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## Understanding Earnings Losses

The descriptive discussion in chapter 3 reveals a few straightforward facts about earnings losses for displaced workers. For manufacturing workers, reemployment is often at a level of pay well below the pay on the old job. On average, weekly earnings from the new job are 13 percent below those from the old one.<sup>1</sup> There is wide variation around this average. About a third of workers earn as much or more from the new job, and about a quarter realize losses greater than 30 percent. The goal of this chapter is to explain that variation in earnings losses. We will start with some background from studies of wage determination, followed by lessons from earlier studies. From this foundation, we will consider the evidence more directly.

### **Background: Human Capital and Wage Determination**

To explain the reasons for earnings losses is a complex problem that requires drawing on theories of human capital and wage determination. The evidence shows that displaced workers were typically earning more in their previous job than they could have earned from other employers.

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1. This earnings loss estimate is likely an understatement. It considers old job earnings at their level at the time of job loss. If a worker had remained on the job and experienced earnings growth, then it is this higher level of pay that should be compared with the earnings from the new job. The Displaced Worker Surveys offer no such comparison group of individuals who stay on the old jobs.

The challenge is to isolate which factors are responsible for the earnings premium, 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. Here I will summarize, briefly, some common understandings of the relationship between skills, job tenure, and earnings. Interested readers are directed to Kletzer (1998b) for a more complete discussion.

Human capital models often divide capital into “general capital,” which is widely applicable to many employers, and “specific capital,” 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, 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 somewhat porous; specific capital may also be transferable to a limited degree.

Job tenure is often the first observable characteristic under consideration, because tenure is the common measure of firm- and job-specific skills. It is clear that earnings losses rise with previous job tenure. Farber (1997) found that each year of job tenure is associated with an additional earnings loss of 1.0-1.3 percent. Topel (1990) estimated that when a worker with 10 years’ tenure is displaced, postdisplacement wages will be 25 percent lower. Although previous job tenure is still valued on the new job, its value is less on that job than it was on the old one. 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 no tenure. Postdisplacement, the worker with 5.9 years predisplacement tenure earned 6.4 percent more than the one with no tenure. This is consistent with a reduction in the value of (old-job) specific skills. For a male white collar worker with average tenure of 6.1 years on the job lost, the predisplacement earnings difference over a similar worker with no tenure was 22.5 percent, and the postdisplacement earnings difference was 19.1 percent (see 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 the returns to seniority in production (unionized) jobs for these workers. In contrast, individual ability and transferable skills are a more important part of the returns to tenure for the white collar group.

One important finding is that full- or part-time status before and after displacement plays an important role in determining earnings changes.

Workers reemployed in part-time jobs have significantly larger earnings losses than workers reemployed full-time. Farber (1997) reports that across the surveys, just 12 percent of displaced workers lost part-time jobs, whereas 17 percent of those reemployed at the survey date were in part-time jobs. This suggests a movement from full- to part-time employment. Kletzer (1998a) estimates that workers displaced from full-time jobs and reemployed part-time experience earnings losses 40 percent larger than workers reemployed full-time. Although 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.

Because 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 sizable 9 percent over time (Farber 1997).

This point about full- and part-time work is more broadly indicative of a limitation of the Displaced Worker Surveys in the study of earnings changes. Individual characteristics easily measured in these surveys, such as education and job tenure, change very little before and after job loss and therefore cannot explain much of the earnings difference. We do know that earnings losses are smaller for more educated workers and larger for more tenured workers. But in general only a small fraction of the variation in earnings changes across workers is explained by the traditional explanatory variables.

The key factors that do change (or that can potentially change) are hours worked, industry, and occupation. It has been shown, in many studies, that earnings losses are larger for workers who change industry or occupation or who work fewer hours (see Kletzer 1998b). There is, however, a circularity to using changes in these factors to explain earnings losses, because changes in these characteristics of work are an outcome of job loss on equal footing with earnings changes. In other words, it should not be surprising that characteristics of the new job, as compared with the old job, help account for earnings change. Statistically, the addition of these changes to our estimation models should enhance the explanatory power of our earnings change estimates. Yet these very characteristics are what we seek to understand, as outcomes, and therefore they are problematic when included as explanatory variables.

## **Looking More Closely at Changes in Earnings**

With these data limitations in mind, table 5.1 reports a straightforward (ordinary least squares) regression analysis of the change in weekly earn-

**Table 5.1 Change in weekly earnings for workers reemployed at their survey date, full sample (ordinary least squares estimates)**

Characteristic	(1)	(2)	(3)
<b>Manufacturing</b> (nondurable goods)	-0.0492** (0.0115)	-0.0201 (0.0115)	-0.0196 (0.0115)
<b>Manufacturing</b> (durable goods)	-0.0846** (0.0094)	-0.0623** (0.0096)	-0.0632** (0.0096)
<b>Transportation, communications, utilities</b>	-0.1042** (0.0143)	-0.0895** (0.0142)	-0.0907** (0.0142)
<b>Age at displacement</b> (years)			
20-24		0.1421** (0.0135)	0.1464** (0.0135)
25-34		0.1021** (0.0107)	0.1045** (0.0107)
35-44		0.0608** (0.0109)	0.0628** (0.0109)
<b>Education</b>			
High school graduate		0.0261* (0.0124)	0.0274* (0.0124)
Some college		0.0202 (0.0132)	0.0201 (0.0132)
College degree or higher		0.0636** (0.0138)	0.0639** (0.0138)
<b>Job tenure</b> (years)			
Less than 3		0.1829** (0.0122)	0.1849** (0.0122)
3-5		0.1037** (0.0129)	0.1057** (0.0129)
6-10		0.0610** (0.0141)	0.0623** (0.0141)
<b>Minority</b>		0.0035 (0.0113)	0.0031 (0.0113)
<b>Married</b>		0.0137 (0.0079)	0.0490** (0.0108)
<b>Female</b>		-0.0254** (0.0079)	0.0184 (0.0120)
<b>Female × married</b>			-0.0752** (0.0155)
<b>Years since displacement</b>	0.0021 (0.0034)	0.0077* (0.0034)	0.0076* (0.0034)
Constant	0.4633** (0.0179)	0.1781** (0.0250)	0.1526** (0.0255)
Observations	18,565	18,565	18,565
Adjusted $R^2$	0.10	0.13	0.13

\*significant at 5 percent; \*\* significant at 1 percent.

Note: Dependent variable is change in  $\ln(\text{earnings})$ . Year of displacement and full-time status (at displacement) included as controls. Standard errors in parentheses.

ings, for the full sample of workers reemployed at their survey date. Without controls for worker characteristics, there are sizable differences by sector in earnings losses. As we saw more descriptively above, manufacturing workers (and transportation and public utilities workers) experience larger earnings losses than displaced workers in wholesale and retail trade and services. Transportation and utilities workers experience earnings losses about 11 percent larger than workers in wholesale and retail trade and services, and durable-goods manufacturing workers' earnings losses are about 8.8 percent larger. Nondurable-goods workers, and the low-wage sector overall, experience earnings losses 5 percent larger than workers in wholesale and retail trade and services.

The addition of controls for age at displacement, educational attainment, job tenure, gender, minority status, marital status, and full-time status reduces the sectoral (or industry) effect. Nondurable-goods workers do not experience larger earnings losses once these demographic and human-capital characteristics are included. The larger earnings losses of (high-wage) durable-goods and transportation and public utilities workers remain, reduced in size to a 6.4-9.4 percent larger loss than similar workers displaced from wholesale and retail trade and services.

Adding to our emerging profile of workers who experience costly job losses, earnings losses rise with previous job tenure and age and are smaller for more educated workers. All else remaining the same, earnings losses are 21 percent smaller for workers with less than 3 years' tenure, relative to workers with more than 10 years' tenure. For workers with 3-5 years' tenure, earnings losses are 11 percent smaller. Prime-aged workers, those 25-44 years old, have earnings losses 6-11 percent smaller than workers older than 45. Earnings losses are somewhat larger (2.6 percent) for women. The estimated difference between minority and nonminority workers is small and statistically insignificant. Column (3) of table 5.1 separates the effects of marriage and gender. Marriage narrows earnings losses for men and increases earnings losses for women. There is no statistically significant penalty for single women.

Among manufacturing workers (table 5.2), earnings changes are not significantly related to the degree of import competition. Even without any of the worker controls, high import-competing workers do not have significantly larger earnings losses than the less import-competing group. Worker characteristics matter similarly to the discussion above: Earnings losses increase with tenure on the old job and age at displacement. Losses are smaller for more educated workers. Within manufacturing, earnings-loss differences between men and women are not statistically significant.

With the Displaced Worker Surveys, we obtain a short-run, or snapshot, view of earnings losses because the time horizon is about 1-3 years after job loss. These sizable short-run earnings losses prompt a natural next question about long-run earnings opportunities and losses. The Displaced

**Table 5.2 Change in weekly earnings for workers reemployed at their survey date, manufacturing sample (ordinary least squares estimates)**

Characteristic	(1)	(2)	(3)
<b>High import-competing</b>	-0.0199 (0.0163)	-0.0058 (0.0161)	-0.0058 (0.0161)
<b>Medium import-competing</b>	-0.0187 (0.0160)	-0.0097 (0.0157)	-0.0101 (0.0157)
<b>Age at displacement (years)</b>			
20-24		0.1127** (0.0208)	0.1152** (0.0208)
25-34		0.0891** (0.0161)	0.0902** (0.0162)
35-44		0.0530** (0.0162)	0.0540** (0.0162)
<b>Education</b>			
High school graduate		0.0051 (0.0160)	0.0056 (0.0160)
Some college		0.0047 (0.0183)	0.0046 (0.0183)
College degree or higher		0.0537** (0.0198)	0.0533** (0.0198)
<b>Job tenure (years)</b>			
Less than 3		0.2174** (0.0174)	0.2184** (0.0174)
3-5		0.1302** (0.0181)	0.1311** (0.0181)
6-10		0.0909** (0.0194)	0.0918** (0.0194)
<b>Minority</b>		-0.0006 (0.0169)	-0.0007 (0.0169)
<b>Married</b>		0.0315* (0.0123)	0.0471** (0.0156)
<b>Female</b>		-0.0184 (0.0123)	0.0060 (0.0194)
<b>Female × married</b>			-0.0400 (0.0247)
<b>Years since displacement</b>	-0.0051 (0.0050)	0.0036 (0.0050)	0.0035 (0.0050)
Constant	0.3424** (0.0371)	0.0359 (0.0434)	0.0241 (0.0440)
Observations	7,167	7,167	7,167
Adjusted $R^2$	0.03	0.07	0.07

\*significant at 5 percent; \*\*significant at 1 percent.

Note: Dependent variable is change in  $\ln(\text{earnings})$ . Year of displacement and full-time status (at displacement) included as controls. Standard errors in parentheses.

Worker Surveys cannot be used to answer long-run earnings questions, but a handful of earlier studies used data that follow a set of workers over time. In summary, earnings losses are large and persistent, on the order of 25 percent, 5-10 years after job loss. (Readers interested in more detail about these studies are directed to appendix C.)

## **The Importance of Industry for Earnings Change**

Import-competing job loss, by its nature, is concentrated in a set of industries. A small number of displaced-worker studies show that “industry” matters, by revealing that industry (or more broadly sector) may be an important dimension across which skills are transferable. These studies find that the postdisplacement earnings of individuals who change industry are lower than the earnings of otherwise comparable individuals who stay in the same industry (see references in Kletzer 1998b). For manufacturing workers, Jacobson, LaLonde, and Sullivan (1993) found larger earnings losses for workers reemployed outside manufacturing than for workers who remained in manufacturing upon reemployment. 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.

More broadly, common sense provides a strong push toward thinking that it matters a great deal where a displaced worker becomes reemployed. More detailed economic analysis has been a bit slow to embrace this point, in part because there are few theoretical guidelines to suggest a model of industry (or sectoral) reemployment. The guidance from theory may be scant, but it is there. A foundation of research in wage determination notes that 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) is very likely to depend on 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, as well as other industry effects. 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 after 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 at the 2-digit SIC level). These studies find that mobility between industries depends on wages in the various industries; the job opportunities in different sectors (Kletzer

1992; Fallick 1993; Seitchik and Zornitsky 1989); if 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 (Topel 1990; Carrington 1993; and Jacobson, LaLonde, and Sullivan 1993) that a substantial share of earnings losses results from the loss of highly firm-specific earnings components. These results imply that industry-specific skills may retain their value if an individual becomes reemployed in a similar sector where those skills are in demand.

Understanding why workers change industry will remain an important question for the research literature on earnings losses. In the following chapter, I consider whether and how import-competing displaced workers change industry after losing their job.