is to see how predisplacement job tenure is related to earnings losses. The evidence from the Displaced Worker Surveys is that each year of job tenure is associated with an additional earnings loss of 1.0–1.3 percent (Farber, 1993). Using a different technique to address possible sources of bias in the relationship between tenure and earnings, Topel (1991) estimates that when a worker with ten years tenure is displaced, postdisplacement wages will be 25 percent lower.

One complication for these sorts of studies is the difficulty of separating industry, occupation, and regional effects that arise from the uneven distribution of displacement across geographic regions. As a consequence of regional industrial concentration, some areas experience painful periods of employment loss and eco-

conomic restructuring, while other areas experience increases in labor demand and/or population growth.⁹ Since displaced workers are not randomly distributed in the economy, their earnings losses may reflect characteristics such as industry, occupation, and location, along with experience and tenure. Carrington (1993) emphasizes the importance of both job tenure (which can be thought of as firm-specific skills) and local labor markets. He finds that the higher earnings losses of highly experienced workers (workers with general skills) are due primarily to conditions in their pre-displacement industry, occupation, and state of residence. High tenure workers (workers with firm-specific skills) suffer large losses even when the local labor market, defined by industry and state, is doing well. One interpretation of these results is that the skills embodied in job tenure are indeed firm-specific and thus are lost to the worker when displaced, even in an otherwise healthy labor market. An additional insight is that job tenure is of varying importance across industries. In services industries, earnings losses from displacement are modest as long as the local service industry is doing well, and these losses are not strongly related to pre-displacement job tenure. In contrast, the earnings losses of displaced transportation and public utility workers do rise with pre-displacement tenure, and those losses are large even when the local industry is in good shape.

Displaced worker studies have also revealed that industry (or more broadly, sector) may be an important dimension across which skills are transferable. A number of papers find that the post-displacement earnings of individuals who change industry are lower than the earnings of otherwise comparable individuals who stay in the same industry (Podgursky and Swaim, 1987; Addison and Portugal, 1989a, b; Kletzer, 1991a; Ong and Mar, 1992; Carrington, 1993; Ong and Lawrence, 1993). However, larger earnings losses for workers who change industry may not necessarily reflect lost specific human capital. Industry wage effects due to efficiency wages, union rents, incentive pay schemes, or internal labor markets may partially account for the earnings losses. In an early study using the 1984 Displaced Worker Survey, Krueger and Summers (1988) found earnings increases for workers who switched to higher wage industries, and earnings losses for workers leaving higher wage industries. For manufacturing workers, Jacobson, LaLonde, and Sullivan (1993) found larger earning losses for workers reemployed outside of manufacturing than for workers who remained in manufacturing after displacement (see also Gibbons and Katz, 1991; Carrington and Zaman, 1994).

With these studies as motivation, more complete examinations of industry or sector-specific skills consider post-displacement mobility. An individual's ability to retain human capital or a share of industry rents (rents due to unionization or incentive pay premiums) or to retain hierarchical standing that was due to promotion-from-within policies (internal labor markets) depends a great deal on

⁹ See Shelburne and Bednarzik (1993) for a study of the geographic concentration of trade-sensitive industries.

the “new” industry and occupation. Workers who regain employment in the same, or similar, industry and/or occupation are more likely to retain their human capital. Thus, where workers become reemployed is unlikely to be random, and it is likely related to postdisplacement earnings potential.

A small number of studies have estimated models of industry mobility following job displacement. The approach of these studies is usually to characterize industry mobility as reemployment in either the “same” industry or in a “different” industry (generally defined as the two-digit SIC level). These studies find that mobility between industries depends on: wages in the different industries; the job opportunities in different sectors (Kletzer, 1992a; Fallick, 1993; Seitchik and Zornitsky, 1989); whether the education level of the displaced worker is high enough to allow movement into a broader range of expanding sectors (Fallick, 1993); and whether the benefits of job tenure within an existing job or industry are high and transferable within the industry (Neal, 1995; Kletzer, 1996). In general, these results underscore earlier findings that a substantial share of earnings losses result from the loss of highly firm-specific earnings components (Topel, 1991; Carrington, 1993; Jacobson, LaLonde and Sullivan, 1993).

In terms of the broader debate on why wages tend to rise with job tenure, the job displacement literature has emphasized that there is a role for both firm-specific and industry-specific human capital. Earnings rise with seniority as a result of the accumulation of job-specific or firm-specific skills. Upon displacement, the firm-specific stock of human capital depreciates completely. But industry-specific skills may retain their value if an individual becomes reemployed in a similar sector where those skills are in demand. However, the extent to which this occurs will depend on a variety of factors about the industry, including the prevalence of efficiency wages, union rents, incentive pay schemes, and the workings of internal labor markets.

What Causes Job Displacement?

Existing research has tended to focus on who gets displaced, how soon they are reemployed, and at what earnings. But we know very little about the fundamental causes of why displacement occurs. The nearly exclusive focus on consequences rather than causes is understandable, but unfortunate.

Surely, the narrowness of the research agenda is due in part to data limitations. The Displaced Worker Surveys contain information only on the displaced, with no information available on individuals who were at risk of displacement but did not experience a job loss. National longitudinal data sets such as the Panel Study of Income Dynamics and the National Longitudinal Surveys do provide such information, but their samples of displaced workers are quite small.

However, one’s perception of displaced workers is surely shaped by whether the underlying reason for their job loss is technological change, increasing foreign

competition, changes in domestic demand, low productivity within an otherwise growing sector of the economy, poor management, regional or national recession, or some other reason. Several recent additions to the literature focus on the relationship between foreign trade and job displacement, and complement the existing literature on the relationship between international trade and changes in domestic employment and wages as surveyed in Richardson (1995) and Belman and Lee (1995). The focus on how trade affects displacement is especially important in considering the political economy of free trade.

There is strong evidence that as imports become more competitive, domestic industry displacement rises (Haveman, 1994; Kletzer, 1995a; Addison, Fox, and Ruhm, 1995). For example, Haveman estimates that a 1 percent decline in industry import price (from one year to the next) is associated with a 1.62 percent increase in industry displacements. For a subset of import-competing industries, Haveman finds that a 1 percent decline in import price is associated with a 3.5 percent rise in displacements. The reasonably strong positive relationship between increases in import share and job displacement seems due to the experience of certain industries long identified as import-sensitive, such as apparel, footwear and textiles. Aside from these industries, the relationship between increasing foreign competition and permanent job loss appears less systematic and the effect somewhat small. Whether the effect is deemed “small” or “moderate” reflects an uneasy judgment; at this stage, it seems at least large enough to warrant further attention. Accounting for the role of technological change and other factors that may cause job displacement, and understanding their interactions with foreign competition, will be an important step for the next stage of this research.

Policy Responses to Displacement

Job displacement brings with it large and persistent earnings losses. Millions of workers have suffered such displacement over the 18 years documented by the Displaced Worker Surveys, and there is no sign that either the magnitude of job displacement or the losses from that displacement are likely to decrease.

The plight of displaced workers attracts widespread concern; both Democratic and Republican administrations have advanced and advocated various programs. The most common programs have been adjustment assistance to help reduce the fall in income immediately after displacement. One of the first programs was the Manpower Development Training Act of 1962, targeted at workers displaced by advancing automation. The most extensive programs were put in place under the aegis of the Trade Adjustment Assistance (TAA) Act, originally enacted by Congress in 1962. TAA included income-replacement support above the levels provided by unemployment insurance, and it targeted workers displaced from jobs in industries adversely affected by import competition that followed the relaxation of trade restrictions. Job search assistance, relocation

allowances and skill retraining were also available to eligible workers. Participation rates were low until amendments to the act in 1974 relaxed eligibility criteria to include all displaced workers and not just workers and firms that could demonstrate that a “major” cause of job loss was increased imports following trade liberalization (Leigh, 1990).

The deep recession of 1981–82 prompted the passage of the Job Training Partnership Act (JTPA). Title III of that Act provided funding for training and job counseling for displaced workers. JTPA Title III was amended in 1988 as the Economic Dislocation and Worker Adjustment Assistance Act, which increased the level of federal funds to be used by states for services such as job search assistance and retraining. Most recently, displacement assistance has been available through the North American Free Trade Agreement Transitional Adjustment Assistance Program (NAFTA-TAA). NAFTA-TAA was implemented in 1994 in response to concerns about job loss following trade liberalization. As an amendment to the 1974 Trade Act, it offers income replacement and reemployment services to certified workers similar to Trade Adjustment Assistance.

These targeted programs, along with the unemployment insurance system, offer income replacement and reemployment and retraining services for a period of time following displacement. As a general judgment, there is little reason to be optimistic about the ability of these programs to alleviate long-term earnings losses. Job-search assistance programs have produced cost-effective results in returning displaced workers to work and raising short-term earnings. Retraining programs have been emphasized as a tool for increasing the long-term earnings of displaced workers by enhancing their skills. Research on existing training programs shows no clear evidence that they help workers earn higher pay on new jobs. There are a large number of federal and state programs; interested readers are directed to Leigh (1989, 1990) and Kodrzycki (1996, 1997).

Another source of support for displaced workers is the federally mandated requirement of advance notification. The Worker Adjustment and Retraining Notification Act (WARN) of 1989 requires employers to provide their employees with 60 days notice of a plant closing or mass layoffs. Available evidence shows that the WARN Act has not increased the provision of advance notice to displaced workers, partly because the requirements for giving advance notice are not very strict (Addison and Blackburn, 1994b).

Advance notice is intended to reduce unemployment by allowing workers to begin the search for a new job sooner, presumably prior to displacement. Early research using the 1984 and 1986 Displaced Worker Surveys found a reduction in the probability of experiencing any joblessness associated with receiving notice (Ehrenberg and Jakubson, 1988). This research was hampered by two data limitations: a failure to distinguish between formal written notice and other informal methods of notification and no information on the length of notice received. With the addition of questions about the type and timing of

notice to the 1988 survey, there is now considerable evidence that the benefits of receiving advance notice are modest at best. Both informal notice and lengthy (more than two months) formal notice are associated with increased probabilities of avoiding any joblessness. Only informal notice is associated with shorter average jobless durations, although for certain groups—such as nonwhites, household heads and workers in high unemployment areas—lengthy formal notice is associated with shorter jobless spells (Ruhm, 1992). “Informal” notice is still not well-defined in the DWS questionnaire, except as an expectation of displacement by means other than written notice. Less attention has been paid to the earnings effects of advance notice. Lengthy written notice is associated with higher post-displacement earnings (Ruhm, 1994). Whether advance notice raises earnings by itself however, is difficult to discern because firms offering formal written notice frequently provide job search assistance, some skill retraining, or supplemental unemployment insurance.

There is also a thorny question about who receives advance notice. It is clear that WARN is not producing widespread advance notice, and before WARN, only three states required advance notice. This means that much of the advance notice observed in the data is voluntarily provided by firms. If firms provide advance notice on a nonrandom basis—for example, under collective bargaining or in depressed labor markets—the estimated advance notice effect will be biased. The direction and size of this bias remain in debate, with more research needed on the process by which workers become informed about future displacements. For a more detailed review of the advance notice literature, interested readers are directed to Addison and Blackburn (1994a) and Fallick (1996).

Attempting to help dislocated workers seems to many a matter of fairness or social insurance. Since dislocation is specifically not due to the actions of the worker, there is no economic incentive to be served by the reduction in their income, and a society made up of risk-averse people will be interested in insuring against the risk that it happens to them. Moreover, promising compensation and adjustment assistance to the dislocated may be a necessary ingredient for the political economy of a market-oriented society that wishes to encourage economic restructuring, since it reduces the incentives of adversely affected interest groups that might take political steps to block such changes.

Conclusion

Jobs are created and destroyed in dynamic economies, and the magnitude of job loss is likely to remain unchanged. Research activity over the past 15 years has improved our understanding of the costs of job displacement substantially. To inform public debate and decision-making, we need to know more. With all the attention paid to corporate downsizing, we need more information to isolate the extent to which downsizing is the reason for job loss. Plant-level data with infor-

mation on turnover (quits, layoffs, firings, recalls, hiring) would help answer questions about firms' decisions to lay off workers, which would further our understanding of the causes of job displacement.

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References

- Abraham, Katharine G., and Henry S. Farber,** "Job Duration, Seniority, and Earnings," *American Economic Review*, 1987, 77:3, 278–297.
- Abraham, Katharine G., and Henry S. Farber,** "Returns to Seniority in Union and Nonunion Jobs," *Industrial and Labor Relations Review*, 1988, 42:1, 3–19.
- Addison, John T., and McKinley L. Blackburn,** "The Worker Adjustment and Retraining Notification Act," *Journal of Economic Perspectives*, 1994a, 8:1, 181–90.
- Addison, John T., and McKinley L. Blackburn,** "The Worker Adjustment and Retraining Notification Act: Effects on Notice Provision," *Industrial and Labor Relations Review*, 1994b, 47:4, 650–662.
- Addison, John, Douglas A. Fox, and Christopher J. Ruhm,** "Trade and displacement in manufacturing," *Monthly Labor Review*, 1995, 118:4, 58–67.
- Addison, John T., and Pedro Portugal,** "On the Costs of Worker Displacement: The Case of Dissipated Firm-Specific Training Investments," *Southern Economic Journal*, 1989a, 56:1, 166–82.
- Addison, John T., and Pedro Portugal,** "Job Displacement, Relative Wage Changes, and Duration of Unemployment," *Journal of Labor Economics*, 1989b, 7:3, 281–302.
- Altonji, Joseph, and Robert Shakotko,** "Do Wages Rise with Job Seniority?," *Review of Economic Studies*, 1987, 54:4, 437–59.
- Becker, Gary,** *Human Capital*. Chicago: The University of Chicago Press, second edition, 1975.
- Belman, Dale, and Thea M. Lee,** "International Trade and the Performance of U.S. Labor Markets," in Robert Blecker, ed., *U.S. Trade Policy and Global Growth: New Directions in the International Economy*. Armonk, N.Y.: M.E. Sharpe, 1995.
- Boisjoly, Johanne, Greg J. Duncan, and Timothy Smeeding,** "Have Highly-Skilled Workers Fallen from Grace? The Shifting Burdens of Involuntary Job Losses from 1968 to 1992," mimeo, November 1994.
- Carrington, William J.,** "Wage Losses for Displaced Workers: Is It Really the Firm that Matters?," *Journal of Human Resources*, 1993, 28:3, 435–62.

- Carrington, William J., and Asad Zaman**, "Interindustry Variation in the Costs of Job Displacement," *Journal of Labor Economics*, 1994, 12:2, 243-75.
- Cassidy, John**, "All Worked Up," *New Yorker*, April 22, 1996: 51-55.
- Crossley, Thomas F., Peter J. Kuhn, and Martin Kukuk**, "Inferring Wage-Tenure Profiles from Displaced Worker Data," McMaster University, mimeo, December, 1994.
- Ehrenberg, Ronald G., and George H. Jakubson**, *Advance Notice Provisions in Plant Closing Legislation*. Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research, 1988.
- Evans, David S., and Linda S. Leighton**, "Retrospective Bias in the Displaced Worker Surveys," *Journal of Human Resources*, 1995, 30:2 386-96.
- Fairlie, Robert W., and Lori G. Kletzer**, "Race and the Shifting Burden of Job Displacement from 1982 to 1993," *Monthly Labor Review*, 1996, 119:9, 13-23.
- Fairlie, Robert W., and Lori G. Kletzer**, "Jobs Lost, Jobs Regained: An Analysis of Black/White Differences in Job Displacement," working paper, University of California, Santa Cruz, May 1997.
- Fallick, Bruce C.**, "The Industrial Mobility of Displaced Workers," *Journal of Labor Economics*, 1993, 11:2, 302-23.
- Fallick, Bruce C.**, "A Review of the Recent Empirical Literature on Displaced Workers," *Industrial and Labor Relations Review*, 1996, 50:1, 5-16.
- Farber, Henry S.**, "The Incidence and Costs of Job Loss: 1982-91," *Brookings Papers on Economic Activity: Microeconomics*, 1993, pp. 73-132.
- Farber, Henry S.**, "The Changing Face of Job Loss in the United States, 1981-1995," Industrial Relations Section Working Paper No. 382, Princeton University, June 1997, forthcoming in *Brookings Papers on Economics Activity, Microeconomics*, 1997.
- Flaim, Paul O., and Ellen Sehgal**, "Displaced workers of 1979-83: how well have they fared?" *Monthly Labor Review*, 1985, 108:6, 3-16.
- Gardner, Jennifer M.**, "Recession swells count of displaced workers," *Monthly Labor Review*, 1993, 116:6, 14-23.
- Gardner, Jennifer M.**, "Worker displacement: a decade of change," *Monthly Labor Review*, 1995, 118:4, 45-57.
- Gibbons, Robert, and Lawrence F. Katz**, "Layoffs and Lemons," *Journal of Labor Economics*, October 1991, 9:4, 351-80.
- Hamermesh, Daniel S.**, 1987. "The Costs of Worker Displacement," *The Quarterly Journal of Economics*, 1987, 102:1, 51-75.
- Haveman, Jon D.**, "The Influence of Changing Trade Patterns on Displacements of Labor," Purdue University, Krannert School of Management, 1994.
- Herz, Diane E.**, "Worker displacement in a period of rapid job expansion: 1983-87," *Monthly Labor Review*, 1990, 113:5, 21-33.
- Herz, Diane E.**, "Worker displacement still common in the late 1980's," *Monthly Labor Review*, 1991, 114:5, 3-9.
- Horvath, Francis W.**, "The pulse of economic change: displaced workers of 1981-85," *Monthly Labor Review*, 1987, 110:6, 3-12.
- Jacobson, Louis S., Robert J. LaLonde, and Daniel G. Sullivan**, *The Costs of Worker Dislocation*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, 1993.
- Kletzer, Lori G.**, "Returns to Seniority After Permanent Job Loss," *American Economic Review*, 1989, 79:3, 536-43.
- Kletzer, Lori G.**, "Earnings after Job Displacement: Job Tenure, Industry, and Occupation." In John T. Addison, ed. *Job Displacement: Consequences and Implications for Policy*. chap. 4. Detroit, Mich.: Wayne State University Press, 1991a.
- Kletzer, Lori G.**, "Job Displacement, 1979-86: how blacks fared relative to whites," *Monthly Labor Review*, 1991b, 114:7, 17-25.
- Kletzer, Lori G.**, "Industrial Mobility Following Job Displacement: Evidence from the Displaced Worker Surveys," Industrial Relations Research Association, *Proceedings from the 44th Annual Meeting*, January 1992a, pp. 621-29.
- Kletzer, Lori G.**, "Industry Wage Differentials and Wait Unemployment," *Industrial Relations*, 1992b, 31:2, 250-269.
- Kletzer, Lori G.**, "International Trade and Job Loss in U.S. Manufacturing, 1979-91," Working Paper #331, Department of Economics, University of California, Santa Cruz, September 1995a, and forthcoming in Susan M. Collins, ed., *Imports, Exports, and the American Worker*. Washington, DC: The Brookings Institution.
- Kletzer, Lori G.**, "What Have We Learned About Job Displacement?," Working Paper #333, Department of Economics, University of California, Santa Cruz, October 1995b.
- Kletzer, Lori G.**, "The Role of Sector-Specific Skills in Post-displacement earnings," *Industrial Relations*, 1996, 35:4, 473-90.
- Kletzer, Lori G., and Robert W. Fairlie**, "The Costs of Job Displacement Among Young Workers," Working Paper, University of California, Santa Cruz, July 1997.

Kodrzycki, Yolanda, "Laid-Off Workers in a Time of Structural Change," *New England Economic Review*, July/August 1996, 3–26.

Kodrzycki, Yolanda, "Training Programs for Displaced Workers: What Do They Accomplish?," *New England Economic Review*, May/June 1997: 39–57.

Krueger, Alan B., and Lawrence H. Summers, "Efficiency Wages and The Inter-Industry Wage Structure," *Econometrica*, 1988, 56:2, 259–93.

Leigh, Duane E., *Assisting Displaced Workers: Do the States Have a Better Idea?* Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research, 1989.

Leigh, Duane E., *Does Training Work for Displaced Workers? A Survey of Existing Evidence*. Kalamazoo, Mich.: W. E. Upjohn Institute for Employment Research, 1990.

Neal, Derek, "Industry-Specific Human Capital: Evidence from Displaced Workers," *Journal of Labor Economics*, 1995, 13:4, 653–77.

New York Times, *The Downsizing of America*. New York: Times Books, 1996.

Ong, Paul M., "Race and Post-Displacement Earnings Among High-Tech Workers," *Industrial Relations*, 1991b, 30:3, 456–68.

Ong, Paul M., and Janette R. Lawrence, "The Unemployment Crisis in Aerospace," Graduate School of Architecture and Urban Planning, University of California, Los Angeles, 1993.

Ong, Paul M., and Don Mar, "Post-Layoff Earnings Among Semiconductor Workers," *Industrial and Labor Relations Review*, 1992, 45:2, 366–79.

Podgursky, M., "The Industrial Structure of Job Displacement, 1979–89," *Monthly Labor Review*, 1992, 115:9, 17–25.

Podgursky, Michael, and Paul Swaim, "Job Displacement and Earnings Loss: Evidence from the Displaced Worker Survey," *Industrial and Labor Relations Review*, 1987, 41:1, 17–29.

Richardson, J. David, "Income Inequality and Trade: How to Think, What to Conclude," *Journal of Economic Perspectives*, 1995, 9:3, 33–56.

Ruhm, Christopher J., "Advance Notice and Post-Displacement Joblessness," *Journal of Labor Economics*, 1992, 10:1, 1–32.

Ruhm, Christopher J., "Advance Notice, Job Search, and Post-Displacement Earnings," *Journal of Labor Economics*, 1994, 12:1, 1–28.

Ruhm, Christopher J., "Are Workers Permanently Scarred by Job Displacements?" *American Economic Review*, 1991a, 81:1, 319–23.

Ruhm, Christopher J., "The Time Profile of Displacement-Induced Changes in Unemployment and Earnings." In John T. Addison, ed. *Job Displacement: Consequences and Implications for Policy*. Chap. 6. Detroit: Wayne State University Press, 1991b.

Schoeni, Robert F., and Michael Dardia, "Wage Losses of Displaced Workers in the 1990s," RAND, September 1996.

Seitchik, Adam, "Who are Displaced Workers?" In John T. Addison, ed. *Job Displacement: Consequences and Implications for Policy*. Detroit: Wayne State University Press, 1991, pgs. 51–82.

Seitchik, Adam, and Jeffrey Zornitsky, *From One Job to the Next: Worker Adjustment in a Changing Labor Market*. Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research, 1989.

Shelburne, Robert, and Robert Bednarzik, "Geographic Concentration of Trade-Sensitive Employment," *Monthly Labor Review*, 1993, 116:6, 3–13.

Stevens, Ann Huff, "Persistent Effects of Job Displacement: The Importance of Multiple Job Losses," *Journal of Labor Economics*, 1997, 15:1, 165–88.

Swaim, Paul, and Michael Podgursky, "Do More-Educated Workers Fare Better Following Job Displacement?" *Monthly Labor Review*, 1989, 112:8, 43–46.

Topel, Robert, "Specific Capital and Unemployment: Measuring the Costs and Consequences of Job Loss," *Carnegie-Rochester Conference Series on Public Policy* 1990, 33, 181–214.

Topel, Robert, "Specific Capital, Mobility, and Wages: Wages Rise With Job Seniority," *Journal of Political Economy*, 1991, 99:1, 145–75.

United States Department of Labor, *Report on the American Workforce*. Washington, DC: Government Printing Office, 1994.

United States Department of Labor, *Report on the American Workforce*. Washington, DC: Government Printing Office, 1995.

United States General Accounting Office, "Equal Employment Opportunity: Displacement Rates, Unemployment Spells, and Reemployment Wages by Race," GAO/HEHS-94-229FS, September 1994.