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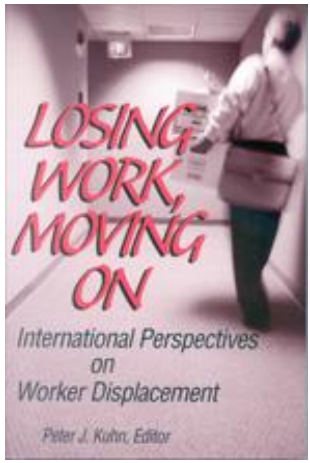

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Displaced Workers in the United States and the Netherlands

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In this chapter, we analyze worker displacement (permanent job separations initiated by employers because of adverse economic conditions) in the United States and the Netherlands. Labor displacement has been widely studied in the U.S. context, where adequate data have been available for a considerably longer period than in most other countries. No similar literature exists for the Netherlands, even though displacement is an increasingly important phenomenon there.[1] We discuss the relevant institutions and provide an empirical analysis of the incidence of displacement and the labor market transitions and earnings changes induced by displacement in both countries.

Our analysis of worker displacement generally identifies displacement as permanent (rather than temporary) layoffs, controlling to varying extents for the cause of job termination. In much of the analysis, we focus on workers with substantial tenure or compare their experiences to those of dislocated persons with less tenure. Restricting our analysis to permanent layoffs is almost irrelevant in the Netherlands because temporary layoffs with recall are rarely observed there. In fact, Dutch institutions work against them. Arrangements for providing unemployment insurance (UI) to workers who are laid off temporarily, for instance, are restricted to very specific activities.[2]

This chapter also provides new information on the relationship between displacement and retirement. In the 1970s and the 1980s, disability insurance (DI) was allegedly used as a convenient alternative to unemployment insurance for the separation of workers in the Netherlands. Early retirement arrangements may also have facilitated the displacement of older workers. Although the data for the Netherlands provide some information on transitions from employment into these alternative destinations, this information is not as rich as for other issues addressed below. Therefore, we mainly discuss the relevant institutional arrangements and findings from existing empirical work in order to clarify the role of DI and early retirement in the Netherlands. Surprisingly, despite richer data, there has been little previous analysis of the relationship between displacement and retirement in the United States. A preliminary investigation of that relationship is also provided in this chapter.

Our discussion of displacement in the United States frequently refers to the results of an extensive North American literature on displacement. These data are well known and were designed specifically for the study of displaced workers. As a result, this chapter provides only a modest updating of prior U.S. analyses. In contrast, our Dutch analyses require data from various sources, none explicitly addressing displacement, and represent the first substantive study of these issues. Our discussions of the Dutch data and results, therefore, usually need to be more extensive than those for the United States.

The plan of this chapter is as follows. First we discuss institutions that are relevant to displacement (such as wage formation, employment protection, and social security) and the data sets used in the analyses. We continue by discussing time-series and cross-sectional properties of displacement rates. Then we analyze labor market transitions following displacement and wage or earnings changes induced by displacement. We finish by discussing the role of early retirement and DI.

INSTITUTIONAL ENVIRONMENT

United States

Minimum wages

Compared with most other industrialized nations, U.S. labor markets are highly flexible.[3] Few workers are unionized and minimum wages are low as a fraction of average earnings. In 1996, for example, union members accounted for only 14.5 percent of total wage and salary employment and 10.0 percent of private wage and salary workers (U.S. Bureau of the Census 1997, Table 688). Effective September 1, 1997, the minimum wage was raised to $5.15 per hour. Even after this increase, however, it was only about 40 percent of the average hourly earnings of production workers.[4]

Employment protection

Employees in most European nations have considerable protection against "unjust" dismissals. In contrast, the U.S. "employment-at-will" doctrine provides U.S. employers with wide latitude to terminate workers for almost any reason. There are important exceptions, however, for unionized workers and for individuals with contracts containing provisions governing discharges. Some state courts have also recognized exceptions that limit dismissals when employees perform acts serving the interests of public policy (such as jury duty) or when an implied contract exists due to written or oral statements made by employers. Some courts have upheld "good faith" provisions requiring employers to treat workers in a "fair and reasonable" manner in all employment relationships, including terminations.[5] Since the Worker Retraining and Notification Act (WARN) took effect in 1989, employers with more than 100 full-time workers have been required to provide 60 days' written advance notice of plant closings or mass layoffs. However, the law contains numerous exemptions, and a preliminary analysis by Addison and Blackburn (1994) suggested that the legislation has had little effect on the provision of notice.

Programs to assist displaced workers

The United States provides limited support to workers who lose jobs. By far the most important assistance comes from unemployment insurance. The UI program is overseen by the U.S. Department of Labor but administered by the individual states, resulting in variation in program eligibility and benefits among geographic locations. Workers with qualified employment histories are eligible for benefits if they are available for work and have become unemployed due to involuntary separation from their jobs (without good cause) or voluntary separation with good cause.[6] Benefit duration is generally restricted to 26 weeks, although up to 13 additional weeks can be obtained under the Extended Benefits Program, if the state unemployment rate is sufficiently high.[7] Almost all wage and salary workers are covered by the UI system, but only a fraction of the unemployed actually receive benefits (36 percent in 1995).[8] Wage replacement rates are also relatively low, generally ranging from 50 to 70 percent of the individual's average weekly pretax wage up to a state-determined maximum, and these funds are taxable as normal income. Due to the ceiling, benefits are somewhat progressive and typically average between 30 and 40 percent of previous earnings.

Other programs assist job losers more directly. Trade Assistance Adjustment (TAA), originally enacted in 1962, targets persons displaced from industries adversely affected by import competition. Qualifying workers can receive up to 52 weeks of combined UI and Trade Readjustment Allowance (TRA) benefits, 76 weeks if enrolled in an approved training program, with TRA generally paid at the same rate as UI. TRA is a limited program, however; only 31,000 workers were supported in 1994, at a cost of $120 million.[9] Some assistance is also provided to dislocated workers under the North American Free Trade Agreement (NAFTA) Worker Security Act and the Employment Dislocation and Worker Adjustment Assistance Program. In addition, a variety of demonstration programs have been implemented to test the efficacy of particular assistance strategies for displaced workers.[10] The relatively small size of these efforts implies that most displaced workers receive relatively limited support from the government beyond that available to persons who are jobless for other reasons.[11]

The Netherlands

Wage formation

Minimum wages in the Netherlands are higher than those in the United States. As of July 1998, the minimum wage has been set at 14.01 Dutch guilders (f.; U.S.$7) per hour before taxes and social security premium payments.[12] In contrast to the United States, 75 percent of all employees are covered by collective agreements, which are negotiated by central bargaining between large firms or employer organizations and unions. The resulting agreements, called *Collectieve Arbeids Overeenkomsten* (CAOs), are usually, but not always, put in terms of lower bounds on the terms of employment, notably the wage. Since 1927 central agreements reached by worker unions have, by law, also been applicable to nonunion employees. Another law, passed in 1937, enabled the Minister of Social Affairs and Employment to declare collective agreements binding for entire sectors. Such extensions of the scope of CAOs, called *Algemeen Verbindend Verklaring* (AVVs) are indeed common practice.[13]

Employment protection

Although there is currently a tendency toward more flexible employment relations, employment protection is stronger in the Netherlands than in the United States. Employment relationships are arranged by either fixed-term or permanent contracts.[14] Fixed-term contracts allow employers to lay workers off at the end of the contracted period without either prior notice or a permit, therefore offering no employment protection to the employee. If the employee is allowed to continue to work after the contracted period, however, or if a new fixed-term contract is written within 31 days of the end date of the first contract, the employee is considered to be working on a "continued contract," and is basically provided the protection of a permanent contract.[15]

As long as workers and firms are bound by a contract, they can separate only after a permit has been granted by a regional employment institution, although this rule is generally applied only to firm-initiated separations. Employers always need a permit for dismissal or layoff of workers unless there is mutual agreement between the employer and the employee, severe misconduct by the employee (like stealing),

bankruptcy of the employer, or unless the employment contract is dissolved by a court. Permits are usually granted for dismissal based on low employee performance and for layoffs necessitated by economic circumstances (displacement). Dismissal because of illness, marriage, pregnancy, or military service is prohibited. Court cases and permits are frequently used to dissolve labor contracts.

Both employers and employees who want to end their employment relationship are bound by mandatory advance-notice requirements. Advance-notice periods are always shorter than six months. Exact durations depend on age, tenure, and the type of contract involved.[16] Severance pay is generally provided only in cases where the contract is dissolved by a court and the employee is not declared responsible. In these cases, severance pay is typically between one and two months' salary per year of tenure.

Public pensions and other programs assisting displaced workers

Assistance to unemployed displaced workers is far more generous in the Netherlands than in the United States. The most important source of income for workers displaced from private sector jobs is unemployment insurance, which is set according to the Unemployment Law.[17] A worker in the Netherlands is entitled to UI benefits if he or she has been employed for at least 26 of the prior 52 weeks, faces a sufficiently large, unpaid, reduction in working hours, and is willing to accept a new job.[18] Benefits equal 70 percent of the gross wage in the last job before unemployment to a maximum (as of January 1999) of 217 f. (U.S.$105) per day and are subject to income tax. The maximum duration of these benefits ranges from six months to five years, depending on the employment history of the unemployed workers.[19] Some unemployed workers are entitled to an extension of these benefits at a level related to the mandatory minimum wage.[20] If, after the expiration of UI benefits, the unemployed individual has not found a job, he may receive subsistence benefits (social assistance), which are means-tested (by household income) and related to what is considered to be the social minimum income.[21] The Unemployment Law provides some arrangements for "short-time unemployment" due to weather conditions, but none for temporary layoffs. This may be the reason

that temporary layoffs are not an important phenomenon in the Netherlands (see Emerson 1988).

According to the Unemployment Law, a worker has to prevent unnecessary job loss in order to be entitled to UI. The administrators of the unemployment benefits system, mainly organized at the level of the industry, are authorized to impose sanctions on unemployed workers who have violated this rule.[22] Thus, to the extent that they do not immediately move into new jobs, most displaced workers in the private sector can be identified as workers flowing into UI and not receiving sanctions for unnecessary job loss. Because of the institutional arrangements, this definition restricts attention both to longer service workers, although not necessarily workers with long tenure in their last jobs, and to layoffs due to economic conditions. In this context, it is relevant that UI premiums are not experience rated at the level of the individual firm.[23]

Other social security schemes have also served as destinations for displaced workers during some periods in recent history, disability insurance being a well-known alleged escape route for displacement.[24] In the 1970s and 1980s, DI was more attractive than UI for both employers and employees in terms of replacement rates and, perhaps, less negative stigma effects. In 1990, there were in fact 139 DI claimants for every 1,000 workers in the Netherlands, while there were only 78 in Sweden and 43 in Germany (Aarts, Dercksen, and de Jong 1993). Since Dutch workers are not likely to run much higher health risks than workers in Sweden and Germany, this suggests that Dutch DI serves more goals than just disability insurance.[25] Policy changes in the late 1980s and the 1990s have been directed at preventing abuse of DI. First, DI replacement rates were reduced in 1985 and 1987. Stricter rules concerning disability, and more extensive monitoring, were introduced in the 1993 law. As a consequence, the DI rate has now reduced, after increasing continuously until 1985 (CTSV 1997).

Another possible escape route for displaced workers is early retirement. Since the late 1970s there have been arrangements for retirement before the standard retirement age (65 years), which were formally established by law in 1981. There is some circumstantial evidence that early retirement may be relevant to worker displacement: labor-force participation rates of Dutch men over age 50 decrease relatively quickly with age compared to other OECD countries (Thio

1997). The use of early retirement to avoid layoff costs in case of displacement is clearly restricted, however, by specific age requirements. Also, early retirement schemes have recently been incorporated in private so-called flexible pension plans, which may reduce the scope for abuse of this scheme. Additional information on the role of DI and early retirement is provided at the end of this chapter.

DATA

United States

Significant improvements in data availability have led to an explosion of analysis on U.S. displaced workers during the last decade. The majority of this research has used information available from the Displaced Worker Supplements (DWS) to the Current Population Survey (CPS). The first DWS was conducted in January 1984, with new supplements released at two-year intervals since that time. Until recently, the surveys collected information for workers losing jobs in the five calendar years prior to the interview date. Beginning in 1994, the surveys were switched from January to February and the period over which job loss was measured was cut from five to three years. Information is collected on pre- and postdisplacement job characteristics and on the intervening period of joblessness.[26] Sample sizes are reasonably large, the DWS data can be supplemented with the information contained in the normal monthly CPS, and the information is fairly easy to analyze.[27] The new analysis of displacement contained in this chapter uses data from the February 1996 DWS and CPS and focuses on 20- to 64-year-old workers (at the survey date) losing jobs due to a plant closing, slack work, or position or shift abolishment. In order to make the investigation more comparable with that conducted for the Netherlands, many of the results focus on persons losing jobs that have lasted at least one year. Special attention is also paid to those who are out of work for some time following the termination.

For all its strengths, the DWS has a variety of disadvantages. First, the data are retrospective and subject to recall bias. Second, information is available for only one lost job, and data on company characteris-

tics or the situation prior to displacement are limited. Most importantly, it is difficult to construct a comparison group of nondisplaced workers.[28] This has led some researchers to use longitudinal data sets (such as the Panel Study of Income Dynamics) or administrative data (such as payroll or unemployment insurance records) to analyze the incidence or consequences of displacement.[29] These alternate sources have advantages, particularly the availability of a comparison group, but they also have problems. For instance, sample sizes of displaced workers are typically quite small in panel data, and the reason for job change often cannot be identified from administrative sources.

The Netherlands

There is no equivalent to the DWS for the Netherlands. We have access, however, to three microdata sets that contain information on various aspects of displacement: the Firm Employment (FE) data set, an administrative longitudinal UI data set of the Dutch Social Security Council (*Sociale Verzekeringsraad* or SVr), and the Labor Force Survey (LFS) of the Netherlands Organization for Strategic Labor Market Research (OSA). Unlike the DWS these data allow, to some extent, for the construction of comparison groups of nondisplaced workers. For some of the analyses, however, sample sizes are small compared to the DWS.

The FE data set is constructed by sampling individuals from administrative records of firms covering the period 1992–1996. It provides information on tenure and separation, reasons for separation, and a variety of individual and job characteristics. The data provide very useful information on the incidence of displacement and shed some light on labor market transitions immediately following displacement. However, the FE data are silent about subsequent labor market transitions and earnings losses.

The UI data set provides information on unemployment spells of all workers entering UI in 1992. Because all unemployed workers in the market sector with sufficiently long employment records end up in UI, and the data reveal worker-initiated separations, these data can be used to study reemployment durations after displacement, conditional on a positive non-employment spell. Since these data show the entire inflow into UI by sector, municipality, and month, we can also con-

struct indicators of excessive inflow into UI in local labor markets, which can be used as indicators of excessive, or even mass, layoffs. Earnings losses, however, are not observed in this data set either: for this we require the LFS data, a labor-force panel survey covering the period 1985–1990. The LFS data set provides extensive information on labor market transitions and earnings, but suffers from small numbers of displaced workers.

Table 2.1 summarizes the main features of the data. Because the Dutch data sets have not been used to study displacement before, we will discuss these in more detail. The appendix provides additional information.

The Firm Employment Data

The Firm Employment data (or *Arbeidsvoorwaardenonderzoek* in Dutch) are firm-worker data collected by civil servants (of the Labor Inspection Service, or *Arbeidinspectie*) of the Ministry of Social Affairs and Employment (*Ministerie van Sociale Zaker en Werkgelenheid*). These data provide information on the incidence of displacement over the period 1992–1996. The data are collected yearly (in October 1993–1996) as repeated cross sections from administrative wage records of a sample of firms by means of a stratified two-step sampling procedure.[30]

In the first step a sample of firms is drawn (about 2,000 in each year) from the Ministry's own database (which is roughly similar to the database of firms of Statistics Netherlands, CBS). In the second step, a sample of workers (about 26,000 per year) is drawn from the records of the firms selected in the first step. The workers are sampled from administrative records of two moments in time, one year before the sampling date and at the sampling date. A distinction is made among employees who are present in both years ("stayers"), workers who are present only in the first year ("leavers"), and workers who are present only in the second year ("entrants"). More than 75 percent of the workers are stayers. Information obtained on the way leavers separate from firms is later used to distinguish between displacement and other separations.

The data set includes additional information on wages, hours worked, days worked, and a number of other variables, including age,

gender, education, job complexity, occupation, SIC industry code, firm size, and type of wage contract.

The UI Data Set

The UI data, which are provided by the SVr, are administrative data from the sectoral organizations that implement the unemployment insurance system. The data cover all individuals who started collecting UI benefits in 1992. Individuals are followed up to September 1993, if necessary. Note that for a given individual the date of inflow into UI as a rule coincides with the date of inflow into unemployment. For each individual we know the duration of UI benefit receipt, except when it is right-censored by the end of the observation period (late 1993); that occurs in 17 percent of all cases. If the UI duration is completed we know the exit state, which is usually either employment (67 percent of the completed spells) or continued unemployment after completion of UI entitlement (14 percent). Only 8 percent of the spells end because of transitions into DI, and hardly any UI spells in our sample end in retirement.[31] Apart from this, we do not have information on events occurring after individuals leave UI.

We observe whether individuals have had a sanction imposed right at the start of the UI spell. These sanctions are punitive benefit reductions that are applied if the UI applicant is considered to bear at least some responsibility for his job loss. Thus, this variable can be used to control for worker-initiated separations, as far as these are not excluded by restricting attention to UI inflow. Otherwise, the number of explanatory variables is limited by the character of the data set. The data do not contain the exact magnitude of the individual UI benefit level. The magnitude is a direct function of the wage earned before entering unemployment, however, affected by personal and household characteristics. Both the wage and these characteristics can be observed, but the data provide only limited information on individual maximum UI entitlement, except of course when the individual is seen to complete entitlement.

The Labor Force Survey of the OSA

The OSA Labor Supply Panel Survey, or just LFS, is a panel which started in 1985. Presently four waves are available (April–May 1985, August–October 1986, August–October 1988, and August–November 1990). In the LFS a random sample of households in the Netherlands is followed over time. Because the study concentrates on individuals between 15 and 61 years of age who are not full-time students, only households with at least one person in this category are included. For households chosen, all individuals in this category (and in all cases the head of the household) are interviewed. The first wave consists of 4,020 individuals (in 2,132 households). The four waves together contain information on 8,121 individuals.

In every interview, retrospective questions are asked to elicit information on possible labor market transitions made by the respondent during the period between the prior and current interviews.[32] This process allows us to reconstruct the sequence of labor market states experienced by 8,075 respondents, with the sojourn times and income levels in all these states.[33] The LFS data identify employment, self-employment, unemployment, not-in-labor-force, military service, and full-time education as labor market states.[34] The respondent is asked to provide a motive or cause for each transition between any two of these labor market states and to indicate whether the transition was made voluntarily.[35] This information enables us to distinguish displacement from other separations. We will come back to this issue when we discuss the analysis of labor market transitions following displacement.

DISPLACEMENT RATES

Incidence of Displacement

United States

Farber (1997) estimated displacement probabilities, over three-year periods, using information from all the available Displaced Worker Supplements. A crude estimate of annual job loss due to plant closing, slack work, or position or shift abolishment is obtained by

dividing his estimated values by three.[36] These results, displayed in Table 2.2, reveal displacement rates of between 2 and 4 percent per year, with higher probabilities for men than women. Displacements are somewhat countercyclical—e.g., notice the high rates during the recessionary period in the early 1980s and the low rates during the economic expansion at the end of the decade—but there is little indication of a time trend.[37]

There are at least two reasons why these estimates understate displacement probabilities. First, the DWS records a maximum of one job loss during the three-year period, thus missing multiple separations.[38] Second, the surveys suffer from recall bias, whereby terminations occurring further in the past are more likely to be forgotten (Topel 1990; Evans and Leighton 1995). Table 2.3 provides estimates of annual displacement rates for the 1993–1995 period, with an attempt made to correct for both sources of bias. The top section shows estimates for all types of displacements, whereas the second is limited to job loss resulting in an initial period of joblessness. This is done to make the results more comparable to those of the Netherlands and some of the countries analyzed in other chapters of this volume, where data limitations restrict the analysis to displacements that lead to unemployment.

The first row of each section shows estimated displacement rates both for all workers and separately by gender. The "correction" involves two parts. First, it is assumed that an equal number of persons are displaced in all three years. Second, it is assumed that in each of the next two years 10 percent of the workers displaced in any given year experience a second job loss.[39] Using these assumptions, persons losing jobs in 1995 should account for 29.9 percent of the displacements observed in the 1996 DWS.[40] Instead, 47.5 percent of displaced workers in the 1996 DWS report losing their jobs in 1995, suggesting that the number of displacements is understated by around 59 percent (0.475/0.299 = 1.589) and that the corrected annual displacement probability is 4.9 percent ($0.031 \times 1.589 = 0.049$). A similar procedure yields a 5.3 percent estimated rate of annual job loss for men and 4.5 percent probability for women.[41] The corresponding entry in the bottom section deflates the displacement probability by the percentage of job losers who obtain new employment without an intervening spell of non-employment. For instance, 14.4 percent of displaced individuals

do not experience any initial joblessness, implying that 3.8 percent ($0.049 \times 0.856 = 0.042$) are expected to lose positions and become jobless.

The remainder of the table provides estimates of annual displacement rates as a function of tenure in the predisplacement job. Since Farber (1997) did not break down his statistics by tenure, additional steps are required to obtain these estimates. First, the predisplacement tenure distribution of workers losing jobs between 1993 and 1995 is calculated from the 1996 DWS. Second, the job tenure of all 20- to 64-year-old workers in February 1996 is estimated using data from the monthly CPS. Third, a relative risk of displacement is calculated by dividing the share of displaced workers in a tenure group by the corresponding share for all workers. Finally, this relative risk is multiplied by the aggregate displacement rate to arrive at a probability of job loss for each tenure category. For example, persons with 1–2 years of preseparation tenure accounted for 26.8 percent of displaced workers but just 13.2 percent of the nondisplaced, implying a relative risk of 2.03 (0.268/0.132) and an estimated annual displacement rate of 9.9 percent (2.03×0.049). This procedure is performed separately for men and women, as well as for both together.

Table 2.3 shows an almost monotonic negative relationship between job tenure and the probability of job loss. Persons holding jobs for ten or more years are only about one-fourth as likely to be displaced as those in positions that have lasted for just a year or two. The one exception to this pattern is that persons in the first year of the job appear to have somewhat lower displacement rates than those with one to two years of tenure. This result is probably erroneous, for two reasons. First, recall bias is probably most severe for very short-tenure workers, since these persons may incur few adjustment problems when their positions end.[42] Second, information on predisplacement tenure is missing for 11 percent of the displaced workers; these individuals are excluded from the calculations in the table. If, as is likely, data are missing relatively frequently for very brief employment spells, the share of displacements and the corresponding risk of job loss will be understated for this group. Overall, the evidence strongly suggests that displacement rates fall with job tenure.[43]

The age pattern of displacement rates over the 1993–1995 period is shown in Table 2.4. These estimates adjust the overall displacement

probabilities in Table 2.3 by the age-specific relative probabilities of job loss calculated by Farber (1997). For example, the probability of displacement is 11.6 percent higher for 20- to 24-year-olds than for all workers, implying an estimated displacement rate of 5.5 percent ($0.049 \times 1.116 = 0.055$). The table shows clear evidence that probabilities of job loss decline with age, but the profile is not nearly as steep as for job tenure. For instance, 55- to 64-year-olds are roughly three-quarters as likely to be permanently laid off as 20- to 24-year-olds.

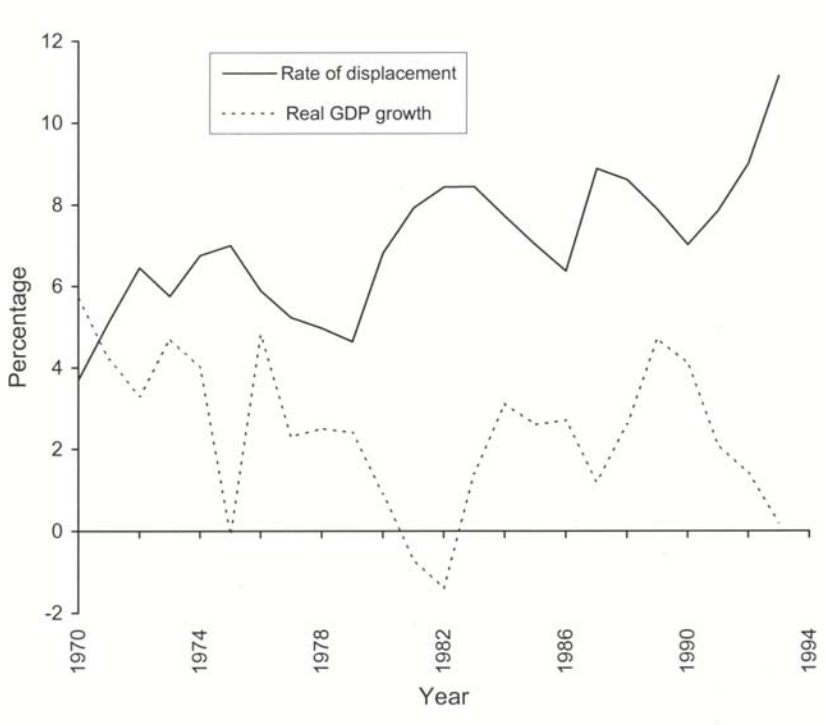
The lack of a comparison group in the DWS makes it difficult to perform a regression analysis of the determinants of displacement. However, Farber (1997) estimated a series of probit models where the dependent variable indicated whether or not a job loss had occurred over a three-year period and the regressors were limited to characteristics observed at the survey date. His analysis confirmed that displacement probabilities decline with age and indicated lower rates of job loss for educated workers, women, and whites.

The Netherlands

Reasonably long displacement-rate time series can be constructed from aggregate UI data, giving the yearly numbers of new UI cases and data on the number of employed individuals at risk. The merits of the first series as a measure of displacement have been discussed in the institutions and data sections. Although it provides only an imperfect measure of displacement, it is the only measure for which we can construct time series over several business cycles.[44] Ideally, one would like to measure the number of individuals at risk as the number of employed individuals who would be eligible for UI benefits in case of displacement. Unfortunately, we have to approximate this series by the number of employed individuals paying UI premiums. Because this number includes individuals with employment histories insufficient for UI eligibility, it provides an upper bound to the number of individuals at risk. As a consequence, the rate computed is a lower bound on the true rate of displacement leading to positive unemployment spells.

Figure 2.1 graphs the annual displacement-rate time series constructed in this manner, together with real Gross Domestic Product (GDP) growth in the Netherlands (percentage change from previous year) for the period 1970–1993. The rate of displacement is clearly an

Figure 2.1 Netherlands: The Annual Rate of Displacement



upward trend over the data period, rising from around 4 percent in 1970 to 11 percent in 1993.[45] As is to be expected, we also observe strong fluctuations over the business cycle, with steep increases in 1970–1972, 1973–1975, 1979–1982, 1986–1987, and 1990–1993. Comparing this to the superimposed macro indicator, real GDP growth, we see that displacement rates are countercyclical. Notable exceptions are 1976–1977, 1984–1985, and 1989–1990, which are all years with decreasing growth and displacement rates. A simple explanation could be that the downturns of the business cycle led to worker displacement, although this seems not to be true for the early 1970s. However, the correlation between the two series is –0.58. A regression of displacement on GDP growth and time shows that displacement changes –0.33 (s.e. 0.12) percentage points for each percentage-point increase in real GDP growth, and 0.15 (s.e. 0.03) percentage points per

year ($R^2 = 0.69$). We do not find significant coefficients for one- and two-year lagged GDP growth.

The FE data can be used to study the variation of displacement over groups of workers.[46] For each separation, information is available that is helpful in identifying displacement. Among other things, the data distinguish layoffs, separations because of the expiration of fixed-term contracts, and transitions into other jobs, DI, and early and normal retirement.[47] It should be understood that this information comes from administrative records of the firm and is therefore limited by the observational scope of the firm's administration. For instance, a worker who is given notice of layoff in the near future may quit immediately to go to another job (before the date of layoff) in order to avoid unemployment. In such a case, the worker would most likely be recorded as a job-to-job mover, without any reference to the layoff. A worker who stays with the firm until the date of layoff, however, is most likely to be recorded as a laid-off worker. For the latter worker the data do not provide information on the labor market state occupied just after displacement. Similar arguments can be made for workers moving into DI or early retirement. For a worker observed to move into early retirement, for instance, we do not have independent information on the circumstances leading to early retirement. Thus, the causes of separations and destinations of labor market transitions following separations are intertwined in the data, and we have to decide on an appropriate way to identify displacement.

We have opted for the following method. For all firms, workers under age 60 with tenure of at least one year who are recorded to be laid off are considered to be displaced. As argued above, some displaced workers who immediately find a new job, or move into DI or early retirement, will be excluded by this definition of displacement. To include at least some of these cases, we will label leavers moving into new jobs, DI, or early retirement from "strongly shrinking" firms to be displaced as well. Since there is no *a priori* reason to pick any particular threshold employment-loss level, we have experimented with a number of different criteria. The results can be found in Table 2.5, which gives the contributions to the annual displacement rate over the period 1993–1996 of separations from strongly shrinking firms by type of separation for six different criteria. The first question is whether we should focus on net or gross employment (outflow)

changes. Using the latter, we will overestimate displacement rates in high turnover sectors, where high simultaneous employment inflow and outflow rates are no exception, whereas using the former we will underestimate displacement at restructuring firms.[48] The weakest criterion in Table 2.5 results in an aggregate annual displacement rate of 7.2 percent, while the strongest criterion results in an aggregate displacement rate of 3.5 percent, over the 1993–1996 period. With all criteria, we find that most workers displaced from strongly shrinking firms are labeled as moving directly into new jobs, with almost as many labeled as being laid off. Early retirement and, in particular, DI seem of minor importance. Note again, however, that some of the workers labeled as being laid off could have moved into new jobs, early retirement, or DI. We will return to this issue later. In what follows we use the net employment criterion, with a –30 percent threshold, mainly because other authors in this volume (Denmark, Belgium) do so.

First, we will give a short description of the variation in displacement rates over time and among different categories of workers. Table 2.6 shows that displacement rates are somewhat higher for men than for women and that displacement rates are much lower for workers with high tenure. Note that, despite the institutional differences, the results are very similar to those for the United States shown in Table 2.3.[49] In both countries, low-tenure men have higher displacement rates than low-tenure women, whereas at the highest tenure levels women have higher displacement rates than men. Table 2.7 shows that displacement rates are highest in 1993 and lowest in 1996. Since 1993 was the year in which the Netherlands had its lowest net employment growth (it was even negative) and the Dutch economy has strongly recovered since 1995, this result is consistent with countercyclical displacement rates. The table also shows that workers covered by a collective agreement (CAO) have lower displacement rates than both workers whose wage contract is required to follow CAO contracts of other firms in the same sector (AVV) and workers with only individual contracts.[50] The finding that displacement rates are highest for AVV workers could reflect the fact that firms are bound to pay such workers wages that are agreed upon by other firms. These wages may not reflect the business conditions of AVV firms. It is also interesting to see that displacement rates for workers at simple jobs, for workers with little formal training, and for young workers are relatively high. This is

in line with standard labor hoarding and human-capital theories. Finally, we see that displacement rates decline with age.

We continue to investigate the results by estimating a logit model for the incidence of displacement (Table 2.8). As the net marginal benefits of displacing a worker will typically be influenced by macroeconomic conditions, we not only include firm and worker characteristics, but sets of calendar-time and sectoral dummies, too. It is important to point out that some of the variables that are used as explanatory variables may well be endogenous. Employed workers who have been relatively successful at avoiding displacement in the past may have both a high current tenure and a low current probability of displacement. Employed workers who have been promoted by accident to a job with fringe benefits that exceed what they can get from other employers may have both a high current tenure and a high current probability of displacement. This potential endogeneity hampers straightforward interpretation of the parameter estimates. Table 2.8 gives the corresponding estimates. The displacement probability decreases with tenure (up to some level), and with gross hourly wages, and it increases with educational and job-complexity level. It is also relatively high for workers without collective contracts and workers employed at large firms.

Using these estimates, we compute displacement probabilities for different types of workers. We evaluate these probabilities at the estimated parameter values and the mean observed characteristics. Table 2.9 illustrates the partial effects of the different worker and firm characteristics. We see some differences from the exploratory results in Table 2.7. Controlling for other characteristics, the displacement probability no longer decreases with education and job complexity level. Furthermore, displacement probabilities differ very little as a result of the type of contract. It appears that low-wage and low-tenure workers have a particularly high probability of being displaced. According to the logit model, a worker with average characteristics who earns 15 f. an hour faces a 4.3 percent chance of being displaced, whereas this probability is only 1.1 percent for a worker who earns 50 f. an hour. This is not a surprising result if wages are determined by a surplus sharing rule, in which case matches with the highest surplus have the lowest probability of ending.

Finally, note that displacement rates calculated with the FE data set are lower than the UI inflow time-series figures because we observe very few firm closings in the FE data. Furthermore, we include individuals who lose only part of their job (those whose hours of work are reduced) in the UI data, and we do not exclude individuals with sanctions.[51]

TRANSITIONS

Labor Market Transitions after Displacement

United States

Job loss increases the risk that an individual will be out of work for some period. Swaim and Podgursky (1991) estimated that the median worker is jobless for 25 to 30 weeks following a permanent layoff, and Farber (1993) found that 29 to 38 percent of men displaced during the previous two years were unemployed at the DWS interview date, compared to 4 to 5 percent of the nondisplaced.[52] Much of the employment reduction is temporary, however. Ruhm (1991a) estimated that unemployment increases by around eight weeks in the year of the permanent layoff, four weeks in the next year, but only around one week four years after the event.

The patterns of postdisplacement joblessness and labor-force status for 1996 DWS respondents losing jobs that had lasted at least one year are shown in Tables 2.10 and 2.11. Table 2.10 shows the probability that workers obtain new jobs within either six months or one year after displacement. By European standards, non-employment spells in the United States are brief, with around two-thirds reemployed in six months or less and three-quarters within a year. Over 60 percent of those with an initial spell of joblessness are working again within six months and 72 percent in less than a year. Men and short-tenure workers obtain new jobs somewhat faster than women and those with longer tenure. The age differences in reemployment are fairly small through the workers' late forties, but workers beyond that age are much more likely to have extended spells of joblessness. This may represent greater adjustment difficulties following displacement, but it could also

confound the effects of job loss and retirement. We return to this point below. Groups obtaining new jobs rapidly generally have rather high rates of survey date employment. The patterns of unemployment and labor-force participation, however, are more divergent, as is shown in Table 2.11. In particular, the relatively low employment rates of mature adults and women are explained by high rates of labor-force withdrawal, rather than elevated unemployment.

Econometric estimates of the determinants of postdisplacement joblessness are summarized in Table 2.12. The first column shows results of a probit equation where the dependent variable equals one for persons finding new jobs without any intervening joblessness and zero for those who are out of work for at least one week. The second shows results of a Cox proportional hazard model where the dependent variable is weeks of joblessness and the sample is restricted to those out of work for at least one week. The third shows corresponding hazard estimates for the full sample, where the dependent variable is weeks of joblessness plus one-half. Thus, the second column indicates hazard rates, conditional on a positive spell, while the third shows results for the unconditional model (that includes both zero- and positive-week spells). The excluded reference category is a white, unmarried, female, high school dropout, born outside the United States, with one to two years of predisplacement tenure, age 20 to 29, who loses a job due to a position or shift abolishment, and receives no written advance notice. A higher hazard rate implies faster exit from joblessness and shorter spells.

The results are generally consistent with those in earlier research. Non-employment declines with education, increases with age, and is higher for nonwhites than whites. Men are just as likely as women to experience some joblessness but transition into employment more quickly. Conversely, married and native-born persons are more likely than their counterparts to move directly into new jobs but once out-of-work show little evidence of faster reemployment. Long-tenure workers have relatively high probabilities of avoiding joblessness but may have modestly lower reemployment hazard rates, conditional on a positive spell. Persons involved in plant closings are more likely to move directly into new positions than those losing jobs due to a position or shift abolishment and have elevated reemployment hazards relative to both this group and those displaced by slack work.[53] Individuals

receiving lengthy written notice are more likely than the non-notified to avoid joblessness, but the notice does not appear to have any effect on reemployment hazard rates. Furthermore, the exit probabilities for those with brief notice are, if anything, actually lower than for those not receiving any written warnings.[54]

The Netherlands

Both the LFS and the FE data provide some information on the labor market states occupied by workers just after displacement. In the LFS, we are able to distinguish job-to-job transitions (E-E), transitions from employment to unemployment (E-U), and transitions from employment to not-in-the-labor-force (E-N) in each individual labor market history. We use the self-reported motive or cause for each transition and the information on whether or not transitions are made voluntarily to distinguish displacement from other types of separations in each case. Details are provided in the appendix.

Table 2.13 shows the number of displaced workers in our sample by transition and motivation. In total we observe 327 displacements. The large majority, 70 percent, involve job-to-job transitions. In contrast, in the United States many more workers experience a positive non-employment spell. As for motivations, in most cases (68 percent) displacement is indicated by the most clear-cut motivation, "reorganization or plant closure" (of which 73 percent involve no joblessness). Only a small share is due to DI (17 percent) or early retirement (1 percent). If we restrict attention to workers with tenure of at least one year, only 162 displacements are left. However, qualitatively similar results hold for this subsample.

As we stated before, the FE data also give some information on the labor market state just after displacement. Although this data set does not indicate the labor market state for those displaced workers labeled as being laid off, firms may be involved in arranging DI and, in particular, early retirement if these destinations are really used as convenient ways to displace workers. In such a case we may expect these transitions actually to be recorded. Similarly, because of employment protection regulation, we may expect firms to be involved in reemploying displaced workers, and so at least some job-to-job transitions of displaced workers will be recorded. In any case, the share of layoffs in

overall displacement provides only an upper bound to the share of displaced workers ending up in unemployment right after being displaced.

Table 2.14 compares the FE layoff rates, job-to-job transition rates, DI inflow rates, and early retirement rates between firms shrinking by 30 percent or more and other firms. We see that not only the layoff rates but also the other separation probabilities are higher at the 30-percent-shrinking firms. This seems to indicate that at least some displaced workers enter DI or early retirement, or move directly into another job. The second column for each type of firms shows, however, that a relatively high share of separations from shrinking firms are labeled as layoffs, and relatively few as job-to-job transitions. So, most of the displacement seems to be captured by layoffs.

The LFS data also provide information on the labor market states occupied by displaced workers 12 months after displacement. Table 2.15 gives the number of individuals in the different labor market states, by type of transition made just after displacement.[55] The table shows that most individuals remain in the same state as they were when they became displaced. We cannot derive strong results on E-U and E-N transitions because of the limited number of individuals in these categories, but it seems that the job-to-job movers do not have problems finding steady employment after being displaced.

Finally, we can analyze reemployment durations following displacement using the 1992 UI inflow data set. We distinguish individuals who have been sanctioned for responsibility for job loss from individuals who have not been sanctioned. Only the latter are considered to be displaced. The sanctioned individuals may then serve as a "control" group, where we should acknowledge that this group contains only individuals who are eligible for UI benefits and no individuals who have, for instance, also quit their jobs or who have been dismissed for severe misconduct. The groups may also differ for two reasons other than cause of separation. First, the "nondisplaced" individuals have been sanctioned, which implies that they face reduced benefits for some period of time. Second, workers are likely to be nonrandomly selected into both states, for which we will not directly control.

Table 2.16 presents summary statistics of reemployment durations by demographic group. Because 44 percent of the durations are right-censored, we compute median durations, in particular median residual

durations at 0 and 26 weeks. From the upper segment we learn that the median reemployment duration of all spells is 20.8 weeks. For displaced workers, the median duration is 3.5 weeks shorter than for sanctioned workers. The median residual durations at 26 weeks are 4–5 times larger, implying strong negative duration dependence of the corresponding reemployment hazard rates. It is well known that this can be explained by both "genuine" duration dependence at the individual level (because of stigma effects or atrophy of skills), and dynamic sorting because of exit-rate heterogeneity.[56] The lower panel restricts attention to displaced workers and gives median durations for various demographic groups. One feature worth noting is the strong increase in median durations with age. This may be due to the institutional structure of UI, which is more generous for older unemployed and unemployed with longer employment histories. In addition, search rules are less strict for older individuals.

We also develop a measure of excess layoffs in the local labor market of each individual. From the UI inflow census we can compute the size of the inflow in UI in each month of 1992 in each Dutch municipality by sector. Thus, we can distinguish local labor markets by municipality and sector, and define excess UI inflow in a local labor market to be the inflow into UI in that market net of the overall average inflow over time, municipality, and sector. More formally, if C_{mst} is the inflow in UI in municipality m in sector s in month t, then data on C_{mst} for all municipalities, sectors, and months in 1992 are regressed on municipality, sector, and time dummies, yielding both predicted counts C_{mst} and residual counts $\hat{\varepsilon}_{mst} = C_{mst} - \hat{C}_{mst}$ for each cell or (m,s,t). Now, each combination (m,s) represents a local labor market, and the $\hat{\varepsilon}_{mst}$ is an indicator of excess layoffs in local labor market (m,s) in month t. We can assign each individual to a local labor market, and use $\hat{\varepsilon}$ as a regressor in an analysis of reemployment durations. Because we will include province indicators instead of municipality indicators in the duration analysis (for computational reasons), it is useful to also include C as a regressor.

The duration model for reemployment durations is specified as a single-risk mixed proportional hazard (MPH) model, with the log hazard for reemployment given by $\ln \theta(t|\boldsymbol{x}, v) = \lambda(t) + \boldsymbol{x}' \beta = v$, where λ is a piecewise constant log baseline hazard, and β is the regressor parameter vector. The vector $\boldsymbol{x}$ is a regressor vector containing the sanction

indicator, the cell or local labor market indicators, and other individual characteristics. The variable v is an unobserved component which is assumed to be discretely distributed so that, with n points of support, $\Pr(v = v_i) = p_i$, for $i = 1, \ldots n$, and $p_n = 1 - \sum_{i=1}^{n-1} p_i$.[57] We fix the number of mass points at $n = 2$ and perform sensitivity analysis by reestimating the model for higher values of n. Finally, we treat destinations different from reemployment as randomly right-censoring the reemployment durations. We have right-censoring because of the fact that individuals are followed only until late 1993.

Table 2.17 shows results from maximum likelihood estimation. The most important finding is that individuals who are displaced according to the sanction indicator, in other words, those who do not have sanctions imposed, have approximately 20 percent higher reemployment rates than sanctioned individuals. Considering the fact that sanctions are likely to increase reemployment rates if they have any direct effect, this figure provides a lower bound on the difference between displaced and nondisplaced workers, given a similar benefits level.[58] This result is consistent with the work of Gibbons and Katz (1991) for the United States, who find that workers displaced because of plant closings have shorter reemployment durations than workers laid off because of slack work or elimination of a position or shift. It is also interesting to note that the predicted size of the local labor market has a significantly negative effect on reemployment rates, which could be a symptom of congestion effects in local labor markets. It should be noted that this variable is identified only from variation between municipalities, as the model contains full sets of time and sector dummies. The wage has a significantly positive effect on reemployment rates, and age a significantly negative effect (from age 16 onwards). Wald-test statistics for the joint significance of the three sets of dummy variables show that there is significant variation (at the 5 percent level) among sectors, months of inflow, and provinces. Most of the variation in reemployment rates between cells or local labor markets is caused by sectoral heterogeneity. Finally, we find significant unobserved heterogeneity and negative individual duration dependence of reemployment rates.[59]

Table 2.18 gives reemployment probabilities computed with the estimated model, by fixing the unobserved heterogeneity component at its estimated mean and the regressors at the sample mean, and consid-

ering one-by-one deviations of regressors from this mean. Of the displaced workers, 55 percent are reemployed within 26 weeks, 73 percent within 52 weeks. For sanctioned individuals these probabilities are slightly lower. We still find strong negative effects of age on reemployment probabilities. Wages have positive effects on reemployment probabilities, *ceteris paribus*, a finding which overturns the results from the raw median estimates.

Earnings and Wage Changes

United States

In addition to transitory increases in joblessness, labor displacement in the United States is frequently accompanied by substantial and lasting wage reductions. Several studies have examined these earnings losses in detail, using longitudinal or administrative data to allow a comparison group of nondisplaced workers. Using the Panel Study of Income Dynamics, Ruhm (1991a) found that job loss reduces weekly wages by 14 to 18 percent in the following year and 11 to 15 percent four years later, with little evidence of recovery beyond this point. A more recent study of the same data source by Stevens (1997) indicated average decreases of roughly the same magnitude and pattern but further highlighted that large losses are concentrated among persons experiencing repeated turnover. Jacobson, LaLonde, and Sullivan's 1993 analysis of administrative data for Pennsylvania workers with six or more years of tenure on the predisplacement job uncovered a similar time profile and even larger losses—quarterly earnings declined by 30 to 40 percent initially, with persistent losses of 20 to 30 percent. The variance of wage changes is also large, however. Early studies by Ruhm (1987) or Kletzer (1991), for example, pointed out that many workers earn more after job loss than before it. Storer and Van Audenrode (1997) suggested that uncertainty over potential wage changes is a major source of the utility losses resulting from displacement, far outweighing the comparatively modest reduction in average wages.

Table 2.19 displays changes in average real weekly earnings occurring between the time of a job loss and the survey date for respondents to the 1996 DWS who have been displaced from jobs lasting at least one year.[60] The first column shows results for the subsample who are working at the survey date; the second presents averages for the full

sample, using a zero value for weekly wages for those not employed in February 1996. Average real weekly wages of reemployed sample members do not change between the displacement and interview dates, with gains observed for persons avoiding joblessness, men, and those with little seniority on the lost job.

These relatively favorable results may partially reflect the robust economic conditions in the United States during the time period analyzed.[61] The findings are not inconsistent with the large earnings losses mentioned above, however, for at least three reasons. First, persons who are not working at the survey date (and so are excluded from these calculations) may have relatively low earnings potential. Second, the "before" versus "after" comparison does not account for changes that would have occurred in the absence of the job loss (young workers, for example, have steep age–wage profiles, suggesting that losses could result from foregone growth in wages). Third, pay frequently begins to decline prior to the actual displacement (Hamermesh 1991; Ruhm 1991b; Jacobson, LaLonde, and Sullivan 1993), implying that the earnings reduction is understated by these estimates. In addition, the median displaced worker does considerably worse than the mean individual—median weekly wages decline by 6 percent conditional on reemployment and 30 percent for all job losers—demonstrating the importance of considering the variance of wage outcomes.

The distribution of earnings changes is displayed in Table 2.20. As above, the analysis is restricted to those losing jobs that have lasted at least one year. The conditional estimates restrict the sample to reemployed workers, whereas the unconditional results assume zero wages for those not working in February of 1996. The last two columns restrict the sample to 25- to 49-year-old men in order to focus on a group with particularly strong labor-force attachments. The table highlights the substantial dispersion of postdisplacement outcomes. Over one-quarter of the reemployed workers earn at least 10 percent more than before being displaced, and the pay of 18 percent increases by at least 25 percent. Even when persons not working at the survey date are included and treated as having a zero wage, 20 percent receive a wage premium exceeding 10 percent in the new job while 13 percent earn at least 25 percent more. Conversely, weekly earnings fall 25 percent or more for 52 percent of all displaced individuals and for 32 percent of those working at the survey date. Interestingly, the results are quite

similar for 25- to 49-year-old men, with the main exception being that their higher rates of reemployment imply somewhat lower unconditional probabilities of large wage losses.

Table 2.21 summarizes the results of a series of earnings regressions for workers displaced from jobs lasting at least one year. The dependent variable in the first two columns is the natural log of weekly wages in February 1996. The second column includes predisplacement wages as a regressor, whereas the first does not. The outcome in column 3 is the change in weekly (ln) earnings. Effectively, this specification constrains the coefficient on previous wages to one, whereas column 2 allows it to vary freely.[62]

Wage levels and changes could be affected by different factors. Postdisplacement earnings will primarily reflect the general human capital possessed by the individual, whereas reductions in pay can occur from losses of firm-specific human capital, job or industry rents, or idiosyncratic residuals (luck). For instance, survey-date earnings are positively related with predisplacement tenure but wage reductions also increase with previous seniority, suggesting that the preseparation tenure differential reflects a combination of specific and general human capital.[63] In contrast, education is positively correlated with earnings on both jobs, suggesting that it provides general human capital.[64] Men and married individuals also earn more on both jobs. Conversely, persons 55 and over experience very large wage reductions. There is little evidence of race or advance-notice effects, once the other regressors are controlled for. Interestingly, there is also an indication, albeit only a modest one, that unionized workers suffer relatively large losses following displacements. Somewhat surprisingly, those displaced due to slack work gain relative to those losing jobs because of position or shift abolishment.[65] Finally, the coefficient on the predisplacement wage, in column 2, suggests that slightly over half of any earnings residual received on the old job is transferred to the new position.

The Netherlands

To analyze possible earnings losses between pre- and postdisplacement jobs, we use data on transitions between jobs, either with or without intervening non-employment spells, from the LFS. Thus, we consider E-N-E, E-U-E, and E-E transitions, of which we have 1,719

observations in our sample, including both displacement and other types of separation from the first employment spell. Only one income level is reported for each labor market spell. However, under the assumption that earnings do not vary within employment spells, the change in earnings between pre- and postseparation jobs equals the change of earnings between the date of separation and the date of entering the first new job. To correct these earnings differentials for inflation, we have used the monthly all-item Consumer Price Index (CPI).[66] After this inflation correction, 1,551 observations remain.[67] If we restrict our sample to workers with tenure of at least one year in the first employment spell, we have 668 observations.[68]

The average post- to preseparation earnings ratio in this sample is 1.24, with a standard error (of the mean) equal to 0.02. For the subsample of displaced individuals (232 observations) this average equals 1.18, with a standard error equal to 0.04. For our subsample of workers with sufficient tenure we find an average earnings ratio of 1.24 (0.02) for all workers and of 1.14 (0.03) for displaced workers (116 observations). In either case, real earnings rise significantly between two consecutive employment spells. Because there is no significant difference between the ratio for all workers and that for displaced workers (their 95 percent confidence intervals are overlapping), this indicates that displacement has no significant effect on future earnings. To investigate this further, we have regressed the log real earnings ratio on tenure in the first employment spell, the duration of the intervening non-employment spell (defined to be 0 for E-E cases), a dummy variable indicating whether the separation involves displacement, and some additional controls. The estimation results are reported in Table 2.22.

The results confirm the preliminary conclusions from the comparison of the averages. Displacement does not have a significant effect on earnings after a separation. Moreover, the first column shows that the effect of displacement is very small if we do not include the tenure criterion in the displacement definition. In the second column, we find some evidence of a negative effect of displacement if we restrict the displacement indicator to separations of workers with at least one year of tenure. This is confirmed by estimates for the tenure-restricted sample in the third column. Also, in all cases we find a significantly negative effect of the length of the spell of intervening joblessness. Thus,

workers who have been without work longer experience smaller earnings gains. This can be explained by either stigma effects or loss of skills. Log tenure is generally insignificant, but the results in the second column indicate that workers with tenure below one year face significantly smaller earnings gains.

Retirement and Disability

United States

As discussed, compared with younger individuals, older persons obtain new jobs more slowly following displacements and suffer relatively larger wage reductions when they do. Rather than indicating a causal effect, however, it is possible that the effects of aging and displacement may be confounded. This possibility is particularly important given that labor-force participation rates fall rapidly once individuals reach their late fifties; previous research provides little insight, however, into the relationship between job loss and retirement.[69]

Table 2.23 supplies information on labor-force participation and retirement or disability status in February 1996 of displaced workers with more than one year on the preseparation job. The missing category is "other" reasons for being out of the labor force. Retirement and disability status are combined because these are likely to be close substitutes for at least some older workers. The table shows that retirement or disability probabilities rise and labor-force participation rates decline with age. However, as discussed, this may represent the normal process of aging rather than any unique consequence of job loss. To examine this possibility, we compare the labor-force status of displaced and nondisplaced men (Table 2.24). Displacement again includes job loss in 1993, 1994, or 1995 due to plant closing, slack work, or position or shift abolishment. We focus on men because women are much more likely to report being out of the labor force for ambiguous "other" reasons. Data are from the February 1996 Current Population Survey and Displaced Worker Supplement.

The table shows that male job losers are more likely than their nondisplaced peers to participate in the labor force but less likely to report being retired or disabled. Taken at face value, this suggests that permanent layoffs delay rather than promote retirement. This could be the

result of reduced wages (and a dominant income effect) or of other financial losses (such as reductions in housing equity) that follow displacement. However, there is an important qualification to this interpretation. The participation and retirement rates of nondisplaced individuals do not condition on labor-force status in previous years. To the contrary, one must be working to be at risk of displacement. Therefore, the probabilities for displaced men in Table 2.24 are dependent on recent labor-force participation, whereas those for nondisplaced men are not. This distinction becomes increasingly important with age. For example, 62 percent of 62- to 64-year-old male job losers participated in the labor force in February 1996, compared to 46 percent of men not terminated. Many of the latter group were likely to have left the labor force several years earlier, however, implying that the conditional participation probabilities are much higher.[70]

The following procedure was used to provide more comparable estimates of survey-date labor-force status. First, age-specific probabilities of being in each labor-force state were calculated.[71] Second, lagged labor-force participation was estimated as the participation rate of workers two years younger than the specified age. A two-year lag was chosen roughly to correspond to the average amount of time since job loss for displaced workers. Third, conditional labor-force participation rates for nondisplaced men were calculated as the difference between current and lagged labor-force participation divided by the lagged rate. Similarly, conditional retirement or disability rates were estimated as the difference between current and lagged values of retirement or disability probabilities, divided by the lagged participation rates.[72]

Figures 2.2 and 2.3 display the age-specific labor-force participation and retirement or disability probabilities for displaced and nondisplaced men. The unconditional estimates for nondisplaced men correspond to those in Table 2.24; the conditional estimates were obtained using the procedure described above. As mentioned, nondisplaced men have uniformly lower probabilities of participating in the labor force and higher rates of retirement or disability. Conditional on being in the labor force two years earlier, however, men in their middle fifties and older who have not lost jobs are more likely to participate and less likely to classify themselves as retired or disabled than those who have lost jobs. For example, the conditional retirement or disabil-

Figure 2.2 United States: Labor Force Participation Rates of Displaced and Nondisplaced Males

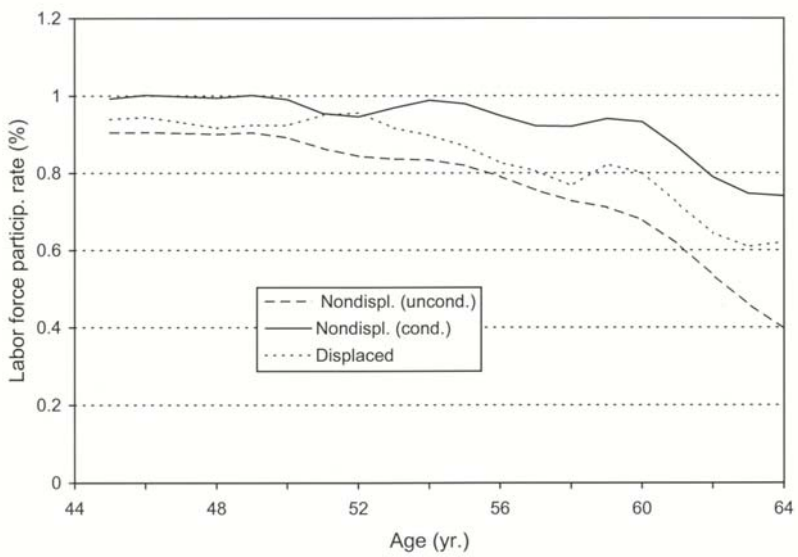
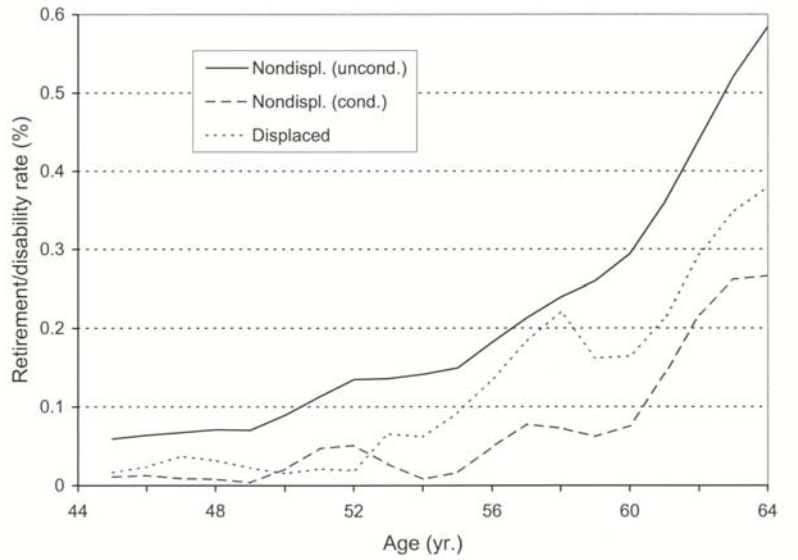


Figure 2.3 United States: Retirement/Disability Rates of Displaced and Nondisplaced Males



ity probabilities of 55-, 60-, and 64-year-old nondisplaced men are 2, 8, and 27 percent, compared to 9, 16, and 38 percent for displaced men.[73] These results suggest that job loss may hasten retirement. Further analysis is needed before this conclusion can be asserted with confidence, however.

The Netherlands

The results from the analyses of labor market transitions following displacement suggest that early retirement and DI have been used to facilitate displacement in the Netherlands. Recall, for example, that in the LFS data (Tables 2.13 and 2.15) at least some displaced workers withdrew from the labor force, either by early retirement or in DI, in the 1985–1990 period. The tables also indicate that this concerns at most 10 percent of all displaced workers. More surprisingly, the FE data (Table 2.14) attribute some role to both early retirement and DI in the 1993–1996 period, even though DI legislation had already undergone major changes to avoid improper use (see the institutional details provided earlier).

The improper use of DI and the role of early retirement have received ample attention in the Dutch policy debate, and numerous empirical studies on these issues exist. Although these usually do not focus on displaced workers per se, some of these papers offer insights that are useful in the context of displacement.

A series of papers has sought to explain the relatively high DI caseload in the Netherlands (see Hassink, van Ours, and Ridder 1997 for an overview). The data suggest that before the reforms in the late 1980s up to 50 percent of the DI inflow was related to "redundancy of workers" and not to actual health problems. This conclusion may appear rather extreme, but it is consistent with the relatively high DI rates in the Netherlands (see the earlier discussion of Dutch institutions). Hassink, van Ours, and Ridder, using an OSA panel survey of *firms,* estimated that in the late 1980s (after the 1980s reforms) there was still 10 percent of the DI inflow that was related to redundancy. Although these authors did not investigate DI in the 1990s, one can expect that the 1993 reforms have reduced this number even further.

Thio (1997) used data from a 1993 survey among elderly heads of households and their partners, conducted by the Centre for Economic Research on Retirement and Ageing, to sample heads of household,

53- to 63-year-olds, who were not working (were "retired") at the time of the interview, had been working at least up to age 40, and had been working for at least three months with their last employer. The data distinguish various self-reported reasons for retiring from their last job. One group of explanation corresponds to layoffs for economic reasons (displacement). Other categories are quits, health-related separations, separations related to working conditions, and separations for family reasons. The data also distinguish various exit routes for retirement, including early retirement and DI. In the sample of retired heads of households used, 37 percent were on DI and 43 percent were in early retirement. The average retirement age was 54 years.

In 96 percent of the DI cases, health was reported as a reason for retirement, and in 86 percent as the primary reason. In 24 percent of the DI cases, layoff was reported as a reason, but in only 8 percent as the primary reason. This seems consistent with the results found by Hassink, van Ours, and Ridder (1997): the average time between retirement and the survey was five years, implying that the results were roughly applicable to the late 1980s. Furthermore, since the data applied to the period before the major DI reform of 1993, the results were again likely to overestimate the current role of DI in facilitating adjustment to displacement. Of individuals in early retirement, 37 percent reported layoff as a reason for retirement, and 26 percent reported layoff as the primary reason. Thus, it seems that a significant share of the inflow into early retirement was related to displacement. Finally, it was shown that 60 percent of retirement due to layoffs, including those retired in UI and other schemes, was concentrated among 54- to 59-year-olds, and only 9 percent concerned individuals of age 60 and up.[74]

CONCLUSION

Discussion

This chapter analyzes the incidence and consequences of displacement in the United States and the Netherlands. For the United States, we provide an illustrative investigation using data from the February 1996 Current Population Survey and attached Displaced Worker Sup-

plement. For the Netherlands, no equivalent to the Displaced Worker Supplements exists, and so displacement is studied using three longitudinal data sets: an administrative firm-worker data set, an administrative UI data set, and a labor-force panel survey.

Although the scope for direct comparisons between the United States and the Netherlands is limited by differences in the available data, several interesting comparisons can be drawn. First, the evidence indicates that displacement is a common event and occurs with roughly the same frequency in both countries: during the 1993–1995 period, between 3 and 4 percent of persons holding jobs lasting more than one year were estimated to have been permanently laid off and to have experienced at least some unemployment. Displacement probabilities are also lower for women than men and decline with job tenure in both nations. Termination rates are estimated to fall with age and education in each country. These effects may reflect other factors, however, and do not persist in the regression analysis provided for the Netherlands. Employment terminations also appear to hasten retirement or transition into disability status in both the United States and the Netherlands, and there is reason to believe that the consequences of displacement were less severe in the booming U.S. labor market of the mid 1990s than in earlier years. In contrast, displacement in the Netherlands seems to have been more frequent in the 1990s than in the 1970s and 1980s.

Patterns of non-employment following displacement exhibit intriguing differences and similarities for the two countries. As might be expected, terminated workers in the Netherlands are out of work for a much longer period of time, conditional on experiencing some joblessness. A much larger share of displaced workers move into alternative employment directly, however, without experiencing unemployment.[75] The lower Dutch reemployment hazard rates are consistent with the possibility that greater labor market rigidity and support during periods of joblessness reduce both the opportunity and the incentive to obtain new positions. The higher frequency of direct transitions into new jobs is harder to explain. Possibly the data are inadequate to make this comparison (the DWS data in the United States, for example, may miss many displacements that result in direct transitions to new employment). Alternatively, the employment protection provisions in

the Netherlands may be more likely to restrict displacements to cases in which new jobs have already been obtained or are readily available.

Despite the aforementioned differences, there are many common patterns of post-termination joblessness in the two countries. For example, reemployment hazard rates decline with age and are lower for women (compared to men) in both nations. The data also suggest negative duration dependence in the United States and the Netherlands. Finally, the overall probabilities that displaced workers are reemployed within six months or one year are surprisingly similar in the two countries. These similarities suggest that there may be adjustment patterns following job loss that are common among many countries, and perhaps even universal, despite substantial differences in institutional arrangements.

It is difficult to compare the wage changes that follow job loss in the two countries. As already mentioned, one problem is that patterns of reemployment are so different in the United States and the Netherlands.[76] In the Netherlands, displaced workers experiencing positive non-employment spells are likely to be out of work for sufficiently lengthy periods to have sorting and stigma effects and loss of skills that significantly affect their labor market position per se (see Andersen 1997). This hampers the interpretation of empirical results on this wage difference.[77] Also, given the difficulties in getting a job once unemployed, workers in the Netherlands who expect displacement may have particularly strong incentives to search actively for another job while still employed. Consequently, some job-to-job transitions may be the result of anticipated displacement. Indeed, if unemployment durations are long, employment may be an even more important destination state following displacement.[78] Again, this suggests that issues like sorting are important and that workers moving directly into other jobs in the Netherlands may be quite different from their U.S. counterparts. Another problem is that only the data analyzed for the Netherlands allow for a comparison of displaced and nondisplaced workers. On the other hand, since sample sizes are small for the Netherlands, it is not possible to say much about how the experiences differ among groups.

This notwithstanding, it is noteworthy that there is no evidence that mean wages decline following displacement in either country. The point estimates actually show significantly higher subsequent earnings

in the Netherlands and no change in the United States. This suggests that the losses in average earnings of reemployed workers should take the form of slower wage growth than for workers avoiding displacement, rather than of outright reductions in compensation (as is shown in the Dutch data). The variance of outcomes is substantial, however. For example, the U.S. evidence indicates that substantial earnings losses are experienced by older workers, those displaced from long-tenure jobs, and those whose earnings were originally relatively high compared to others with similar observable characteristics. Finally, the results suggest two important sources of risk beyond any expected changes in wages for reemployed workers. The first relates to uncertainty regarding duration of the spell of joblessness and the second to the substantial variance of subsequent earnings experienced by workers on their new jobs. These risks and the institutional arrangements for dealing with them are also related to the experiences of displaced individuals. For instance, Dutch workers who experience unemployment following displacement may have longer spells than their U.S. counterparts precisely because the Dutch social protections reduce the size of loss during periods of unemployment. This could result in reduced dispersion of postdisplacement wage changes, conditional on reemployment, because workers have less incentive to obtain new jobs that pay substantially less than their old ones.

Notes

We thank Peter Kuhn and Christian Dustmann for useful comments on earlier drafts of this chapter.

1. Displacement rates increased from about 4 percent in 1970 to 11 percent in 1993, according to a rough estimate based on the unemployment insurance (UI). Displacement rates are lower in 1994–1996, however, than in 1993. See the section on incidence for details.
2. Temporary layoffs may occur in less organized ways, however. Seasonally unemployed workers, for instance, can sometimes receive UI. Institutional details and a discussion of the consequences for our analysis are provided in later sections. Emerson (1988) discussed the role of temporary layoffs in various industrialized countries.
3. See Siebert (1997) and Nickell (1997) for recent, and somewhat conflicting, discussions of the role of labor market rigidities in explaining the disparate employment experiences of the United States and Europe.
4. Production workers averaged $12.39 per hour in September 1997 (U.S. Bureau of Labor Statistics 1998).
5. More detailed discussion of these issues are provided in Krueger (1991) and Dertouzos and Karoly (1993).
6. Generally individuals must have worked at least two quarters and earned a minimum amount (typically between $500 and $3000, depending on the state) during the year prior to the immediately completed calendar quarter. The claimant must also be available for, and able to, work if a "suitable" offer is received.
7. Most of the information in this and the next paragraph comes from the Committee on Ways and Means (1996).
8. For displaced workers, a somewhat larger fraction probably qualify for benefits. Data from the 1996 Displaced Worker Supplement indicates, for instance, that 44 percent of the 25- to 64-year olds losing jobs due to plant closings, slack work, or position or shift abolishment between 1993 and 1995 received UI.
9. Payments under TAA were much larger in earlier years, peaking at 532,000 persons and $1.6 billion in 1980.
10. Leigh (1995) and Kodrzycki (1997) provided useful summaries of these programs and their effectiveness.
11. The total budget for dislocated worker programs funded through the Employment and Training Administration of the Department of Labor was $1.1 billion in fiscal year 1996 (Office of Management and Budget 1998).
12. Minimum wages in the Netherlands are actually set as monthly wages. They can be transformed to hourly minimum wages by dividing the sector-specific normal working hours. The reported hourly minimum wage is valid for a 38 hour/week sector. For young workers up to 23 years of age, minimum wages are lower.

13. One of the data sets used in our analyses distinguishes between individuals employed under CAO contracts or AVVs and employees who are not covered by either of these. See the data section.
14. In recent years, so-called flexible contracts have been used increasingly. Such contracts do not specify working hours and correspond more closely to U.S. employment-at-will arrangements. In 1996, however, only 6 percent of all working hours were controlled by such flexible contracts (CBS 1998).
15. Note that employers have to avoid such "continued contracts" in several ways, by only offering new contracts after slightly more than 31 days. Although such contracts are not formally "continued contracts," employees have been successful in fighting such contracting behavior in court. Also note that, currently, laws are proposed that allow for more flexible fixed-term contracting, offering less protection to the employee.
16. In case of separation, advance-notice periods start after a permit has been granted and, if not specified otherwise in the contract, generally equal the time between two subsequent wage payments, as a base. This period is usually one month. In addition, however, the employer must give one week's notice for each year of the employee's tenure, up to a maximum of 13 weeks, with one additional week per year of tenure for employees of age 45–65, up to a maximum of 26 weeks. Advance-notice periods can be contracted, instead. However, such periods can never be excluded, nor can they exceed six months.
17. Actually, there are two laws, of 1949 and 1987, which were both revised in the 1990s.
18. We use administrative UI data for 1992–1993 in this chapter. To qualify as unemployed, the individual has to face a reduction of at least five hours of work per week or half of his original hours if he worked fewer than 10 hours per week.
19. For example, to get an initial benefit-entitlement period of five years, the unemployed worker has to have had jobs for at least 40 months, including at least three of the five years just prior to the start of the unemployment spell.
20. The extended benefits are equal to 70 percent of the gross minimum wage or 70 percent of the gross wage in the last job before unemployment, whichever is lower, and are again subject to income tax. Unemployed who have had jobs in the last three of the last five years are eligible for extended benefits, for a maximum duration of one year, or sometimes longer for older workers.
21. In general, welfare is applicable to all jobless not covered by UI, DI, or other schemes, and provides benefits at the subsistence level (currently around $500 after taxes per month for singles without children).
22. A UI recipient should 1) take actions to avoid staying unemployed—to search for a job and accept appropriate job offers, register as a job searcher at the public employment office, participate in education and training, etc., and 2) keep the administration informed about everything that is relevant to the payment of his UI benefits. For more details and references see Abbring, van den Berg, and van Ours (1997).

23. A small part of the cost of UI—roughly 50 percent of the costs induced by UI benefits paid during the first 13 weeks of unemployment—is covered by premiums related to sectoral unemployment risk.
24. DI is arranged by a variety of laws from 1967 (referring to a law from 1930), 1976, and 1993, and is revised throughout. Also, DI actually consists of two separate arrangements, one for the first 52 weeks of DI, and one for the remaining DI spell. In this chapter, we simply label both arrangements as DI. See CTSV (1997) for details.
25. It should be noted that Dutch DI also covers disability that is not work related, however.
26. Analysis of DWS data typically focuses on joblessness, rather than unemployment, since information on labor-force participation is not available.
27. For additional information on the Displaced Worker Supplements, as well as excellent reviews of research using these and other data sources, see Fallick 1996 or Kletzer 1998.
28. Researchers have used a variety of strategies in an attempt to surmount this shortcoming. For instance, displacement probabilities are sometimes calculated by assuming that the number of persons at risk of permanent layoff (the denominator of the displacement rate) is equal to the number employed at the survey date. Similarly, the quasi-longitudinal nature of the Current Population Survey Outgoing Rotation Group data has been used to construct estimates of the earnings changes of nondisplaced workers, which can then be compared to those of job losers. Farber (1993) is an example of a study using several of these techniques.
29. Studies using longitudinal data include Topel (1990); Ruhm (1991a); and Stevens (1997). Administrative data have been utilized by Jacobson, Lalonde, and Sullivan (1993) and Schoeni and Dardia (1996), among others.
30. Note that the structure of the FE data is similar to that of the Japanese data used in this volume.
31. The remaining spells are completed for quantitatively less important reasons like death, military service, self-employment, or permanent 100 percent benefit reductions because, for instance, of noncompliance with eligibility rules.
32. Thus, we do not miss transitions made between two consecutive interview dates, assuming recall errors are absent.
33. We exclude 46 individuals whose interviews are not successive. This reconstruction covers at most the five-year period 1985 until the end of 1990 for respondents who participated in all waves, and some retrospective information on the state occupied at the date of the first interview. See van den Berg, Lindeboom, and Ridder (1994) for an analysis of attrition using these data. They found that the effects of attrition on estimates of transition models are unimportant.
34. Unemployment and not-in-the-labor-force are differentiated by requiring those who are unemployed to actively search for a job.
35. Job-to-job changes are recorded. The motive or cause is selected from an extensive list.

36. Farber (1997) included in this category job loss for "other" reasons in his analysis. We have deleted persons in this category from our calculations. In a recent analysis of additional data collected on respondents to the 1996 DWS who report being displaced for "other" reasons, Farber (1998) concluded that fewer than one-quarter of persons giving this response had "involuntary" job losses (and some of these may have left temporary or seasonal jobs). It is also worth noting that workers whose contracts expire do not fit neatly into any of the DWS categories. These individuals might classify themselves as displaced for "other" reasons or, alternatively, say that their position has been abolished or that they have concluded a temporary job.
37. Using data from the Panel Study of Income Dynamics, Hall (1995) estimated the rate of permanent layoffs to be around 1.8 percent per quarter or roughly 7 percent per year. Using the same data source, Stevens (1997) estimates, however, that annual displacement rates are only around half as large. On the other hand, Hamermesh (1989) indicated that displacement rates were 20 to 40 percent higher in the 1980s than the 1970s.
38. The issue of multiple turnover was discussed in Ruhm (1987) and played a key role in the analysis made by Stevens (1997).
39. Farber (1997) estimated that 30 percent of persons losing jobs in a given year are again displaced at some point during the next three. Stevens (1997) estimated annual displacement rates of between 10 and 12 percent in the two years following an initial job loss.
40. Assume that 100 individuals are displaced in each year between 1993 and 1995. Under the second assumption above, 10 persons terminating jobs in 1994 will also have been displaced in 1993 and so only 90 of the job losses will be recorded in the 1996 DWS. Similarly, 10 of those terminated in 1995 will have had a 1993 job loss and 9 of them a 1994 displacement. Therefore, workers identified as displaced in 1995 will constitute 81 out of 271 sample members.
41. Men and women losing jobs in 1995 account for 46.2 and 48.5 percent of the 1996 DWS samples, implying inflation factors of 1.545 (0.462/0.299) and 1.622 (0.485/0.299) respectively. In the absence of recall bias, observed displacements might be concentrated in the later years if the rate of job loss actually increased over time. Given that the economy was improving, however (unemployment fell from 6.9 percent in 1993 to 5.6 percent in 1995), this seems unlikely.
42. A common inflation factor is used to account for the effects of recall bias, with no attempt made to differentiate as a function of job seniority. In fact, 58 percent of observed displacements involving those with less than one year of tenure occur in 1995, suggesting that recall bias is particularly severe for this group.
43. A multivariate analysis by Farber (1993) indicated a strong monotonic decline in the risk of job loss with tenure. Fallick (1996) summarized evidence suggesting that the protective effect of tenure decreases over time.
44. A more complete measure of aggregate displacement can be computed from the FE data on a much shorter time interval. This measure and its differences from the UI measure will be discussed later.

45. Note that we will show later that displacement rates are lower again in 1994–1996.
46. Analyses based on the FE data draw on results from a project on crowding out of low-skilled workers, in which three of the authors of this chapter are involved at the CPB Netherlands Bureau for Economic Policy Analysis in The Hague.
47. Note that we observe that workers are on a fixed-term contract only once they separate for that reason; so we cannot exclude these workers from the data set. This is not a serious problem, however, as we condition on tenure, which seems more relevant as a determinant of the risk set for displacement.
48. If, for example, Philips displaces all workers at its computer division and at the same time expands its audio and video divisions, we will underestimate the true displacement rate when we use the net employment criterion.
49. The relatively low displacement rate of the lowest tenure group could be an artifact of the FE sampling procedure, which undersamples workers who separate within a year (see the data section). Note that the FE data are administrative and cannot suffer from recall bias as the DWS possibly does. On the other hand, the nonmonotonicity could be explained by a learning model along the lines of Jovanovic (1979).
50. See the institutions section for a discussion of collective agreements in the Netherlands.
51. See the discussion of the role of sanctions in the data and transitions sections. We do not exclude low-tenure individuals. However, the UI eligibility requirements would prevent most of the low-tenure workers from ending up in UI. Also note that we will conclude later that a large proportion of displaced workers in the Netherlands experience no unemployment spells at all, which implies that the UI data may well underestimate the true displacement rate.
52. Displacements are also associated with lower employment probabilities for women, although the differences are less dramatic for men.
53. This is consistent with Gibbons and Katz's evidence (1991) that workers displaced by plant closings are reemployed more quickly than those losing jobs due to slack work or position or shift abolishment. They attributed this to the possibility that plant closings affect a relatively random group of workers, whereas the other types of job loss impact those of lower average quality.
54. Finding that advance notice is associated with the lower rates of joblessness but without reductions in durations, conditional on a positive spell, is common in this literature (see Addison and Portugal 1987; or Ehrenberg and Jakubson 1988). Ruhm (1992, 1994) provided evidence that persons with short written notice have longer spells and concluded that this occurs because firms disproportionately supply voluntary notice to workers with unobserved characteristics correlated with low reemployment probabilities. Previous research has also shown that union membership, high predisplacement earnings, and depressed local labor market conditions are associated with extended joblessness (see Fallick 1996 for examples). Estimation of corresponding Weibull hazard models reveals that baseline

rates decline over time. This could reflect either observed heterogeneity (where "better" workers get reemployed first) or duration dependence.

55. The total number of observations is smaller than in Table 2.13 because information on sojourn times was missing in some cases.
56. See, for instance, Lancaster (1979). The fact that median residual durations are now longer for displaced workers can possibly be traced back to heterogeneity in terms of unobserved and other observed characteristics. Earlier analyses of the same data by Abbring, van den Berg, and van Ours (1997) indeed did show that both negative genuine duration dependence and observed and unobserved heterogeneity play a significant role in explaining the observed duration dependency pattern.
57. Because of their flexibility and computational convenience, discrete distributions for unobservables are frequently used in MPH analyses. The flexibility of discrete distributions as heterogeneity or mixture of distributions was illustrated by a result of Heckman and Singer (1984) who showed that in MPH models the nonparametric maximum likelihood estimator or the heterogeneity distribution is a discrete distribution. The estimation procedure requires the number of points of support not to be fixed in advance, however, and the estimation of standard errors is not straightforward.
58. Recall, however, that unobserved differences between the two groups of individuals may interfere with this argument. The excess layoffs indicator, the "residual size of the cell," has a significantly positive effect on reemployment rates, which could be explained as a signaling effect. Workers who are involved in excess, or even mass, layoffs, are more attractive than workers who are singled out for layoff.
59. The table includes an Information Matrix (IM) test on the unobserved heterogeneity parameters (see White 1982). Chesher (1984) has shown that this test on the equality of the score and Hessian representations of the IM can be interpreted as a test of local parameter variation. In this case, the IM test can be expected to detect additional unobserved heterogeneity, and can be shown to be distributed with two degrees of freedom. Thus, the IM is rejected at just a 5 percent significance level. Adding an additional mass point to the heterogeneity distribution does not change the results, however, two mass points converge to the same value and other parameter estimates are unaffected.
60. The DWS does not contain information on hourly earnings. Crude controls for part-time versus full-time work are available, but these are not used in the analysis below because these changes are likely to be endogenous (e.g., some displaced workers may be unable to obtain full-time jobs).
61. During the 1993–1995 period, the civilian unemployment rate averaged 6.2 percent, 62.4 percent of the civilian population were employed, and real GDP grew 2.6 percent per year. The comparable figures for the 1990–1992 time span were 6.6, 62.0, and 1.0 percent. Herz (1990) and Farber (1997), among others, showed that workers adjust more easily to displacements occurring during booming periods than when economic conditions are less favorable. In addition, many of the

earlier analyses have been restricted to groups likely to experience relatively large wage losses, such as persons with more than three years' tenure.

62. No effort is made to control for selection into employment. Therefore these results should be interpreted as providing information on the determinants of wages (or earnings changes) conditional on survey-date employment.
63. Kletzer (1989), Addison and Portugal (1989), and Ruhm (1990), among others, provided earlier related analyses.
64. Other research also suggests the usefulness of distinguishing between general and specific human capital. For example, larger losses have been found for displaced workers who switch industries than for those who do not; see Kletzer (1998) for a detailed summary of this literature.
65. Gibbons and Katz (1991) indicated smaller displacement-induced losses for those affected by plant closings than for other job losers but, as mentioned, do not distinguish between slack work and position or shift abolishment.
66. Source: CBS (1998, 1991).
67. There are several reasons for this loss of observations. First, the starting date of the initial observed labor market state can be missing. In this case the different states cannot be linked to a calendar time, a necessity for the inflation correction. Second, the starting date may be inconsistent with the reported sojourn time, given the date of the first interview. Finally, one or more sojourn times may be missing.
68. Note that most observations are lost because tenure is missing: tenure is observed for 1,069 of the 1,551 observations. Of these 1,069 cases, 168 cases concern displacement. Of the 668 observations with sufficient tenure, 116 concern displacement, which is 69 percent of 168. This number is referred to in the discussion of the UI inflow measure later on.
69. The labor-force participation rates of 45- to 54- and 55- to 64-year-old men (women) were 89 and 67 (75 and 50) percent, respectively, in 1996 (U.S. Bureau of the Census 1997). In contrast, 35- to 44-year-olds were only marginally more likely than those age 45 to 54 to participate (92 percent of the men and 78 percent of the women). The lack of research on displacement and retirement is probably due to the difficulty in using the DWS for this type of analysis. The small bit of earlier literature that is relevant to this issue uncovered little evidence that displacements have strong effects on retirement ages.
70. Workers with less than a year on the predisplacement job are retained in this portion of the analysis because the end of even a brief job has the potential of creating considerable adjustment problems for older workers. In addition, information on prior tenure is unavailable for nondisplaced workers, making it difficult to undertake the comparison procedure discussed next.
71. To reduce fluctuations due to small sample sizes (particularly for displaced workers) the probabilities are actually calculated as three-year averages centered around the specific age (for example, the retirement or disability rate for "60-year-olds" is actually the average retirement or disability rate of 59- to 61-year-olds).

72. These conditional probabilities are analogous but not identical to hazard rates. They differ in part because 1) some men who are initially nonparticipants might reenter the labor force during the compensation period; 2) "lagged" status is calculated for slightly younger workers in 1996, rather than for the same cohort of men in an earlier year; 3) there can be some movement over time between "other" reasons for nonparticipation and retirement or disability.
73. The unconditional retirement or disability probabilities for nondisplaced men are 15, 29, and 58 percent.
74. By construction of the data set, the remainder is in the 40–53 age group.
75. Layard, Nickell, and Jackman (1991, chap. 5, Table 1) provided a steady state estimate of unemployment durations of around three months for 1988 for both countries. Furthermore, their Table 2 showed that this is fairly typical of the period 1962–1989. In the Netherlands, however, mean unemployment durations are usually longer than one year: Layard, Nickell, and Jackman even gave a steady state estimate of 25 months for 1988. Also, median reemployment durations of displaced workers in our 1992 UI data set for the Netherlands (20 weeks; see Table 2.16) are substantially longer than median reemployment durations in our U.S. data set (7 weeks). This is remarkable, as our data set excludes workers entering other schemes and hardly ever returning to employment, and includes at least some short-tenure workers, who can be expected to be more mobile.
76. These problems have recently been encountered by Cohen, Lefranc, and Saint-Paul (1997), who compared the U.S. and French labor markets. Using the Enquete Emploi, collected by the INSEE, for France and the Panel Study of Income Dynamics for the United States, they found that wage discounts after displacement are roughly the same in both countries. The discussion following the paper, however, showed that it is not easy to draw and clear conclusions from this.
77. An additional empirical problem is that the postdisplacement wage will frequently be unobserved for these workers due to right-censored unemployment spells.
78. Of course, workers in the United States also have incentives to avoid unemployment and to find new jobs prior to job loss, but they are generally weaker incentives.
79. See the section on labor market transitions following displacement. We exclude individuals who are living abroad.
80. This may be due to DI legislation, however. Partly disabled workers have to find a job for their remaining work capacity because of a rule that came into effect in 1987. We cannot distinguish these cases, but the rule only affects observations in part of our observation period (see Hassink, van Ours, and Ridder 1997).

Table 2.1 Netherlands: Overview of the Data Sets

Data set	FE data	LFS	UI data
Unit of observation	Firm/worker	Household (hh.)/individ. (i.)	UI case
Type of data	Administrative	Survey	Administrative
Sampling scheme	2-yr. rotating panel 4 waves (1991–92, 1992–93, 1993–94, 1994–95)	Random panel 4 waves (1985, 1986, 1988, 1990)	Inflow sample UI inflow 1992 (spells followed up to Sept. 1993)
No. of observations	Approx. 2,000 firms/26,000 workers per year	2,132 hh./4,020 i. in the first wave	209,478 cases
Key feature	Worker transitions into and out of firms	Full individual labor market histories	Transitions into and out of UI
Displacement criterion	Separations labeled as layoffs and those from shrinking firms	Layoffs for economic reasons	UI inflow (minus sanctions responsibility for job loss)
Tenure restriction	Tenure ≥1 yr.	Tenure ≥1 yr.	Entitlement to UI
Information on displacement rate	Yes	No	No[a]
Transitions following displacement	Yes	No	No
Prob. positive spell joblessness	Upper bound[b]	Yes	No
Reemployment duration	No	Yes[c]	Yes

Labor market state after 1 yr.	No	Yes	No[d]
Role of early retirement or DI	Some[e]	Some[e]	No
Earnings changes induced by displacement	No	Yes	No

[a] However, the corresponding aggregate time series on UI inflow over the period 1970–93 are used to construct displacement-rate time series.

[b] Only for displacement identified by separations from shrinking firms, some job-to-job transitions are recorded; thus the probability of a positive spell of joblessness is overestimated.

[c] The LFS data are not used here, however, because of the superiority of the UI data for this purpose.

[d] We observe whether an individual leaves UI and why (i.e., to what labor market state), but not the subsequent labor market transitions made.

[e] These data can be used to construct circumstantial evidence, but we employ results from other studies using data that are better suited to analyze these issues.

Table 2.2 United States: "Lower-Bound" Estimates of Annual Displacement Rates (%)

Time period	All workers	Men	Women
1981–83	3.8	4.4	3.0
1983–85	3.0	3.4	2.5
1985–87	2.7	3.1	2.2
1987–89	2.4	2.6	2.1
1989–91	3.4	4.0	2.8
1991–93	3.2	3.6	2.7
1993–95	3.1	3.4	2.8

NOTE: The table refers to job loss among 20- to 64-year-olds (at the survey date) due to plant closing, slack work, or position or shift abolishments.

SOURCE: Estimates obtained by dividing by three the estimates for three-year displacement rates calculated by Farber (1997).

Table 2.3 United States: Estimated Annual Displacement Rates during the 1993–95 Period by Predisplacement Job Tenure (%)

Tenure (yr.)	All workers	Men	Women
All displacements[a,b]			
All	4.9	5.3	4.5
<1	5.9	6.7	5.1
>1	4.6	4.9	4.3
1–2	9.9	10.9	9.0
3–4	4.7	5.6	4.0
5–9	3.5	4.0	3.0
≥10	2.7	2.5	2.9
Displacements resulting in joblessness[c]			
All	4.2	4.5	3.9
<1	5.1	5.7	4.4
>1	3.9	4.2	3.7
1–2	8.5	9.3	7.7
3–4	4.0	4.8	3.5
5–9	3.0	3.4	2.6
≥10	2.3	2.1	2.5

NOTE: Estimates for overall and gender-specific annual displacement rates are obtained using the lower-bound displacement rates in Table 2.2 and then inflating them via the procedure discussed in the text.

[a] Tenure-specific rates are calculated by multiplying the overall displacement rate by the ratio of the fraction of displaced workers with the specified amount of tenure divided by the franction of all workers with that amount of tenure. For example, the displacement rate for persons with 1–2 years of seniority is calculated as $0.049 \times 0.268/0.132 = 0.099$.

[b] Results for all types of permanent job loss.

[c] Restricted to displacements resulting in an initial spell of joblessness.

Table 2.4 United States: Estimated Annual Displacement Rates during the 1993–95 Period by Age (%)

Age (yr.)	All displacements	Displacements resulting in joblessness
All	4.9	4.2
20–24	5.5	4.7
25–34	5.3	4.5
35–44	4.7	4.0
45–54	4.4	3.8
55–64	4.1	3.5

NOTE: Estimates for overall displacement rates are obtained from Table 2.3. Age-specific rates are calculated by adjusting the overall rate by the relative age-specific differences in displacement probabilities calculated by Farber (1997).

Table 2.5 Netherlands: Reported Labor Market States of Workers at Strongly Shrinking Firms, 1993–96 (% of Employment at all Firms)

Criterion		Firms (%)[a]	Layoff[b]	New job[b]	Early retirement[b]	DI[b]	Displacement[c]
Employment	–20%	16.0	0.6	0.7	0.1	0.0	4.8
(net change)	–30%	9.4	0.4	0.4	0.1	0.0	3.8
	–40%	4.7	0.2	0.3	0.0	0.0	3.5
Outflow	–20%	50.3	1.5	2.4	0.2	0.1	7.2
(gross change)	–30%	32.4	1.0	1.7	0.2	0.1	5.9
	–40%	19.5	0.7	1.2	0.1	0.0	5.1

NOTE: Workers older than 60 years are excluded, as are workers with less than one year's tenure.

[a] Firm shares are computed among firms with workers in the selected category.

[b] Separations only from strongly shrinking firms added to annual displacement rates.

[c] Total displacement as a percentage of total employment. Displacement includes "layoffs" (excluding layoffs during test periods) at all firms, plus transitions into "new jobs," "early retirement," and "DI" at strongly shrinking firms.

SOURCE: Based on weighted FE data.

Table 2.6 Annual Displacement Rates by Tenure during the 1993–95 Period (%)

Tenure (yr.)	All workers	Men	Women
All	4.1	4.2	4.0
<1	5.8	6.3	5.2
1–2	8.1	9.2	6.7
3–4	4.7	5.2	4.0
5–9	3.0	3.0	2.9
≥10	1.9	1.9	2.0

NOTE: Workers older than 60 are excluded. Displacement is identified with "layoffs" (excluding "layoffs during test periods") at any firm, plus transitions into "new jobs," "early retirement," and "DI" at firms with net employment changes < –30%.

SOURCE: Based on weighted FE data.

Table 2.7 Netherlands: Displacement and Other Separation Frequencies 1993–96 (%)

Variable	No transition	Displaced	Other outflow
All	88.3	3.8	7.8
Year			
1993	87.2	7.6	5.2
1994	89.8	2.9	7.4
1995	88.3	3.6	8.1
1996	88.1	1.7	10.2
Gender			
Female	87.0	3.6	9.4
Male	89.1	3.9	7.0
Tenure (yr.)			
<1	88.0	4.5	7.5
1–2	81.7	6.8	11.5
3–4	87.1	4.0	9.0
5–10	91.3	2.6	6.1
>10	93.9	1.7	4.4
Coll. agreement			
CAO[a]	88.8	3.6	7.7
AVV[b]	85.8	5.2	9.0
None	87.3	4.3	8.4
Job complexity level			
Low	82.6	5.7	11.8
Intermediate	89.5	3.4	7.1
High	91.3	3.3	5.4
Education (yr.)			
≤10	87.4	4.3	8.4
>10 – <15	89.9	3.1	7.1
≥15	89.6	3.3	7.1
Age (yr.)			
18–19	72.3	10.7	17.0

(continued)

Table 2.7 (continued)

Variable	No transition	Displaced	Other outflow
20–29	83.0	5.8	11.2
30–39	89.7	3.4	6.9
40–49	93.0	2.6	4.4
≥50	90.4	2.1	7.5

NOTE: Workers older than 60 are excluded, as are workers with less than one year's tenure (except in the row giving results for these workers). Displacement is identified with "layoff" (excluding "layoffs during test periods") at any firm, plus transitions into "new jobs," "early retirement," and "DI" at firms with net employment changes < –30%.

[a] Covered by a collective agreement.

[b] Covered by a mandatory extension of a CAO.

SOURCE: Based on weighted FE data.

Table 2.8 Netherlands: Logit Estimates of Probability of Displacement

Variable[a]	Estimate	(std. error)
Intercept	–11.21***	(2.58)
log Age	8.15***	(1.62)
(log Age)^2	–1.13***	(0.23)
Woman	–0.36***	(0.05)
log Tenure	–0.54***	(0.05)
(log Tenure)^2	0.02	(0.02)
log Wage	–2.52***	(0.31)
(log Wage)^2	0.20***	(0.05)
Part-time	–0.24***	(0.05)
Education (yr.)	0.00	(0.01)
Job complexity		
Low	–0.72***	(0.10)
Intermediate	–0.68***	(0.08)
Occupation		
Simple technical	0.09	(0.16)
Administrative	0.30**	(0.15)
Management	–0.06	(0.17)
Services	0.14	(0.16)
Commercial	0.20	(0.16)
Creative	0.19	(0.21)
Wage agreement[b]		
CAO	–0.00	(0.05)
AVV	–0.05	(0.08)
Sector		
Manufacturing	0.20*	(0.11)
Construction	0.44***	(0.11)
Trade	–0.16	(0.11)
Restaurants, etc.	0.39***	(0.14)
Transport, comm.	–0.03	(0.13)
Financial	0.16	(0.12)

(continued)

Table 2.8 (continued)

Variable[a]	Estimate	(std. error)
Health	–0.12	(0.11)
Firm size[c]		
10–19	–0.26***	(0.06)
20–49	–0.42***	(0.06)
50–99	–0.56***	(0.07)
100–199	–0.49***	(0.06)
200–499	–0.24***	(0.06)
≥500	0.48***	(0.05)
Year = 1993	1.46***	(0.06)
Year = 1994	0.38***	(0.06)
Year = 1995	1.07***	(0.06)
log L	–32,842.81	
N	100,908	

NOTE: Logit estimates with dependent states "displaced" and "not displaced" (reference state). Workers older than 60 or with tenure less than one year are excluded. Displacement is identified with "layoffs" (excluding "layoffs during test periods") at any firm, plus transitions into "new jobs," "early retirement," and "DI" at firms with net employment changes < –30%. Wages are real gross hourly wages (in Dutch guilders) including extra time payments, profit sharing, etc. *** = statistically significant at the 1% level; ** = statistically significant at the 5% level; * = statistically significant at the 10% level.

[a] Age and tenure are measured in years. Reference states are "male," "full-time," "high job complexity," "IT," "no collective wage agreement," "agriculture/mining," "firm with < 10 workers," and "year = 1996."

[b] "CAO" refers to coverage by a collective agreement, "AVV" to coverage by a mandatory extension of such an agreement.

[c] Firm size is measured by the number of employees.

SOURCE: Based on weighted FE data.

Table 2.9 Netherlands: Simulated Annual Displacement Probabilities (%)

Variable	Not displaced	Displaced
Total population	97.8	2.2
Year		
1993	95.3	4.7
1994	98.4	1.6
1995	96.8	3.2
1996	98.9	1.1
Gender		
Female	98.2	1.8
Male	97.4	2.5
Tenure (yr.)		
1	95.0	5.0
2	96.5	3.5
4	97.5	2.5
10	98.3	1.7
20	98.8	1.2
Wage agreement[a]		
CAO	97.8	2.2
AVV	97.9	2.1
No collective wage agreement	97.8	2.2
Job-complexity level		
Low	98.0	2.0
Intermediate	98.0	2.0
High	96.0	4.0
Age (yr.)		
20	98.1	1.8
30	97.5	2.5
40	97.4	2.6
50	97.7	2.3

(continued)

Table 2.9 (continued)

Variable	Not displaced	Displaced
Wage (guilders)		
15	95.7	4.3
20	97.0	3.0
40	98.7	1.3
50	98.9	1.1

NOTE: Based on logit estimates (see Table 2.8), evaluated at the mean characteristics of the population over the period 1993–96. Displacement is identified with "layoffs" (excluding "layoffs during test periods") at any firm, plus transitions into "new jobs," "early retirement," and "DI" at firms with net employment changes < –30%.

[a] "CAO" refers to coverage by a collective agreement, "AVV" to coverage by a mandatory extension of such an agreement.

Table 2.10 United States: Duration of Postdisplacement Joblessness

	All displacements		Displacements resulting in joblessness	
	% reemployed within		% reemployed within	
Variable	6 mo.	1 yr.	6 mo.	1 yr.
All displaced workers	67.3	76.1	61.0	71.7
Gender				
Male	69.7	77.8	63.5	73.2
Female	64.0	74.3	57.7	69.8
Age (yr.)				
20–29	70.9	78.0	66.5	75.7
30–39	72.4	79.6	66.7	75.4
40–49	67.8	79.0	61.5	74.8
50–54	58.8	68.9	50.3	62.5
55–59	52.7	63.0	42.3	54.8
60–64	44.0	53.0	34.5	45.1
Job tenure (yr.)				
1–2	70.0	77.8	65.2	74.2
3–4	66.6	76.5	61.1	72.7
5–9	67.7	74.4	60.4	68.7
≥10	64.2	76.0	55.8	70.4

NOTE: Data are weighted so as to be nationally representative.The data apply to workers who were 20 to 64 years old at the survey date and were displaced from jobs lasting more than one year in 1993 or 1994.

SOURCE: From the February 1996 Displaced Worker Supplement.

Table 2.11 United States: Labor-Force Status of Displaced Workers (%)

Variable	Employed	Unemployed	Out of labor force
All displaced workers	73.7	14.7	11.6
Gender			
Male	76.5	16.5	6.9
Female	69.9	12.3	17.8
Age (yr.)			
20–29	77.9	15.2	7.0
30–39	77.3	12.0	10.7
40–49	76.5	14.5	9.0
50–54	66.2	19.5	14.3
55–59	58.8	18.1	23.1
60–64	42.6	19.6	37.8
Job tenure (yr.)			
1–2	73.6	16.2	10.2
3–4	74.7	12.8	12.6
5–9	76.6	14.7	8.7
≥10	70.0	15.0	15.2

NOTE: The table shows the labor-force status in February 1996 of 20- to 64-year-old persons displaced from jobs lasting more than one year during the 1993–95 period.
SOURCE: Data are from the 1996 Displaced Worker Supplement and are weighted so as to be nationally representative.

Table 2.12 United States: Econometric Estimates of the Determinants of Postdisplacement Joblessness

Regressor	Probability of no joblessness[a]		Duration of joblessness			
			Conditional[b]		Unconditional[c]	
Job tenure (yr.)						
3–4	0.047	(0.089)	0.116	(0.073)	0.028	(0.055)
5–9	0.052	(0.090)	–0.017	(0.075)	0.006	(0.090)
≥10	0.095	(0.096)	–0.054*	(0.083)	–0.007	(0.073)
Age (yr.)						
30–39	–0.052	(0.094)	–0.118	(0.078)	–0.107	(0.069)
40–49	–0.134	(0.099)	–0.185**	(0.082)	–0.184**	(0.072)
50–54	–0.212	(0.133)	–0.479***	(0.113)	–0.442***	(0.100)
55–59	–0.138	(0.146)	–0.704***	(0.137)	–0.583***	(0.117)
60–64	–0.353*	(0.190)	–1.12***	(0.187)	–1.01***	(0.163)
Education						
High school grad.	0.321**	(0.134)	0.271***	(0.105)	0.303***	(0.096)
Some college	0.341**	(0.135)	0.319***	(0.105)	0.345***	(0.096)
College grad.	0.394***	(0.144)	0.387***	(0.115)	0.416***	(0.104)
Grad. school	0.480***	(0.170)	0.304**	(0.140)	0.381***	(0.125)
Married	0.135*	(0.069)	0.027	(0.058)	0.059***	(0.051)
Man	–0.007	(0.065)	0.231***	(0.055)	0.182***	(0.049)
Nonwhite	–0.285**	(0.113)	–0.188**	(0.087)	–0.228***	(0.080)
Native born	0.387***	(0.131)	–0.006	(0.090)	0.093	(0.084)
Source of job loss						
Plant closing	0.066	(0.084)	0.072	(0.058)	0.075	(0.060)
Slack work	0.034	(0.087)	0.010	(0.073)	0.021	(0.065)
Written notice (months)						
<1	–0.018	(0.112)	–0.036	(0.095)	–0.033	(0.084)

(continued)

Table 2.12 (continued)

Regressor	Probability of no joblessness[a]		Duration of joblessness			
			Conditional[b]		Unconditional[c]	
1–2	–0.139	(0.108)	–0.139	(0.086)	–0.154**	(0.078)
>2	0.209 **	(0.089)	–0.048	(0.082)	0.039	(0.070)

NOTE: Standard errors are in parentheses. The sample includes persons displaced from jobs lasting more than one year in 1993, 1994, or 1995 who were between the ages of 20 and 64 in February 1996. The reference groups for the sets of dummy variables are persons with 1–2 years of tenure on the predisplacement job, 20- to 29-year-olds, high school dropouts, those losing jobs due to a position or shift abolishment, and those with no written advance notice. *** = Statistically significant at the 1% level; ** = statistically significant at the 5% level; * = statistically significant at the 10% level.

[a] This column shows the results of a probit model where the dependent variable is equal to 1 if the respondent obtains a new job within one week of the displacement and zero otherwise.

[b] This column indicates coefficients for a Cox proportional hazard model where the dependent variable is weeks of joblessness and the sample is restricted to persons out of work for at least one week following displacement.

[c] This column shows results for a Cox proportional hazard model estimated over all displaced workers where the dependent variable is weeks of joblessness plus one-half week.

SOURCE: From the 1996 Displaced Worker Supplement.

Table 2.13 Netherlands: Displacement by Motivation and Transition

Worker category		Motivation[a] 1	2	3	4	5	All
Transition[b]	*E-E*	30	162	1	37	—	230
	E-U	6	47	0	15	—	68
	E-N	7	14	3	—	5	29
All		43	223	4	52	5	327
Workers with tenure ≥1 year							
Transition[b]	*E-E*	19	76	1	17	—	113
	E-U	1	21	0	10	—	32
	E-N	2	11	1	—	3	17
All		22	108	2	27	3	162

NOTE: Rows correspond to self-reported combinations of motivation for and voluntariness of transition.

[a] 1 = "would have lost job anyway"; 2 = "reorganization or plant closure"; 3 = "involuntary early retirement"; 4 = "DI"; and 5 = "voluntary disability" (E-N only).

[b] E-E = job-to-job transitions, E-U = employment-to-unemployment transitions, and E-N = employment-to-not-in-labor-force transition.

SOURCE: Based on the LFS.

Table 2.14 Netherlands: Reported Labor Market States of Separated Workers by Net Employment Change (%)

Group of firms	Layoff	New job	Early retirement	DI
Net employment changes < –30%				
All workers	24.9	19.4	2.9	1.9
Outflow	44.3	34.5	5.1	1.8
Other firms				
All workers	3.3	4.6	0.5	0.4
Outflow	31.0	43.4	4.9	3.5

NOTE: Workers older than 60 and workers with tenure less than one year have been excluded.

SOURCE: Based on weighted FE data.

Table 2.15 Netherlands: Labor Market State One Year after Displacement by Transition

Worker category		Labor market state[a]						
		E	*S*	*U*	*N*	*M*	*F*	All
Transition[b]	*E-E*	143	0	3	1	0	0	147
	E-U	17	2	27	1	0	1	48
	E-N	4	0	0	18	0	0	22
All		164	2	30	20	0	1	217
Workers with tenure ≥1 year								
Transition[b]	*E-E*	75	0	1	1	0	0	77
	E-U	6	1	17	0	0	1	25
	E-N	2	0	0	12	0	0	14
All		83	1	18	13	0	1	116

[a] *E* = "employed"; *S* = "self-employed"; *U* = "unemployed and searching"; *N* = "not-in-labor-force"; *M* = "military service"; and *F* = "full-time education."

[b] *E-E* = job-to-job transitions, *E-U* = employment-to-unemployment transitions, and *E-N* = employment-to-not-in-the-labor-force.

SOURCE: Based on the LFS.

Table 2.16 Netherlands: Median Residual Reemployment Durations (weeks)

Worker category	At 0 weeks	At 26 weeks
All workers	20.8	102.9
Sanction indicator		
Nondisplaced	23.9	86.2
Displaced	20.4	104.6
Displaced workers		
Age (yr.)		
<30	14.0	77.4
30≤ – <40	23.2	91.3
30≤ – <50	27.2	∞ [a]
≥50	∞	∞
Daily wage (guilders)		
<80	22.0	93.2
80≤ – <110	26.6	106.9
110≤ – <150	15.5	97.7
≥150	21.4	∞
Gender		
Female	25.8	93.3
Male	17.2	105.4
Urbanization		
Urban	25.5	100.0
Not urban	19.7	106.5
Hours		
Part-time	29.9	101.5
Full-time	18.0	107.9
Marital status		
Married	32.3	109.2
Not married	15.4	92.0

NOTE: Durations are observed in intervals and may be right-censored. Medians are computed using the actuarial method, i.e., assuming that censoring and reemployment durations are uniformly distributed within observational intervals.

[a] ∞ is used to denote medians larger than the longest completed spell observed, i.e., that are beyond the scope of the data set.

SOURCE: Based on the UI data.

Table 2.17 Netherlands: Mixed Proportional Hazard Estimates of Reemployment Durations

Variable[a]	Estimate (std. error)
Nondisplaced (sanction)	–0.18*** (0.04)
Sanctions/cell member[b]	0.01 (0.07)
Predicted size cell ($\hat{c}$)	–1.42*** (0.15)
Residual size cell ($\hat{\varepsilon}$)	0.35*** (0.05)
log Age[c]	0.89*** (0.28)
(log Age)^2	–0.93*** (0.12)
log Wage[d]	0.18*** (0.03)
(log Wage)^2	0.09*** (0.02)
Right-censored wage[e]	–0.48*** (0.15)
Female	–0.09*** (0.02)
Urban	–0.01 (0.05)
Part-time	–0.00 (0.03)
Married	–0.15*** (0.03)
v_1	–2.80*** (0.19)
v_2	–3.74*** (0.15)
p_1	0.40** (0.16)
p_2	0.60*** (0.16)
8–16 weeks	–0.13*** (0.04)
16–24 weeks	–0.26*** (0.05)
24–32 weeks	–0.43*** (0.06)
32–45 weeks	–0.80*** (0.07)
45–58 weeks	–1.05*** (0.10)
>58 weeks	–1.05*** (0.12)
log L	–40,739.8
N	21,079

Test	Statistic (d.f.)
IM mixing dist.[f]	6.95 (2)
Wald sectors	628.99 (16)

Test	Statistic (d.f.)
Wald months	108.54 (11)
Wald provinces	20.75 (11)

NOTE: Sector, month of inflow, and province dummy variables are included. *** = Statistically significant at the 1% level; ** = statistically significant at the 5% level.

[a] All variables are included in deviation from their sample means. Reference interval for the piecewise constant baseline hazard is 0–8 weeks.

[b] Cell refers to municipality × month of inflow UI × sector − groups. The sanction rate in each cell is included as a regressor. Also, the number of individuals in each cell is regressed on municipality, month of inflow UI, and sector dummies, which gives predicted cell counts $\hat{c}$ and residuals $\hat{\varepsilon}$.

[c] "Age" = age/10.

[d] Wage is daily wage in referral period in 100 Dutch guilders.

[e] Wages are right-censored at 430 guilders.

[f] IM = a test statistic for local parameter variation in (v_1, v_2), or, equivalently, (v_1, v_2, p_1, p_2); Wald-tests for the joint significance of the three groups of dummy variables. All tests are asymptotically χ^2 distributed with the degrees of freedom given in parentheses.

SOURCE: Based on the UI data.

Table 2.18 Netherlands: Simulated Reemployment Probabilities

Variable	Pr($t \leq 26$ weeks)	Pr($t \leq 52$ weeks)
Sample mean	0.54	0.72
Sanction indicator		
Nondisplaced	0.49	0.66
Displaced	0.55	0.73
Age (yr.)		
20	0.70	0.86
30	0.58	0.76
40	0.44	0.61
50	0.32	0.46
Daily wage (guilders)		
50	0.50	0.68
100	0.53	0.71
150	0.56	0.74
200	0.59	0.77
Gender		
Female	0.52	0.70
Male	0.56	0.74
Urbanization		
Urban	0.54	0.72
Not urban	0.54	0.72
Hours		
Part-time	0.54	0.72
Full-time	0.54	0.72
Marital status		
Married	0.51	0.69
Not married	0.56	0.74

NOTE: Probabilities are computed using the model estimates of Table 2.17. The sample mean is computed at the mean of the regressors in the sample used for estimation and the estimated mean of the unobserved heterogeneity component. All other rows correspond to single deviations from this mean.

Table 2.19 United States: Ratio of Average Survey Date and Predisplacement Weekly Earnings

Category	Conditional on survey date employment	Unconditional
All displaced workers	1.00	0.70
Initial jobless spell (weeks)		
0	1.19	1.14
>0	0.95	0.62
Gender		
Female	0.95	0.64
Male	1.03	0.75
Age (yr.)		
20–29	1.20	0.90
30–39	0.98	0.73
40–49	0.90	0.66
50–54	0.92	0.56
55–59	0.90	0.49
60–64	1.18	0.46
Job tenure (yr.)		
1–2	1.11	0.77
3–4	1.05	0.76
5–9	1.00	0.74
≥10	0.81	0.53
Year of displacement		
1993	0.96	0.75
1994	1.04	0.78
1995	0.99	0.62

NOTE: The table shows average values of the ratio of survey date (February 1996) to predisplacement weekly wages, both measured in February 1996 dollars, using the all-items Consumer Price Index to adjust for price changes. The sample includes persons aged 20–64 at the survey date who lost jobs lasting more than one year in 1993, 1994, or 1995 due to slack work, plant closing, or position or shift abolishment.

SOURCE: Data are from the 1996 Displaced Workers Supplement and are weighted so as to be nationally representative.

Table 2.20 Distribution of the Ratio of Survey Date to Predisplacement Wages

	All displaced workers		25- to 49-year-old men	
Wage ratio	Conditional[a]	Unconditional	Conditional	Unconditional
<0.75	0.323	0.523	0.276	0.449
0.75–0.89	0.136	0.096	0.134	0.102
0.9–1.09	0.262	0.184	0.286	0.218
1.1–1.25	0.096	0.068	0.105	0.080
>1.25	0.184	0.129	0.199	0.151

NOTE: The table shows the distribution of the ratio of survey date (February 1996) to predisplacement weekly wages. Predisplacement earnings are in February 1996 dollars, using the all-items Consumer Price Index to adjust for price changes. The sample includes persons aged 20–64 at the survey date who lost jobs lasting more than one year in 1993, 1994, or 1995 due to slack work, plant closing, or a position or shift abolishment.

[a] The conditional estimates are for reemployed workers only.

SOURCE: Data are from the 1996 Displaced Workers Supplement and are weighted so as to be nationally representative.

Table 2.21 United States: Econometric Estimates of the Determinants of Postdisplacement Earnings and Earnings Changes

	Postdisplacement wages				Change in wages	
Regressor[a]	(1)[b]		(2)[c]		(3)[d]	
Job tenure (yr.)						
3–4	0.062	(0.047)	0.039	(0.044)	–0.031	(0.047)
5–9	0.091**	(0.049)	0.018	(0.046)	–0.024	(0.049)
≥10	0.087	(0.054)	–0.081	(0.051)	–0.187***	(0.054)
Age (yr.)						
30–39	0.127**	(0.050)	–0.045	(0.048)	–0.153***	(0.050
40–49	0.142***	(0.053)	–0.041	(0.051)	–0.061***	(0.053)
50–54	0.067	(0.073)	–0.087	(0.069)	–0.181***	(0.073
55–59	0.018	(0.085)	–0.177**	(0.080)	–0.283***	(0.085)
60–64	–0.197*	(0.118)	–0.286***	(0.111	–0.345***	(0.119)
Education						
High school grad.	0.215***	(0.069)	0.081	(0.064)	–0.002	(0.068)
Some college	0.383***	(0.070)	0.144*	(0.065)	0.007	(0.069)
College grad.	0.546***	(0.075)	0.237***	(0.071)	0.027	(0.074)
Grad. school	0.766***	(0.091)	0.325***	(0.086)	0.029	(0.089)
Married	0.025	(0.037)	0.010	(0.035)	0.000	(0.037)
Male	–0.428***	(0.036)	0.201***	(0.036)	0.041	(0.036)
Nonwhite	–0.050	(0.057)	0.030	(0.055)	0.045	(0.058)
Native born	–0.010	(0.060)	–0.022	(0.057)	–0.048	(0.061)
Source of job loss						
Plant closing	–0.050	(0.043)	–0.010	(0.041)	0.039	(0.043)
Slack work	–0.026	(0.047)	0.061	(0.044)	0.120***	(0.047)
Written notice (mo.)						
<1	–0.045	(0.061)	–0.054	(0.057)	–0.056	(0.061)
1–2	0.025	(0.057)	0.002	(0.054)	–0.007	(0.058)
>2	0.023	(0.051)	–0.012	(0.048)	–0.050	(0.051)

(continued)

Table 2.21 (continued)

	Postdisplacement wages				Change in wages	
Regressor[a]	(1)[b]		(2)[c]		(3)[d]	
Year of displacement						
1994	–0.041	(0.043)	–0.013	(0.041)	0.016	(0.044)
1995	–0.075*	(0.042)	–0.039	(0.039)	–0.009	(0.042)
Union	0.032	(0.052)	–0.021	(0.049)	–0.061	(0.052)
Predisplacement wage	—		0.599***	(0.029)	—	

NOTE: Standard errors are in parentheses. The sample includes persons between the ages of 20 and 64 who were displaced from jobs lasting more than one year in 1993, 1994, or 1995 and were reemployed in February 1996. *** = Statistically significant at the 1% level; ** = statistically significant at the 5% level; * = statistically significant at the 10% level.

[a] The reference groups for the sets of dummy variables are persons with 1–2 years' tenure on the predisplacement job, 20- to 29-year-olds, high school dropouts, those losing jobs due to position or shift abolishments, and those with no written advance notice.

[b] The dependent variable is the natural log of weekly wages at the survey date. Predisplacement wage is not included as a regressor.

[c] The dependent variable is the natural log of weekly wages at the survey date. Predisplacement wage is included as a regressor.

[d] The dependent variable is the difference in (the natural logs of) weekly wages at the survey date and prior to displacement, both in February 1996 dollars.

SOURCE: Data are from the 1996 Displaced Worker Supplement.

Table 2.22 Netherlands: Estimates of Changes in Earnings after Displacement

	All workers					
	No tenure criterion		Tenure 1 yr. min.		Workers with tenure ≥1 yr.[b]	
Variable	estimate	(std. error)	estimate	(std. error)	estimate	(std. error)
Constant	0.160***	(0.036)	0.197***	(0.038)	0.199***	(0.046)
log Tenure[a]	0.016*	(0.009)	–0.011	(0.015)	–0.025	(0.018)
(log Tenure)²[b]	–0.004	(0.005)	0.001	(0.005)	0.009	(0.016)
log Age[c]	–0.101*	(0.053)	–0.087	(0.053)	0.002	(0.062)
(log Age)²[b]	0.272*	(0.153)	0.281*	(0.153)	0.190	(0.185)
Spell[d]	–0.008***	(0.003)	–0.008***	(0.003)	–0.008**	(0.004)
d^{I}_{displ}[e]	–0.003	(0.033)	—		—	
d^{II}_{displ}[f]	—		–0.049	(0.040)	–0.050	(0.038)
Female	–0.025	(0.024)	–0.024	(0.024)	–0.024	(0.030)
Education						
Intermediate	–0.002	(0.027)	–0.004	(0.027)	0.013	(0.032)
Higher	–0.022	(0.035)	–0.022	(0.035)	–0.043	(0.041)
University	–0.030	(0.056)	–0.029	(0.055)	–0.083	(0.068)
Married/cohabitating	–0.049	(0.029)	–0.051*	(0.029)	–0.067*	(0.035)
Non-Dutch	0.078	(0.074)	0.069	(0.074)	–0.012	(0.086)
Tenure <1 yr.	—		–0.104***	(0.040)	—	

(continued)

Table 2.22 (continued)

Variable	All workers: No tenure criterion estimate (std. error)	All workers: Tenure 1 yr. min. estimate (std. error)	Workers with tenure ≥1 yr.[b] estimate (std. error)
R^2	0.024	0.031	0.029
N	1,069	1,069	668
No. displaced	168	116	116

NOTE: Standard errors are in parentheses. Data on all transitions between jobs with or without intervening non-employment spells (*E-E*, *E-U-E*, and *E-N-E*) are included. Dependent variable is the change in log real after-tax monthly earnings between the pre- and postseparation employment spell. Reference states are "nondisplaced," "male," "primary/lower education," "unmarried and not cohabitating," "Dutch," and "tenure ≥ 1 year"; "log tenure," "log age," and "spell" are included in deviation from their sample means. *** = Statistically significant at the 1% level; ** = statistically significant at the 5% level; * = statistically significant at the 10% level.

[a] "Tenure" = tenure on the preseparation job (in months).

[b] In "(log tenure)^2" and "(log age)^2," both "log tenure" and "log age" are in deviation from their sample means, which correspond to geometric means of tenure and age equal respectively to 18.0 months and 28.9 years in the full sample and 39.8 months and 29.9 years in the tenure-restricted sample.

[c] "Age" = the age at the date of the first interview (in years).

[d] "Spell" = the duration of the non-employment spell between the pre- and postseparation jobs (in months); 0 for *E-E* cases.

[e] The variable d^{I}_{displ} = a dummy indicating whether the separation was caused by displacement, using the definition discussed in the text.

[f] The variable d^{II}_{displ} = a dummy indicating whether the separation was caused by displacement, using the definition discussed in the text.

SOURCE: Based on the LFS.

Table 2.23 United States: Survey Date Labor-Force Status of Displaced Workers (%)

	All displaced		Males		Females	
Age (yr.)	In labor force	Retired/disabled	In labor force	Retired/disabled	In labor force	Retired/disabled
30–39	81.3	1.5	95.6	2.0	81.6	1.0
40–49	91.0	1.2	93.4	1.9	87.6	0.3
50–54	85.7	6.5	92.5	3.8	76.1	10.3
55–59	76.9	13.5	81.5	13.9	69.9	12.8
60–64	62.1	30.5	68.8	28.4	54.9	32.8

NOTE: The table shows the labor-force status in February 1996 of persons displaced during the 1993–95 period, from jobs lasting more than one year.

SOURCE: Data are from the 1996 Displaced Worker supplement and are weighted so as to be nationally representative.

Table 2.24 United States: Survey Date Labor-Force Status of Displaced and Nondisplaced Males (%)

	Men, not displaced		Men, displaced	
Age (yr.)	In labor force	Retired/disabled	In labor force	Retired/disabled
44–46	90.4	5.9	93.8	1.6
47–49	90.0	7.1	91.5	3.0
50–52	86.4	11.1	95.0	2.2
53–55	81.5	14.1	90.8	4.7
56–58	75.3	21.5	81.9	16.5
59–61	68.0	29.3	79.7	16.7
62–64	46.0	52.1	61.8	34.9

NOTE: The table analyzes labor-force status in February 1996. "Displaced" individuals are those losing jobs during the 1993–95 period due to plant closing, slack work, or a position or shift abolishment.

SOURCE: Data are from the February 1996 Current Population Survey and Displaced Worker Supplement and are weighted so as to be nationally representative.

Appendix

Details of Dutch Data Sources

THE FE DATA

The Firm Employment (FE) data were collected by the Dutch "Labor inspection," which is part of the Ministry of Social Affairs and Employment, and contain administrative data on workers employed in both the private and the public sector. For our analyses we use only private sector workers below 60 years of age with at least one year of tenure (unless stated otherwise).

The data are collected yearly (in 1993–1996) as repeated cross-sections from administrative wage records of a sample of firms by means of a stratified two-step sampling procedure. In October of each year, in the first step a sample of firms is drawn. In the second step, workers are sampled from administrative records of these firms corresponding to two moments in time, one year before the sampling date and at the sampling date. As the two-step sampling procedure is repeated in 1993, 1994, 1995, and 1996, we have information on separation and displacement between October 1992 and October 1993, October 1993 and October 1994, October 1994 and October 1995, and October 1995 and October 1996. For notational convenience, we label these four data periods by 1993, 1994, 1995, and 1996, respectively. It should be noted that workers who enter and leave a firm between these two sampling moments are never sampled by this method.

Because both the first-step firm sample and the second-step worker sample are stratified, we have to reweigh the data before performing any (cross-) tabulation. Firm strata are distinguished by firm size (number of employees) and sector. The number of workers sampled per firm depends on firm size; whether the worker is a new entrant, a stayer, or one who left in the previous period; and whether the employee is covered by a collective agreement. Weights for the firm strata are computed from the "Business Statistics" of CBS. Employee weights are calculated from the CBS statistic "Jobs of Employees."

Table 2.A1 provides some sample characteristics. It is useful to mention that the data contain very few missing cases. Job-complexity levels, for example, are known for more than 99 percent of the workers. Below we provide information on the construction of some of the key variables.

Displacement

All workers with at least one year of tenure who are laid off, plus all separations because of disability (DI), early retirement, and transitions into other

jobs directly at firms that face a (net) loss of more than 30 percent of their workforce.

Other Outflow

Workers who separate from a firm that is not shrinking by at least 30 percent because of (early) retirement, disability (DI), end of a test period, transition into another job, or expiration of a contract with a temporary work office.

Job-Complexity Level

We use the following classification of job-complexity levels:

Low

Simple, generally repetitive activities that take place under direct supervision. Little or no formal schooling or experience is required.

Intermediate

Less simple activities that partly take place without direct supervision. Administrative or technical knowledge is often required.

High

Activities that require a higher level of knowledge and experience and that take place without direct supervision. Also, management activities that require an academic degree or comparable level of learning.

Tenure

Measured in years (difference between starting and sampling dates).

Wage

Monthly wages (including extra-time payments, profit shares, and so forth) and hours worked are measured very accurately. We calculate gross hourly wages for each worker and deflate the wage by the all-item Consumer Price Index.

Wage Agreement

We distinguish three types of wage contracts. Most workers have a collective agreement (CAO) which is negotiated at the sectoral level or by leading firms within a sector. The Minister of Social Affairs and Employment has the right to force all other firms within a sector to follow an existing CAO, a practice which is labeled by AVV. The remaining workers have only bilateral employment contracts. These workers are, in general, employed at higher positions.

Part-Time–Full-Time

Part-time refers to working less than 100 percent of the regular number of hours in the worker's industry. Regular hours are determined by collective agreements; currently about half of Dutch industries set regular hours at 36 per week.

Education

Education refers to years of completed education. When it takes four years to complete higher vocational education, the reported years of schooling will be four years (plus the number of years it takes to finish high school and elementary school) even if the worker has spent more or fewer years to actually complete his higher vocational degree.

THE UI DATA

The UI data set is provided by Dutch Social Security Council (SVr) and contains administrative data from the sectoral organizations that implement the unemployment insurance system. Table 2.A2 reports results of our analysis of UI data. All cases of individuals applying for unemployment benefits in 1992 were included in the database, and, if necessary, followed up to September 1993. We create an initial data set by restricting the raw data to cases that can be linked to a local labor market—individuals who started collecting benefits in 1992 for whom sector, municipality, and month of inflow are known.[79] This data set contains 219,531 cases and is used for computing characteristics of local labor markets. Excluding all cases for which one or more regressor variables are missing leaves 209,478 cases. This data set is merged with local labor market characteristics computed from the initial data set and becomes the point of departure for the reemployment duration analysis. Below we give some details on measurement and construction of some of the variables.

Duration of Unemployment Insurance Benefits

Both the duration of the insurance benefits period and the destination state of individuals whose benefits expire are observed. Durations are observed in intervals. Thirteen biweekly intervals cover the first half year. Then we have one six-week interval, for durations between 26 and 32 weeks. On the interval 32 to 318 weeks we are able to distinguish 22 quarterly duration classes. The remaining durations are observed as being 318 weeks or longer. Since we are not considering benefit payments that started before 1992, and we are only following benefit recipients up to September 1993, there is no right-censoring because of observations in the residual class 318 weeks and higher. We observe unemployment spells that are continuing at the end of September 1993, how-

ever, and transitions out of unemployment insurance to destinations other than employment. In our analysis, both are considered to be right-censored.

Sanctions

The data set contains a variable indicating whether a sanction has been imposed at the start of the UI spell (because of a worker's responsibility for becoming unemployed). We do not use information on sanctions that are imposed during the UI spell, as these are related to behavior during the unemployment spell and not to any behavior that may have led to displacement.

Age

Age is computed as the age in years at the start of the individual's benefits spell.

Wage

Wage is the daily wage before taxes earned by the individual before becoming unemployed. It is the wage that is used by the administrative organization to compute the level of benefits. It is observed in 43 intervals—of width 10 f. up to 430 f.—and a residual interval for those earning over 430 f. The continuous wage variable is defined as the average wage in each wage class, or 435 f. for those in the highest wage class. An additional dummy variable is included for the highest wage class.

Provinces and Urbanization

Municipality codes are observed and recoded to provincial and urbanization dummies. The provinces are Groningen, Friesland, Drenthe, Overijssel, Flevoland, Gelderland, Noord-Brabant, Limburg, Utrecht, Noord-Holland, Zuid-Holland, and Zeeland. Urbanized areas are municipalities that are highly urbanized according to Statistics Netherlands (CBS): Amsterdam, Delft, The Hague, Groningen, Haarlem, Leiden, Rijswijk, Rotterdam, Schiedam, Utrecht, Vlaardingen, and Voorburg.

Part-Time–Full-Time

Like the wage information, this variable refers to the employment situation of the benefits recipient preceding the unemployment spell. Full-time refers to working 100 percent or more of the regular number of hours. Part-time refers to working less than 100 percent of the regular number of hours.

THE LFS DATA

The OSA Labor Force Survey follows a random sample of households in the Netherlands over time. On the basis of these data, sequences of labor mar-

ket states occupied by the respondents are reconstructed. Table 2.A3 provides some characteristics of the sample that is used in this chapter. The following labor market states are distinguished: employed, self-employed, unemployed, not-in-labor-force, military service, and full-time education. For each transition between two of these labor market states, the respondent is asked to provide a motive or cause selected from an extensive list of possible motives and causes:

1. Due to *Tweeverdienerswet* (law on double-income households).
2. I wanted a more interesting job.
3. I wanted a more secure job.
4. I wanted a job with better career opportunities.
5. I wanted a better paying job.
6. I would have lost my job anyway.
7. Unemployment benefits are sufficient.
8. I wanted a job.
9. Reorganization or plant closure.
10. Bankruptcy.
11. Family business closed or reorganized.
12. Laid off for other reasons.
13. Early retirement.
14. Retired, living off my investments.
15. Disability.
16. Marriage.
17. Birth of a child.
18. Move of household or partner.
19. My family situation did not allow it anymore.
20. I wanted to earn my own wage or an extra wage again.
21. My family situation allowed it again.
22. I wanted to be more among people.
23. I wanted to attend classes again.
24. I just finished my education.
25. I had to fulfill military service.
26. I just fulfilled military service.

Most respondents, 78 percent, do not experience a labor market transition. Almost all respondents make fewer than four transitions (99 percent). The low number of transitions can be explained by the relatively short observation period (at most five years) and the fact that most respondents are breadwinners, who can be expected to have low job mobility. At the date of the first interview, 62 percent of the respondents are employed, whereas 27 percent are nonparticipants, and 7 percent are unemployed.

In the LFS, three types of transitions can be the result of displacement: job-to-job transitions (E-E), transitions from employment to unemployment (E-U), and transitions from employment to not-in-the-labor-force (E-N). As noted earlier, the LFS provides a self-reported motive or cause for each transition in the data set, and it provides information on whether the transition was made voluntarily. This information can be used to identify displacement. For instance, if "reorganization or plant closure" is reported as a cause for leaving a job, the worker is clearly displaced. There are several other motives which could indicate displacement. It could have occurred through DI, in which case disability may be reported as a cause for leaving employment. In deciding which motivation-voluntariness combinations identify displacement, we had to recognize that the reported motivations and voluntariness are heavily liable to subjective perceptions (like the distinction between a quit and a layoff). Having this in mind, we decided to consider transitions with the following motivation-voluntariness pairs as displacement.

The motivation "I would have lost my job anyway" will most likely be applicable to situations in which people anticipate displacement. In this case we take both voluntary and involuntary as involuntary transitions, because there seems to be no reason to believe that one or the other excludes displacement. The same holds for the cause "reorganization or plant closure." For the motivation "early retirement" involuntary transitions seem most likely to denote displacement. Voluntary early retirements, on the other hand, will probably cover individuals who prefer to stop working irrespective of economic conditions in the firm; these individuals would have reported "would have lost job anyway" in case of displacement. Finally, we have the transitions into DI. For this motivation we distinguish between E-E and E-U transitions, on the one hand, and E-N, on the other. We think that in case of an E-E or E-U transition, both voluntary and involuntary transitions denote displacement, because these people keep working or are searching for a job after the transition; they are not really incapacitated for work.[80] For E-N transitions, we assume that displacement is indicated by voluntary transitions, while involuntary transitions cover transitions for pure medical reasons.

More details on the LFS data can be found in van den Berg and Ridder (1998) and van den Berg (1992).

Table 2.A1 Netherlands: Weighted Means in FE Data for the 1993–96 Period

Variable	Mean
Year[a]	
1993	0.23
1994	0.24
1995	0.25
1996	0.28
Gender	
Female	0.37
Male	0.63
Coll. agreement	
CAO[b]	0.72
AVV[c]	0.05
None	0.23
Job-complexity level	
Low	0.19
Intermediate	0.70
High	0.11
Education (yr.)	11.3
Age (yr.)	34.1
Tenure (yr.)	4.1
Real gross hourly wage (guilders)	27.1
Total no. of workers	102,141

NOTE: Workers older than 60 and workers with less than one year's tenure are excluded.

[a] "Year" = the sampling year. Note that data on two consecutive years for each worker are collected at a single sampling date, October of the sample year, by reviewing the administrative records of both the sampling date and one year before the sampling date.

[b] "CAO" = coverage by a collective agreement.

[c] "AVV" = coverage by a mandatory extension of such a CAO.

SOURCE: FE data.

Table 2.A2 Netherlands: Some Characteristics of UI Data

Characteristic		
No. of spells	209,478	
Terminated by		
Reemployment	0.56	
Maximum entitlement	0.12	
Transition into DI	0.07	
End of observation period	0.17	
Other[a]	0.08	
	Mean	Std. dev.
Nondisplaced (sanction)	0.13	
Age (yr.)	32.0	10.9
Daily wage (guilders)	122.5	65.9
Female	0.43	
Urban	0.17	
Part-time	0.29	
Married	0.40	

NOTE: Wages are observed in 10-guilder intervals and are right-censored at 430 guilders. Sample mean and standard error of wages are computed by recoding wages to mean interval wages, or to 435 guilders if right-censored.

[a] "Other" includes reaching age 65, death, military service, and self-employment, among other things, all of which occur in less than 0.5 percent of the cases.

SOURCE: UI data.

Table 2.A3 Netherlands: Characteristics of LFS Earnings Sample

	All workers		Workers with tenure ≥1 yr	
Variable	Mean	Std. dev.	Mean	Std. dev.
Ratio post- to preseparation earnings[a]	1.22	0.62	1.24	0.55
Tenure (months)[b]	44.4	71.0	67.5	81.5
Age (yr.)[c]	30.0	8.1	31.0	8.3
Spell (months)[d]	0.7	3.5	0.6	3.3
Spell (nonzero spells only, in months)	8.8	9.5	10.4	10.1
Education				
Primary/lower sec.	0.36		0.34	
Intermediate	0.41		0.43	
Higher	0.18		0.19	
University	0.05		0.05	
d^{I}_{displ}[e]	0.16		—	
d^{II}_{displ}[f]	0.11		0.17	
Female	0.40		0.36	
Married/cohabitating	0.69		0.75	
Non-Dutch	0.03		0.03	
Total no. of individuals	1,069		668	
No. of nonzero intervening spells	81		37	

[a] "Ratio post- to preseparation earnings" = real after-tax monthly earnings in the preseparation and the first postseparation jobs.

[b] "Tenure" = tenure on the preseparation job; it is used to select the cases in the right panel.

[c] "Age" = age at the date of the first interview.

[d] "Spell" = the duration of non-employment spell between the pre- and postseparation jobs (0 for *E-E* cases).

[e] d^{I}_{displ} is a dummy variable indicating whether the separation was caused by displacement (1) or not (0), using the definition discussed in the main text.

[f] $d^{II}_{displ} = d^{I}_{displ}$ with the additional requirement that the tenure of the displaced individual equals at least one year.

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