Research summaries

Do more-educated workers fare better following job displacement?

Paul Swaim and Michael Podgursky

Increased international competition and capital mobility, new workplace technologies, and structural changes in industry continue to focus attention on the problem of job displacement and on labor market policies to reduce and more equitably distribute the costs of such changes.[1] It has been argued that the ongoing—and perhaps accelerating—process of structural economic change has increased employers' demand for higher educational attainment among workers, because workers with good cognitive skills are more easily trained and generally more adaptable. For example, according to authors of a recent joint publication of the U.S. Departments of Education and Labor, shifts in the industrial and job mix are placing an increasing premium on basic educational skills that many workers lack.[2] In economic terms, this means that workers with better general education will have lower costs of displacement.

The argument that general education facilitates labor market adjustment is intuitively plausible and supported by some case study evidence.[3] Statistical tests of this hypothesis, however, have been hampered by scarcity of data, because, until recently, microdata on the postdisplacement experience of a large sample of permanently displaced workers have not been available. In this report, we use a large sample of displaced workers from the January 1984 and January 1986 Displaced Workers Surveys, special supplements to the Current Population Survey (CPS),[4] to examine the effect of education on postdisplacement labor market adjustment. We find strong evidence that workers with more schooling experience smaller economic losses as a result of displacement.

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Educational credentials of workers

In January 1984 and again in January 1986, all respondents from 60,000 CPS households were asked whether they or any other member of their household age 20 or older had "lost or left a job" within the previous 5 years "because of an employer going out of business, a layoff from which [the worker] was not recalled, or other similar reasons." An affirmative response triggered 18 supplemental questions concerning the nature of the job lost and postdisplacement labor market experience. These displacement questions, of course, supplement the extensive demographic and labor force data in the basic monthly CPS.

For this study, we pooled the two surveys and drew a sample of 10,659 workers between the ages of 20 and 61 whose full-time nonagricultural jobs were eliminated between January 1979 and January 1986 due to plant or company closures or moves, slack work, or abolishment of position or shift.[5] We excluded workers age 62 and older because they would generally be eligible for Social Security retirement payments and possibly private pensions as well. They thus face a different set of circumstances in the labor market than do younger workers. Finally, the Displaced Workers Surveys only provided information on usual weekly earnings and full-time/part-time nature of the worker's former job. By limiting our sample to full-time workers, we attempt to control for

Table 1. Average educational and demographic characteristics of displaced and employed workers, by occupation of former job

Occupation	Percent of displaced workers	Education (years)	Age (years)	Percent female	Percent black
Total displaced workers[1]	100.0	[2]12.3	[2]34.3	[2]34.4	[2]12.0
(Total employed workers)	(100.0)	(13.1)	(37.1)	(40.5)	(10.1)
Operatives	[2]28.6	11.3	[2]34.3	[2]35.3	15.0
	(13.7)	(11.2)	(38.0)	(28.5)	(14.5)
Craft and precision	[2]21.3	11.8	[2]34.9	[2]12.5	[2]9.1
	(14.0)	(11.8)	(37.0)	(8.2)	(6.6)
Laborers	[2]8.2	11.3	[2]32.1	[2]17.3	[3]19.9
	(3.5)	(11.2)	(34.2)	(15.7)	(16.7)
Clerical	[2]10.1	[2]12.6	[2]33.7	[2]68.5	[3]13.6
	(17.5)	(12.8)	(37.1)	(77.6)	(11.0)
Managerial	[2]8.8	[2]14.0	[2]35.8	[2]40.5	5.2
	(13.3)	(14.6)	(39.2)	(33.1)	(5.4)
Sales	[2]8.4	[2]13.1	[2]34.7	39.1	4.3
	(9.7)	(13.5)	(36.3)	(36.0)	(4.5)
Service	[2]5.6	11.9	[2]34.0	[2]58.7	23.6
	(9.7)	(11.8)	(37.2)	(51.3)	(21.0)
Professional	[2]5.8	[2]14.8	[2]34.9	[2]36.3	7.6
	(14.3)	(16.1)	(37.9)	(46.5)	(7.3)
Technical	[2]3.1	13.8	[2]32.9	[2]33.9	5.8
	(3.8)	(13.9)	(34.6)	(46.1)	(8.1)

[1] Workers ages 20 to 61 displaced from full-time nonagricultural wage and salary jobs between January 1979 and January 1986. Statistics in parentheses refer to workers ages 20 to 61 employed in full-time nonagricultural jobs in January 1984. To facilitate comparison between these two groups, the age criterion for displaced workers refers to age at the time of displacement.

[2] Difference between the upper (displaced) and lower (total employed) estimates significant at the 1-percent level.

[3] Difference between the upper (displaced) and lower (total employed) estimates significant at the 5-percent level.

hours of work on the old job when comparing pre- and postdisplacement earnings levels.

Sampling weights provided with the CPS can be used to estimate national totals corresponding to our sample. Such tabulations suggest that displacement is widespread. For example, weighted tabulations from the 1986 survey indicate that approximately 5.8 million workers who fit our sample definition were displaced from at least one full-time job between 1981 and 1984.[6]

Table 1 presents descriptive statistics for these workers, broken down by the broad occupational class of the worker's former job. For comparison, we indicate in parentheses the average characteristics of all full-time workers employed in these same occupational groups in January 1984. The first column of the table shows occupational shares of the relevant population. Blue-collar workers (operatives, craftworkers, and laborers) account for the majority of displaced workers and are much more likely to be displaced than are white-collar or service workers. For example, operatives represent just 13.7 percent of employment, but 28.6 percent of displaced workers.

The second column of table 1 compares the average educational attainment of displaced workers with the corresponding averages for all workers. Displaced workers tend to have less formal schooling than does the average employed worker. This occurs not because displaced workers have less education than employed workers in the same occupation, but because workers in blue-collar occupations, in which average education is lower, are much more likely to be displaced.[7] This is particularly true for operatives and laborers, who have considerably lower educational attainment, on average, than do sales and clerical workers, not to mention professional, technical, and managerial workers. As a group, displaced workers are also younger than the total work force, and are disproportionately male and black.

Table 2. **Median earnings losses and number of weeks of joblessness following displacement, by educational attainment and occupation**

Occupation on former job	Years of schooling completed			
	11 or fewer	12	13 to 15	16 or more
All displaced workers:[1]				
Percent earnings loss	16.1	10.2	8.4	2.0
Number of weeks jobless	39	24	15	12
Operatives:				
Percent earnings loss	16.1	12.8	14.0	5.2
Number of weeks jobless	52	26	17	20
Craft and precision:				
Percent earnings loss	17.2	8.4	13.3	4.1
Number of weeks jobless	26	20	16	15
Laborers:				
Percent earnings loss	14.7	10.9	13.6	(2)
Number of weeks jobless	51	24	24	(2)
Clerical:				
Percent earnings loss	17.5	9.5	6.1	1.6
Number of weeks jobless	36	26	16	12
Managerial:				
Percent earnings loss	[3]27.2	12.8	8.4	2.0
Number of weeks jobless	[3]30	12	12	9
Sales:				
Percent earnings loss	9.5	8.4	.6	.0
Number of weeks jobless	24	12	12	12
Service:				
Percent earnings loss	19.5	5.3	5.7	[3]–6.3
Number of weeks jobless	36	13	13	[3]12
Professional:				
Percent earnings loss	(2)	11.2	3.8	.2
Number of weeks jobless	(2)	20	8	10
Technical:				
Percent earnings loss	(2)	12.0	9.2	1.9
Number of weeks jobless	(2)	16	13	8

[1] Workers ages 20 to 61 displaced from full-time nonagricultural wage and salary jobs between January 1979 and January 1986. Earnings loss, which is only defined for workers reemployed on the survey date, is the percentage reduction in usual weekly earnings between the old job and the current job. Earnings on the old job were adjusted for trend growth in occupational wages between the year of job loss and the date of the survey (as reported in various issues of the Bureau of Labor Statistics monthly publication *Employment and Earnings*). The tabulations of numbers of weeks jobless are for workers displaced at least 1 year prior to the survey. Although some of these workers' jobless spells are right-censored (that is, still in progress on the survey date), the median spell durations are not biased because fewer than 50 percent of the workers in any cell experience a year or more without work.

[2] Median value not reported because fewer than 26 observations were available.

[3] Between 26 and 50 observations were available.

The cost of displacement

From the worker's perspective, two potential costs of displacement are the time spent finding a new job and reductions in earnings from predisplacement levels once the worker is reemployed. Table 2 presents median weeks of joblessness and median percentage-point earnings losses for our sample of displaced workers by educational level. The data for all displaced workers in the first two rows show that workers with fewer years of schooling experience much larger losses. The median reduction in usual weekly earnings falls from 16.1 percent for workers lacking a high school diploma to just 2.0 percent for those having completed at least 4 years of college. Similarly, median weeks of joblessness falls from 39 to 12.

The benefits of more education are also evident for the nine broad occupational categories. With only a few exceptions, earnings loss and number of weeks spent jobless fall steadily as years of schooling increase. It is noteworthy, however, that the profile of the decline in displacement-related costs with education differs somewhat among the occupations. For example, completion of high school is very important in blue-collar occupations, but attending college does not appear to bring additional improvements unless a 4-year degree is obtained. By contrast, the distinction between having 12 years of schooling and having 13 to 15 years is important for managerial, sales, professional, and technical workers.

This decline in weeks of joblessness and in earnings loss with education need not be attributable to schooling, if education is correlated with other determinants of adjustment success. Table 3 presents multivariate statistical estimates of the effect of an additional year of completed schooling on short- and long-term displacement costs. In addition to education, our models include a large number of independent variables that control for other worker and labor market characteristics likely to affect postdisplacement adjustment. We also control for years since displacement, because

Table 3. **The effect of an additional year of educational attainment on private costs of job displacement**[1]

Dependent variable	Education coefficient and average value of variable (in parentheses)			
	Blue-collar		White-collar and service	
	Men	Women	Men	Women
Change in—				
1) Median weeks of joblessness	[2]−2.3 (24.5)	[2]−5.3 (47.5)	−0.4 (12.5)	[2]−2.4 (18.5)
2) Probability of full-time reemployment	[2]3.2 (56.2)	[2]2.1 (40.2)	[2]1.7 (69.0)	[2]1.8 (49.3)
3) Percent loss in full-time weekly earnings	[2]−2.6 (9.4)	[2]−3.7 (9.4)	[2]−3.5 (3.8)	[2]−5.0 (2.7)
4) Probability that group health insurance was not replaced	[2]−2.4 (39.6)	[2]−2.7 (41.6)	[2]−3.6 (27.3)	[2]−1.8 (30.8)

[1] In addition to years of schooling, the following independent variables were included in the model: age (linear term plus a spline at age 50); dummy variables for race, marital status, and number of children; the log of weekly earnings, years of tenure, and occupation (eight dummy variables) for prior job; unionization rate in industry of prior employment; dummy variables for plant shutdown, abolishment of shift or position, eligibility for unemployment insurance benefits, receiving of advance notice of layoff, year of displacement, and years since displacement; and local unemployment rate at time of displacement. The effects reported in rows 2 and 4 are based on maximum-likelihood logit coefficients. The effects in row 1 are calculated from maximum-likelihood coefficients of a Weibull duration model. The effects in row 3 are ordinary least squares coefficients.

[2] Significant at the 1-percent level.

some of the reductions in earnings associated with displacement may be transitory. We estimated separate multivariate models for four subgroups defined by sex and broad occupational groupings, because coefficient values are likely to differ for these groups. More-detailed occupational stratification was not attempted because unreliably small sample sizes would result. However, dummy variables were included for each of the nine occupational groups in table 2.[8]

Row 1 of table 3 focuses on the duration of joblessness following displacement. The education coefficient is the estimated effect of an incremental year of education on the median spell of joblessness for an average worker in the four subsamples. (These are computed from the estimated coefficients of a flexible multivariate survival model fit to the distribution of jobless spells.[9]) For blue-collar men, an incremental year of education reduced the median spell by 2.3 weeks. The effect was similar for white-collar women (2.4 weeks), but considerably greater for blue-collar women (5.3 weeks). Schooling had a smaller and marginally significant effect for men in the white-collar and service groups (0.4 weeks, significant at the 12-percent level).[10]

Another indication of adjustment success is whether these workers, all of whom lost full-time jobs, returned to full-time employment. The second row of table 3 shows the percentage-point effect of an extra year of education on the probability that a worker was reemployed full time at the survey date (that is, in January 1984 or January 1986). (These are computed from maximum-likelihood logit coefficients for an average worker in each of the four subsamples.) An additional year of education raises the probability of subsequent full-time employment by 3.2 percentage points for blue-collar men, and is significant and positive for the other three groups as well. Thus, the coefficients in the first two rows of the table clearly show that more-educated workers spend less time without work following displacement and are more likely to return to full-time employment.

The percentage reduction in full-time weekly earnings associated with displacement also is smaller for workers with greater educational attainment. The third row of table 3 shows the percentage-point change in earnings loss associated with an extra year of education for workers who were reemployed full time when surveyed. (These were computed from the ordinary least squares coefficients of an earnings equation with full-time weekly earnings in January 1984 or January 1986 as the dependent variable.) The reduction in earnings loss per year of education ranges from 2.6 percentage points for male blue-collar workers up to 5.0 percentage points for female white-collar workers.[11]

Finally, higher educational attainment reduces the likelihood of losing employer group health insurance—a major fringe benefit. Because employer-based plans usually terminate within 90 days of layoff, the risk of health insurance loss looms large for displaced workers. Among blue-collar men, 39.6 percent of workers who had an employer-sponsored group health plan on their old job reported that they were covered by *no* group plan at the time of the survey. The educational effects reported in row 4 of the table are computed from maximum-likelihood coefficients of a logit model of health insurance loss. For the blue-collar men, an incremental year of schooling reduced the loss rate by 2.4 percentage points. Similar reductions in loss rates result for the other three subgroups.[12]

Conclusion

Data from the Displaced Worker Surveys show that more-educated workers fare better in the job market following displacement. In the face of involuntary job loss, workers with greater educational attainment suffer smaller economic losses. Among otherwise comparable workers, displaced workers who have completed more years of schooling spend significantly less time finding a new job and are more likely to return to full-time employment. More-educated workers also become reemployed at earnings levels that compare more favorably to those on their former job and are more likely to replace employer-sponsored health plans lost with the prior job.

Does education also reduce the social cost of economic change? The reductions in the *private* costs of displacement associated with education also represent net reductions in the *social* costs of economic change if the better adjustment experience of educated workers reflects their greater productivity in new jobs or their greater productivity in finding the right new job. Such productivity gains, in turn, would reflect the increased value of investing in general skills during a period of rapid structural change. It is possible, however, that some of the advantages accruing to more-educated workers do not reflect true social gains if educational credentials are serving as a signal of native intelligence or perseverance, rather than of productive skills acquired in school.[13] Unfortunately, our data do not tell us why more-educated workers fare better, just that they do.[14]

One final caveat is in order. While greater educational attainment lowers the costs of displacement, it by no means elim-

inates these costs. Many workers with above-average education still experience long spells of joblessness and large earnings losses upon reemployment. Improved general education thus is unlikely to address fully the concerns motivating targeted adjustment assistance for displaced workers, such as Job Training Partnership Act Title III programs. □

Footnotes

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[1] Recent reports examining the problems of displaced workers include *Economic Adjustment and Worker Dislocation in a Competitive Society*, Report of the Secretary of Labor's Task Force on Economic Adjustment and Worker Dislocation (U.S. Department of Labor, December 1986); U.S. Congress, Office of Technology Assessment, *Technology and Structural Unemployment: Reemploying Displaced Adults*, OTA-ITE-250 (Washington, U.S. Government Printing Office, February 1986); and Richard M. Cyert and David C. Mowery, *Technology and Employment: Innovation and Growth in the U.S. Economy* (Washington, National Academy Press, 1987).

[2] See U.S. Department of Education and U.S. Department of Labor, *The Bottom Line: Basic Skills in the Workplace* (Washington, U.S. Government Printing Office, 1988).

Other authors have come to similar conclusions. Robert Reich and Michael Piore and Charles Sabel emphasize that a broadly trained work force is necessary for the "flexible production" model of work organization that is emerging in competitive sectors of U.S. manufacturing. (See Robert Reich, *The Next American Frontier* (New York, Times Books, 1983); and Michael Piore and Charles Sabel, *The Second Industrial Divide* (New York, Basic Books, 1984).) Similarly, authors of a major econometric study using Current Population Survey microdata on earnings covering more than two decades conclude that labor market returns to education have risen sharply in the 1980's, and that increased demand for educated workers is an important cause of that rise. (See Kevin Murphy and Finis Welch, "The Structure of Wages," Working Paper (Los Angeles, Unicon Research Corporation, April 1988).) Theodore Schultz argues that educational investments produce not only more productive but also more adaptable workers—that is, workers better able to redeploy their human resources in the face of economic change. (See Theodore Schultz, "The Value of the Ability to Deal with Disequilibria," *Journal of Economic Literature*, September 1975, pp. 827–46.)

[3] In a 1986 report on technology and structural unemployment by the Office of Technology Assessment (see footnote 1), the authors note the adjustment problems of workers lacking basic educational skills who participated in various Federal Job Training Partnership Act Title III ("Dislocated Worker") programs. For evidence from earlier case studies, see Jeanne Prial Gordus, Paul Jarley, and Louis Ferman, *Plant Closings and Economic Dislocation* (Kalamazoo, MI, W. E. Upjohn, 1981).

[4] The Current Population Survey is a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample, selected to represent the U.S. population 16 years of age and older, consisted of about 60,000 households in 1984 and 1986.

[5] We excluded workers who reported job loss due to self-employed business failure, termination of a seasonal job, or "other" reasons, which is consistent with the technique employed by other researchers. (See Paul O. Flaim and Ellen Sehgal, "Displaced workers of 1979–83: how have they fared?" *Monthly Labor Review*, June 1985, pp. 3–16; and Francis Horvath, "The pulse of economic change: displaced workers of 1981–85," *Monthly Labor Review*, June 1987, pp. 3–12.) Unlike these authors, however, we do not exclude workers with less than 3 years of seniority on their former jobs. None of the findings of this study are changed if we restrict our sample to workers with 3 or more years of tenure.

[6] Because the 1984 and 1986 surveys both include workers displaced in 1981–83, the total weighted count for our pooled sample would overstate the incidence of displacement. Year-by-year comparisons for the two surveys suggest that many workers "displaced" in the year prior to the survey are eventually recalled by their former employers. (See Michael Podgursky, "Job Displacement and Labor Market Adjustment: Evidence from the Displaced Worker Surveys," in Richard M. Cyert and David M. Mowery, eds., *The Impact of Technological Change on Employment and Economic Growth* (Cambridge, MA, Ballinger, 1988), pp. 3–41.) Hence our choice to report the weighted count for 1981–84 from the 1986 Displaced Worker Survey.

[7] As is indicated in table 1, mean educational attainment is significantly lower for displaced workers than for all employed in four of the white-collar occupations (clerical, managerial, sales, and professional). Within-occupation differences in years of schooling, however, account for just 0.1 year of the 0.8 year of educational gap between all displaced workers and all employed.

[8] A complete list of the independent variables is provided in a footnote to table 3. For reasons of space, we report only education coefficients in the table. The full set of estimated coefficients for all the independent variables and related statistics is available on request from the authors.

[9] Specifically, we used a Weibull regression model. For a description of this model, see Michael Podgursky and Paul Swaim, "Duration of Joblessness Following Displacement," *Industrial Relations*, Fall 1987, pp. 213–26.

[10] The relatively weak association between education and weeks spent jobless for white-collar men is at least partially attributable to the fact that years of schooling completed enters the survival-time model as a linear effect. We reestimated the model replacing the linear education term with dummy variables for the four intervals used in table 2 (0 to 11, 12, 13 to 15, and 16 or more years of schooling). The estimated coefficients indicate much longer jobless durations for the least educated group (significant at the 2-percent level), but very similar spell lengths for the remaining three groups.

[11] Because data on reemployment earnings are unavailable for workers not employed on the survey date, the estimated impacts of education on weekly earnings may be unreliable for these workers. In "Job Displacement and Earnings Loss: Evidence from the Displaced Worker Survey," *Industrial and Labor Relations Review*, October 1987, pp. 17–29, Michael Podgursky and Paul Swaim analyze sample selection for this model using 1984 Displaced Worker Survey data. Their results suggest that nonrandom selection into reemployment probably does not significantly bias the estimated coefficients for education.

[12] In "Health insurance loss: the case of the displaced worker," *Monthly Labor Review*, April 1987, pp. 30–33, Michael Podgursky and Paul Swaim show that health insurance loss rates are much lower for reemployed workers, but that a substantial number become reemployed in jobs without employer-sponsored health insurance. More-educated workers are more likely to replace their former health plan both because they become reemployed more quickly and because their new jobs are more likely to provide insurance coverage.

[13] Michael Spence analyzes educational credentials as signals of native abilities. See Michael Spence, "Job Market Signaling," *Quarterly Journal of Economics*, Vol. 87, 1973, pp. 355–74. Similarly, if more-educated workers bump less-educated workers further back in job queues, the social return to education is reduced. See Lester Thurow, *Generating Inequality* (New York, Basic Books, 1975).

[14] The Displaced Worker Survey data suggest one possible explanation for the link between education and adjustment to displacement. More-educated workers are more likely to make employment-related moves to a new city or county. For example, 14.9 percent of the men with 0 to 11 years of schooling made such a move, as compared to 27.1 percent for those with 16 or more years of schooling. The corresponding migration rates for women were 9.7 and 22.0 percent.