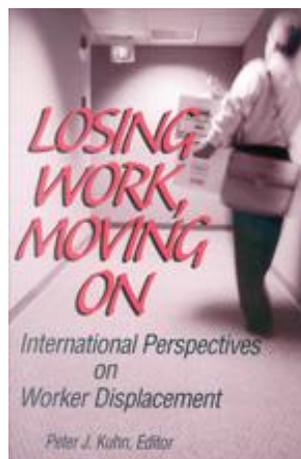# W.E. UPJOHN INSTITUTE
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Employment Protection and the Consequences for Displaced Workers: A Comparison of Belgium and Denmark

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A Comparison of Belgium and Denmark

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INTRODUCTION

Belgium and Denmark offer marked contrasts in many of their labor market institutions. Belgium has long been considered by many as exemplifying the economic problem known as Eurosclerosis. Indeed, Belgium did have (and to some extent still has) almost all of the negative institutional characteristics often associated with poor economic performance: high job protection, rigid wages, and generous unemployment insurance compensation. Denmark, on the other hand, has long been considered as an example of a country that has successfully achieved a good balance between social protection and economic growth. Below we shall discuss the differences between the two countries in detail, but in Table 6.1 we present some of the features of the two labor markets along with those of a selection of other countries, to provide some context. These rankings are taken from the World Eco-

nomic Forum's 1997 global competitiveness report.[1] The table gives the rankings (for 5 out of 53 countries) for various labor market indicators. In each case a lower ranking (closer to 1) means "more advantageous for employers" (or, as conventionally seen, as bad for workers). Of particular note is the fact that Belgium consistently has high scores, indicating "negative" institutional characteristics. On the other hand, Denmark is much more mixed. For example, it is seen as having generous unemployment insurance (UI) provisions but it also has the lowest impediments to hiring and firing (lower even than Singapore or Hong Kong).

Belgium and Denmark are both small open economies whose primary trading partner is Germany. They also both have a relatively generous social safety net. The major difference between their labor markets is the higher firing costs in Belgium. Thus it is very tempting to compare the outcomes of workers in the two countries who are displaced from a long-tenure job to identify how these outcomes differ and whether they can be attributed to the differences in firing provisions. This comparison is made even more attractive by the availability of two comparable administrative data sets describing the Belgian and Danish labor markets. In this work, we will use these data sets to compare worker displacement and worker adjustment to displacement in Belgium and Denmark.

LABOR MARKET INSTITUTIONS

Employment Protection

As in the United States, Belgian law recognizes the basic principle of employment at will. Thus, with a few exceptions (for example, union activity and pregnancy) employers rarely have to demonstrate just cause when dismissing an employee. Unlike the United States, however, laying off workers can be very costly in Belgium due to significant legislated notice periods and severance payments, especially in the case of white-collar workers. In Belgium, the required advance-notice period for blue-collar workers is four weeks for workers with fewer than 20 years of service, and eight weeks for those with more

than 20 years. Low-wage white-collar workers are given three months of notice plus three months for every five completed years of seniority.[2] For high-wage white-collar workers, these are lower bounds. The actual period of notice has to be set in agreement between the employer and the employee. When no accord can be reached, the length of notice is set by the labor courts. According to Blanpain (1994), the length of notice courts grant to these high-paid employees is a function of age, specialization, tenure, and wage. These lengths can go as high as 36 months. Of course, these restrictions do not apply during trial periods (generally two weeks for blue-collar workers, but up to six months for white-collar workers). It is worth noting that during the period considered here, protections were sharply reduced for some categories of white-collar workers. In addition to notice, Belgian workers (both blue- and white-collar workers) are given large severance payments in case of plant closings. These payments amount to roughly one month of salary per year of seniority, plus some additional compensation for high-wage and older workers. Mass layoffs also require some severance pay, although much less generous than plant closings.

In contrast to this, the Danish industrial relations system is characterized by a small amount of interference from the state, which includes some very limited employment-protection legislation. There are two major provisions in the legislation, which are both about advance notice. The first provision, which is limited to white-collar workers, requires that advance notice be given. The length depends on the tenure of the worker, with a maximum length of six months. This set of rules was enacted in 1938. The second set of provisions encompasses the different rules about mass layoffs enacted by the European Union (EU). The Danish legislation has followed the minimum required by these EU rules, which have undergone some changes since Denmark joined the EU in 1973. The restrictions on the behavior of the employers are moderate: they have to submit a notice to the regional labor market board and they have to go into negotiations with their employees before the layoff can be enacted. Other than this, general rules about employment protection are absent from the Danish labor market. Thus there is a complete absence of severance pay, unless it has been agreed upon in a voluntary contract between the employer and the single employee. Such agreements are relatively uncommon. Just as in Belgium, procedures for dismissal are also

absent; that is, employers are not required to act "fairly" or in a "socially responsible" way. It should be noted, however, that there are some provisions for specific groups in the labor market; these include, for example, pregnant workers, and workers on maternity leave, and persons elected by their fellow workers as representatives for negotiations with the employer. These provisions do not apply in the case of mass layoffs, however.

Employment-protection provisions also play a close-to-negligible role in Danish unions' collective agreements. With few exceptions, Danish collective agreements do not include such employment-protection provisions as advance notice and severance or redundancy pay. One of the reasons for this absence can be traced back to the formation of the Danish collective bargaining system. As in most other countries, Danish employers tried to avoid recognizing the right of workers to organize and bargain collectively. After a four-month nationwide general lockout in 1899, the Confederation of Danish Employers conceded. In return for recognition the trade unions granted the employers the "right to manage" in the "general agreement" between the two organizations, which was the main outcome of the conflict. The interpretation of "right to manage" is the (nearly) unlimited formal right of the employers to decide which workers to hire and which workers to fire.

Wage Setting

Union membership is very high in Belgium, and coverage rates are even higher. All firms with 25 or more employees are *de facto* unionized, since they are required to have an elected works council, and only union members can be elected to these councils. Nonunionized firms are covered by any relevant contract that has been extended. Inside firms, workers can choose not to be union members. Those who do so won't pay dues, but they will still be covered by all the relevant agreements. They cannot be candidates to the works councils, but they can vote.   Finally, two or more unions can coexist and compete for membership inside the firm.

Wage bargaining in Belgium has a pyramidal structure, in which contracts can be bargained at the national, industry, and firm level. Agreements struck at a higher level immediately become lower bounds

for bargaining at lower levels. These of course limit downward real-wage flexibility at the firm level, especially given the fact that as a general rule, Belgian wages are automatically indexed. The main feature of the structure of the Belgian pattern of wage bargaining pertinent to our study is the portability of seniority. Workers changing jobs between firms within the same bargaining unit (often an industry) keep their accrued seniority. This considerably limits a worker's ability to accept a wage cut, even if he or she is willing to do so.

As in Belgium, the Danish labor market is heavily unionized, with 80–90 percent of Danish workers being members of trade unions. The share of workers covered by collective agreements is not known; recent figures of as low as 50 percent have been suggested, although a more likely figure is about 75 percent.[3]

For the time period considered below, centralized negotiations in the private sector took place every second year between the Confederation of Unions, which represents both skilled and unskilled workers, and the Confederation of Employers. For wages the negotiations establish a minimum wage level, so that in more decentralized negotiations afterwards (at the plant level, for example) lower wage levels cannot be agreed to. Other items in the centralized wage negotiations are provisions about holidays, working hours, and overtime. Bargaining can also occur at several lower levels, including between single employers and shop-stewards, and can cover a wider range of issues.

Interference by the state in the bargaining process is limited to the centralized level and, then, only to instances where agreement has not been reached. The state does not extend contracts between employers and unions to employers who are not covered by collective agreements. There are no formal minimum wage laws in Denmark. This implies that despite the fact that the Danish system at face value looks very unionized and centralized, there are loopholes with respect to the acceptance of wage reductions.

Unemployment Insurance Provisions

The Belgian system of unemployment insurance is said to be one of the most generous in the world (Burda 1988). As a general rule, benefits do not expire in Belgium. They are reduced, however, after both one and two years of unemployment. In fact, a closer look at the

Belgian UI system indicates that it hardly qualifies as an insurance system. First, students can qualify for benefits even if they have never been employed. Second, and more importantly, benefits are means tested. The official replacement rate is 60 percent of the lost wage during the first year of unemployment and 40 percent after that. But, practically, these rates are meaningless. Many UI recipients receive compensation based entirely on family status and income. Thus "heads" of households receive a flat amount which can be higher than 60 percent of their lost wages, while the benefits of most other workers are limited by a cap and are often below 60 percent of their lost wages. Third, while there is a search requirement attached to UI benefits, this requirement is hardly ever enforced.

At the beginning of this century the Danish state began to subsidize the unemployment insurance system run by trade unions, who had set up special UI funds for this task. Since a reform of the system in about 1970, the UI funds no longer bear the marginal burden of expenditures for unemployment benefit. Each person pays a fixed fee in order to be a member of the UI system and the Danish state covers the remaining part of the expenditures. The UI funds are, in principle, separate administrative units, but in practice there is a close connection between the unions and the UI funds. The funds are closely regulated by the state, however, with respect to benefit levels, entitlements, and so on. One of the duties resting on the UI funds is to test that unemployed members actually search for a job. The general impression is that there is considerable variation across UI funds with respect to the efficiency with which this task is carried out.

Eligibility for unemployment benefit in Denmark is limited to persons who are members of an unemployment insurance fund. About 80 percent of Danish private sector workers are members of a UI fund. In order to become a member, workers have to fulfill a requirement of work experience. In the 1980s, six months of work within one year was required. However, persons who graduate from schools aiming at a particular trade or as skilled workers in an apprenticeship system also have a right to become members of a fund.

Concerning benefit levels, the Danish UI system is closer to a true insurance scheme than the Belgian one in that it does not have a means test for benefits. At the same time, however, it also has many features (such as the absence of differentiation with respect to risk) that reduce

the insurance element. It is considered generous compared to most other countries, both with respect to the level and duration of benefits. The maximum amount in unemployment benefit is 90 percent of the previous wage, but this is obtained only by workers with low previous wage levels. At the beginning of the 1980s, the benefit level was capped at about the average wage level for workers in the private sector. Since that time, this maximum has been eroded considerably so that now the average replacement ratio is about 65 percent. Thus, Danish workers with high wage levels have a replacement ratio that is somewhat lower than in many other countries. Formally, there is a maximum duration period, but until the beginning of the 1990s unemployed workers could become eligible for continued benefits by participating in a public employment scheme. This implied that the duration period was practically unlimited.

Although the administration of UI funds is in the hands of individual trade unions, there is also a government labor exchange system that is directly responsible for matching unemployed workers and vacancies. When a firm notifies the labor exchange of a vacancy, the latter is required to identify a suitable unemployed worker and send him or her for an interview. If the worker is offered the job and refuses, the labor exchange is required to contact the UI fund and the worker loses benefits for five weeks. This is the formal procedure, but the unions also take an active role in finding jobs.

Overall, it is extremely difficult to make cross-country comparisons of the "harshness" of the pressure unemployed are exposed to from authorities, labor unions, or social norms in society. Within Scandinavia, however, there is no doubt that the Danish system is more easygoing than the Swedish and the Norwegian systems. This applies both with respect to the formal rules and to the way workers are assigned to jobs. One of the reasons is that trade unions in the other Scandinavian countries are organized as industrial unions, while the Danish ones are organized according to trade or education. Thus, the Danish system is somewhat more hesitant with respect to the demand that the unemployed search for jobs for which they have not been educated.

DATA

In this chapter, the aim of our procedures with respect to data selection and definition of variables is to come as close as possible to similar definitions for Belgium and Denmark, so that the results for the two countries are as comparable as possible. When it is possible or desirable we adopt the definitions in Jacobson, LaLonde, and Sullivan (1993), which is the main study on displaced workers using administrative data for the United States. This implies that the results in this study are to a certain extent comparable to the results for the United States as presented in the study by Jacobson, LaLonde, and Sullivan. In some instances we could come close to their study for one of our countries, but not for the other. In such cases we have chosen to select the sample to maximize comparability between Belgium and Denmark. A detailed description of the underlying data sets and our selection of extracts therefrom, with a discussion of a broad range of comparability issues between countries, is provided in the appendix to this chapter. In what follows we provide a broad overview of the main data issues relevant to understanding and interpreting our empirical results.

The Data Sets

For Belgium, we use administrative data from the Belgian social security system. All Belgian workers, with the exception of tenured employees of the federal government, are included in that database. The data provide one record per employee per employer per year, plus information about potential spells of unemployment. In these records, we directly observe the age and gender of the worker, the wage, the number of days worked, and a broad occupational classification (either blue-collar or white-collar). From these records, it is possible to reconstruct employee and firm histories and a (censored) measure of tenure. We do not, however, directly observe the reasons for separation from a job. Nor do we observe any family characteristics, so that we cannot reconstruct UI benefit entitlements. In our computations for both countries, public sector jobs will be excluded (although workers who are displaced from a private firm and find a job in the public sector will be included).

The Danish data are based on the fact that all Danish residents have a personal number. A very wide variety of transactions are recorded against these personal numbers. These data are then centralized and collated by Danmarks Statistiks and are available for research purposes (subject to very stringent controls to maintain confidentiality). Thus, in principle, it is possible to track all adult Danish residents from 1980 to 1994 (the latest year for which information is available) and to analyze a wide variety of behavior. Moreover, individuals can be linked to one another to form households and they can also be linked to the plants at which they work, which can also be followed over time. Thus there is considerable scope for research into the labor market encompassing demographic and plant information. In this study we take a subsample of workers in private firms and follow them from 1980 to 1991. Unfortunately, although the initial sample size is reasonably large (37,319 workers), we are left with only a few workers in specific strata, which somewhat limits the precision of some of the analysis. For example, the restriction to high-tenure workers leaves only 15,860 workers and the number of these displaced in our chosen reference year is only 547!

In both countries we focus on displacements that occurred in one particular "reference year," close to the end of the data series available to us. Reference years were chosen to allow us to follow workers for up to three years after displacement, and (by following workers before displacement) to construct (left-censored) tenure measures for as long as possible before displacement. Our reference years are 1983 for Belgium and 1988 for Denmark. Aside from timing, the only other major difference between the two data sets is the fact that the Belgian data are firm-based, while the Danish are plant-based. A second (minor) difference is that all point-in-time wage and employment variables for Belgium are defined for the end of the year, whereas they are defined for mid November for Denmark.

Defining Displacement

We will label as "displaced" all the workers who separate from a firm (or plant) where employment has been reduced by 30 percent or more during the reference year and which had more than five employees before this reduction in employment. In the sample used below,

multiple job holders are always excluded and workers having less than three years tenure at the time of displacement are usually excluded. We have also constructed two comparison groups. The first one is made up of workers with at least three years' tenure who continued to be employed at the end of the displacing year in firms (plants, for Denmark) which displaced workers. The second comparison group is made up of workers with at least three years' tenure employed at other plants or firms. The exception to the three-year-tenure rule occurs when we compute displacement rates. Thus the analysis of the postdisplacement outcomes below includes only workers with three years or more of tenure and excludes multiple-job holders. This study of outcomes will look at displaced workers' histories up to three years after their job loss.

Firm or Plant Identification and "False Death"

Sometimes, firms or plants disappear from the Belgian and Danish data. According to the above definition, these firms will be treated as displacing all their workers as they shrink to a size of zero (or "die"). One potential problem with this is the possibility that firms may disappear from the data not because they close, but because they are acquired by another firm or are involved in some other kind of reorganization that does not involve laying off the workforce. Given differences in the nature of the data available to us, we deal with this "false deaths" problem in somewhat different ways in the two countries under study.

In Belgium, firms are identified by a unique taxpayer number that can survive change in ownership. A firm ID number will change only if the firm disappears as a corporation and all its debts have been paid in full; the ID will not change if the corporation is taken over. Given the nature of Belgian industrial organization (big holding companies holding shares in many corporations), corporations rarely disappear. Mergers do happen though, and they are probably more rare than in the United States. Some firms also die and revive under different names. To control for these possibilities we proceeded as follows: vanishing firms where at least 70 percent of the workers were reemployed (at any firm) in the next year, and where 70 percent of those rehired were rehired in a single firm, were not considered to be displacing firms.[4]

In Denmark, an establishment is considered (by Danmarks Statistiks) to be continuing from one year to the next if any one of the following four criteria is satisfied: there are the same owner and same industry; there are the same owner and largely the same employees; there are the same employees and the same industry; or there are the same employees and the same address. More precisely, "same industry" means the same ISIC code at the 5-digit level. "Same employees," in the second case, means that at least 30 percent of the first plant's employees remain at the plant or make up at least 30 percent of the second-year employees. "Same employees," in the third and fourth cases, means that at least 30 percent of the first group of employees remain at the plant *and* make up at least 30 percent of the second-year employees.[5]

Even with such a classification scheme, it remains possible, of course, to categorize workers as "displaced" even though we would not consider them as being genuinely displaced. This can happen if some of the workers at one plant are taken over by another plant. Our database contains variables to take this situation into account. In shrinking but continuing plants, sometimes a group of two or more workers leave the "main" plant and move to a second plant together. Danmarks Statistiks calls such plants "spinoffs." In such situations we classify workers remaining in the main plant as not being displaced, but those moving into the spinoffs as displaced. Among plants that disappear completely from the data, a plant is considered to be "taken over" by a new plant if at least two of its workers are employed in the new plant *and* these workers constitute at least 30 percent of the workforce in the closed plant. Workers involved in such "takeovers" are not treated as displaced workers in our analysis (they are placed in the category "other workers").

RESULTS

Who Is Displaced?

To put our results into context, we first examine some aggregate statistics for Belgium and Denmark for the two years before and after

our reference years, which are 1983 for Belgium and 1988 for Denmark. These statistics are presented in Table 6.2. In the period before the reference year, Belgium was suffering a recession and unemployment grew quite quickly (from 7.8 percent to 11.7 percent). In contrast, the prereference years in Denmark were relatively healthy, although the economy declined in the reference year. The postreference-year experiences are much more similar, except that average manufacturing wages declined in Belgium but not in Denmark. In both countries unemployment increased a little in the postreference period even though there was modest real growth. We take these statistics to indicate that the postreference-year macro environment in the two countries was similar and is unlikely to account for any large differences in outcomes that we observe below.

In Table 6.3 we present the incidence of displacement in Belgium and Denmark (for all private sector workers). Although there are some significant differences, the most striking feature of this table is that long-tenure workers (those with three or more years with the firm or plant) are just as likely to be displaced in Denmark as in Belgium (3.45 percent and 3.41 percent, respectively). This comes as something of a surprise since, as we have seen, Belgium has very stringent layoff rules and Denmark has very weak ones. The major difference between the two countries is that short-tenure workers in Denmark are more likely to be displaced and Danish workers (short-tenure and long-tenure) are much more likely to be displaced from a shrinking firm than from a dying one. There are two possible explanations for this last result. It may reflect the fact that in Belgium it is more difficult for firms that continue in business to lay off workers, or it may be that Danish plants are less likely to go out of business, perhaps because they are larger. With the data at hand we are unable to distinguish between these alternatives.

In Table 6.4 we present some of the characteristics of displaced workers. Since our primary focus is on long-tenure workers, we present results only for workers who had at least three years of tenure at the plant or firm where they worked in the sample period. We also break down the sample by whether the firm closed down or not. Finally, we present the same statistics for workers who continued in "shrinking" firms and for those who were not in firms that displaced workers ("other workers"). Comparing the latter to the displaced sam-

ple, we see that displaced workers in Belgium tend to have slightly lower tenure (but remember that all the workers here have at least three years' tenure); to have lower wages; to be more likely to be blue-collar; and to work for smaller firms than "other workers." It is also clear that women are more likely to be displaced. There are similar differentials for firm size, tenure, and being blue-collar in Denmark, but the differences in wages and gender composition are much smaller there.

Finally we present an analysis of the characteristics of the displaced using a simple probit for being displaced (see Table 6.5); note that here we include all workers, not just the long-tenure ones. The first column provides a comparison with "all nondisplaced workers" and the second is a comparison with those who remain in displacing firms. In Belgium in the first comparison, the categories more likely to be displaced are: male, blue-collar, lower wage, and low tenure. Controlling for tenure, workers in all age groups over 20 are more likely to be displaced than teens, but there is no apparent age difference in displacement rates between the ages of 20 and 59. Workers over 60 appear to be at somewhat greater risk than workers with similar tenure under 60. The results for the comparison with those in displacing firms are somewhat different. In particular, the tenure effects are now stronger (with workers with less than one year of tenure being much more likely to be displaced than other workers). Despite the differences in sign, the age effects are similar (note that the comparisons are with the "under twenty" group so that the change in sign tells us something only about this group). In Denmark, the probabilities of being displaced are quite similar to those for the "other" comparisons in Belgium. Thus the first columns of Tables 6.4 and 6.5 give a similar picture in comparisons of who is displaced in the two countries except that for the comparison with "nondisplaced" workers, the Danish results do not show any significant differences in the tenure effects. All in all, there are only relatively minor differences between the personal characteristics of workers who are displaced in Belgium and Denmark. The main differences seen in Table 6.4—in the proportion who are white-collar workers and the firm size—reflect differences found in the "other worker" sample. As we shall see below, there are quite sharp differences in the postdisplacement experiences for workers in the two countries and the results presented in Tables 6.4 and 6.5 suggest that these

differences in outcomes are unlikely to be due to the sample composition of the displaced groups.

Postdisplacement Employment Outcomes

In Table 6.6 we present some statistics on the unemployment outcomes after displacement (once again, only for long-tenure workers). Specifically, this gives details of how many months of unemployment displaced workers experience in the three years after their displacement. It is most important to note that these statistics give information on (registered) unemployment after displacement and *not* non-employment. Thus, someone who withdraws from the labor force after displacement or remains in the labor force but does not register as unemployed would not be included in the "unemployed" here. These results reveal some extraordinary differences between Belgium and Denmark and are quite different from experiences in other countries. First, almost two-thirds of displaced Danish workers experience no interruption in employment (or unemployment in the subsequent three years) as against one-third for Belgium. The latter figure is more in line with the international experience, so one immediate worry is that the Danish figure is incorrect. One possibility is that in the Danish sample we are misclassifying workers and our displaced sample actually includes some workers who found employment in other plants within the same firm. Although we cannot completely rule this out, as we have documented in the data section above we have gone to great lengths to ensure that we are not making such an error. We also note that the proportion of all workers in Denmark who experience some unemployment in our reference year is 23 percent. This is in line with aggregate statistics that are compiled from different sources, leading us to believe that our calculations are not seriously biased.

Turning to workers who do experience some unemployment, we see that Danish workers are unemployed for an average of five months but Belgian workers have average spells of 15 months (but note that any spell is truncated above at 36 months). Now it is the Belgian results that are out of line with the wider international experience. To investigate these differences, we also present selected quantiles of spell lengths in the lower portion of Table 6.6. From these we see that Danish workers either move out of unemployment relatively quickly (more

than 50 percent of those exiting unemployment do so within about two months) or tend to stay for long spells. In contrast, the majority of workers who become unemployed in Belgium tend to have long spells—less than one-half of them have left unemployment after one year.

Combining the probability of having any unemployment and the mean spell length, we see that a Belgian displaced worker has an expected unemployment spell of about 10 months as against 6 weeks for a Danish worker. What could account for such large differences? Here we list some possibilities, informally. The first is that there is a difference in definitions. The definitions of unemployment in our two samples are not exactly the same, but they are so close that it is not credible that the differences in outcomes are attributable to this. A second possibility is that there are differences in sample composition, that is, that the composition of the displaced worker groups are very different in the two countries. As we saw in Table 6.4, however, the two samples appear to have similar personal characteristics so that it is unlikely that it is this that accounts for the differences in unemployment outcomes. A third possibility is that the differences are due to differences in notice provisions. As discussed in the institutions section, workers in Belgium generally receive more advance notice of closures and mass layoffs than workers in Denmark. Conventional search models would then suggest the converse of what we observe. Similar remarks apply to a fourth possibility, namely, that the differences in outcomes can be attributed to differences in UI systems. Both Denmark and Belgium are usually regarded as having very generous UI systems (see, for example, Table 6.1 above) but, as discussed in the institutions section, this is something of an illusion for Belgium. In fact, an unemployed worker in Denmark is more likely to receive high benefits than a comparable worker in Belgium. This is because Belgian benefits are means tested so that married workers with an employed spouse do not receive much. Given this, we regard it as extremely unlikely that the differences in unemployment outcomes in Belgium and Denmark are due to differences in the UI system. Indeed, we can go further and question whether the "generosity" of the UI system in Belgium "causes" the observed long unemployment spells, given that the UI system in Denmark is at least as generous and unemployment spells are much shorter. This is clearly work for the future

but we note here that this conclusion—that the long spells in Belgium are unlikely to be solely the result of the UI system—highlights the virtue of making cross-country comparisons.

A fifth possibility is that the payment of severance pay to long-tenure workers in Belgium facilitates longer unemployment spells there. Certain aspects of the results presented here are consistent with this—for example, the longer duration for the longest-tenure workers (see upcoming discussion of Table 6.8). Moreover, this effect is absent for Denmark where severance pay is not usually given. This is certainly an explanation that deserves closer inspection. Since the data at hand do not report severance pay, we cannot follow this through here. A sixth possible explanation for the differences between the two countries is the different cyclical effects in the two countries. As discussed above, however, Belgium and Denmark experienced fairly similar cyclical conditions after the reference year; it is difficult to believe that such small differences could lead to such large differences in outcomes. Yet another alternative (number seven) is that because the UI system in Denmark is administered by the unions they have more incentive, or more ability, to find displaced workers new jobs. With respect to this hypothesis it is sufficient to note that although the unions administer UI payments they have no direct financial incentive to move workers from unemployment to a new job. It thus seems unlikely that unions' incentives explain the difference between the countries.

An eighth alternative is that labor-demand conditions differ significantly between the two countries. Although the cyclical conditions in the countries are similar, it is still possible that there could be permanently lower arrival rates of job offers in Belgium. In a conventional search model this would lead to longer unemployment durations. This would also be consistent with the major difference in employers' firing flexibility between the two countries: high firing costs in Belgium lead to employers being less willing to hire and, consequently, to longer unemployment durations. If this explanation is to be consistent with the roughly equal unemployment rates in the two countries (see Table 6.2), then it means that flows into unemployment must be much higher in Denmark. Given that displacement rates in Denmark are not dramatically higher than in Belgium (see Table 6.3), the bulk of Danish unemployment has to be the result of something other than displace-

ment; for example a higher quit rate. We cannot check this with the data at hand, but this is clearly a promising avenue of future research.

Finally, it could be that the differences arise because Danish wages are less rigid downwards. The aggregate figures on wage growth given in Table 6.2, however, suggest that, if anything, the converse is the case. These show that the average wage in Belgium declined in the year after the sample year but Danish wages did not. On the other hand, these aggregate changes may be masking changes for displaced workers in Denmark who take a job. Thus we need to look at what happened to the earnings and wages of reemployed displaced workers. We shall do this shortly. For now we anticipate those results and state that we do not believe that the very large differences in unemployment outcomes are attributable to a greater propensity for unemployed Danish workers to accept lower wages.

To complement the unemployment statistics of the previous table, we present reemployment rates at annual intervals after the displacement in Table 6.7. These largely confirm the analysis above—Belgian displaced workers have much lower subsequent reemployment rates than Danish displaced workers, particularly in the year after the displacement. One additional interesting feature in Table 6.7 is that Belgian workers who were in a shrinking firm in the reference year but were not displaced are significantly less likely to be employed in later years than "other" workers. This is not the case for Denmark—the employment rates for "other" workers and workers who stayed with shrinking firms are almost identical. Once again, the likeliest explanation for this is the difference in firing costs: Danish firms adjust more quickly to negative demand shocks and are less likely to experience persistent downsizing.

We end the analysis of reemployment with a regression analysis of the determinants of reemployment. Coefficients from comparable Cox partial likelihood models of unemployment durations in both countries are presented in Table 6.8. These coefficients give the (assumed proportional) impacts of different characteristics on the probability of being reemployed. In Denmark we can draw no firm conclusions regarding the determinants of reemployment, due to the small sample size. In Belgium, reemployment is significantly more likely for men, for white-collar workers, high-wage workers, young workers, and (controlling for age) high-tenure workers. As was discussed in Chapter

2 of this volume, this positive effect of tenure may reflect the greater advance notice and other reemployment assistance provided to senior workers under Belgium's strict system of employment protection law.

Postdisplacement Wages and Earnings

We turn now to earnings and wages for those who find a job. We present statistics on earnings in the years after displacement in Table 6.9; once again these are for long-tenure workers. The preparation of these figures makes them somewhat different from those presented for the United States by Jacobson, LaLonde, and Sullivan (1993). In the latter study the possibility of out-of-state migration (with consequent attrition from the sample) meant that Jacobson, LaLonde, and Sullivan had to condition on having some positive earnings in all of the comparison years after the displacement. In our analysis we condition only on being in employment at the end of the relevant year (actually, in November for Denmark—see the appendix for more details). In the top panels of Table 6.9 we present average earnings in the year, conditional on our employment condition, so these are comparable to those given by Jacobson, LaLonde, and Sullivan. These averages are not for the same people in each year so that employment change, wage changes, and selection are all confounded. In the lower panel we present mean log differences in annual earnings as compared to the displacement year so that the comparison in any year is with the same workers in the reference year (year 0). The most obvious feature of the lower panels is the very large drop for displaced workers in Belgium in the year after displacement. This reflects the fact that Belgian displaced workers are more likely than Danish displaced workers to have only part-year employment in the year after, even if they are back in work one year later. There is also a strong decline in year two for Belgian "nondisplaced workers at displacing firms." This mirrors the persistence in displacement seen in Table 6.7. Comparing the results for the two countries, we see that for Denmark even "other workers" record a small loss in earnings (of 1.5 percent) over the three years while displaced workers have a larger loss of 8.3 percent. Thus, Danish displaced workers seem to have a medium run earnings loss of about 6.8 percent as compared to "other workers." In Belgium, however, three-year earnings losses are actually smaller for displaced

workers than for "other workers." Indeed, Belgian workers who were not displaced ("other workers") experienced an earnings loss of 7.6 percent in the year after the reference year. This is consistent with the macro evidence on wage and employment changes in year one given in Table 6.2.

In Table 6.10, we present average wage levels and log wage changes. Once again, we concentrate on the latter. For wages the perverse effect noted for earnings for Belgium disappears. Now both Danish and Belgian workers show a decline relative to "other" workers. The order of the decline for Denmark is similar to that of earnings (a relative loss of 6.4 percent as against a relative loss of 6.8 percent for earnings). This suggests that all of the relative medium run negative impacts on earnings for Danish workers are driven by wage losses and not employment changes. In contrast, Belgian displaced workers suffered a relative wage loss of 3.7 percent as against a relative earnings gain of 6 percent. It is important in interpreting these results to keep in mind that we are always conditioning on being back in work at the end of the relevant year. For the reasons discussed above, this probably does not matter much for Denmark but in Belgium those who have found a job after one year are the exception rather than the rule. The finding that displaced Belgian workers who are reemployed are doing relatively better than those who were not displaced seems very likely to be a selection effect.

We finish our analysis in Table 6.11 with a regression of the wage loss for those who are reemployed within two years of the displacement. For both countries the coefficient on the lagged wage is significantly less than 1 so that higher wage workers lose relatively more. Moreover, this effect is more pronounced for Denmark, suggesting that higher wage workers in Denmark do a good deal worse; this is consistent with the earlier analysis suggesting that Danish workers go back to work much more quickly and suffer some wage loss as a consequence. There is no significant effect of age for workers aged between 20 and 60 but workers aged over 60 who choose to go back to work suffer very large falls: 14 percent for Belgium and 28 percent for Denmark. Both countries also show much larger wage losses for women (15 percent for women relative to men for Belgium and 17 percent for Denmark). Given that the reemployment probabilities seem to be lower for women than for men (see Table 6.8), this is clearly an important area

for future research. One other notable feature is that postdisplacement wage losses do not seem to be correlated with tenure (given the selection on having at least three years of tenure).

CONCLUSIONS

We have compared the displacement experience in two countries—Belgium and Denmark—that share some common features in their labor market institutions but that also display significant differences. In particular, both have what are thought to be generous UI systems, but firing costs in Belgium are high relative to other countries whereas firing costs in Denmark are very low by international standards. We found that displaced workers in Denmark are more likely to be displaced from a firm that continues in existence than are displaced Belgian workers. This is consistent with the fact that firing costs are much higher for Belgian firms and that, consequently, they are less likely to shed workers if they stay in business. Apart from this we did not find significant differences in the predisplacement characteristics of displaced workers in the two countries. When we compared postdisplacement outcomes we found very significant differences in employment outcomes but only relatively minor ones in wage losses for those who are reemployed. Belgian workers have an expected unemployment spell of ten months while Danish workers have an expected spell of only six weeks. We reviewed a number of possible explanations for this difference. In particular, we rejected the proposition that the longer Belgian spells are due to the UI system since the Danish UI system is even more likely to induce long unemployment spells. We concluded that of all of the explanations we examined, only one is likely to be the cause of the longer spells, namely, that there are permanent differences in the demand side and Belgian workers face a much lower arrival rate of job offers. This lower propensity to hire by Belgian firms is consistent with the differences in firing costs.

Notes

1. World Economic Forum rankings are based on a combination of objective information and employers' subjective rankings of the difficulty of making employment adjustments. See World Economic Forum 1997.
2. The threshold between low and high wages is set by decree and indexed.
3. Using a survey of private sector employees, Scheuer (1997) found that only 52 percent of the respondents answered that they were covered by a collective agreement. This figure is low compared to other information, including a more recent survey of about 2,000 firms with more than ten employees conducted by Statistics Denmark. In this survey, 69 percent of firms indicated that a majority of their employees were covered by collective agreements. When weighted by the number of employees in the firms, these responses suggest that 83 percent of the workers in firms with more than ten employees are employed in firms where the majority of workers are covered by collective agreements. However, the coverage among firms with less than ten employees is probably considerably below that for larger firms (the coverage among firms with 10–19 employees was 63 percent). Given that about 20 percent of Danish workers work in plants with fewer than ten employees and the 63 percent applies to firms with fewer than ten workers, then we get an average coverage of 79 percent. This figure is an upper bound. If we assume 50 percent coverage for firms with fewer than ten employees then we have an overall coverage of 76 percent. On the basis of these calculations, an estimate of 75 percent coverage of collective agreements among private sector employees seems reasonable.
4. A dying firm from which fewer than 70 percent of its workers failed to become reemployed would automatically be considered a displacing firm according to our 30 percent employment-reduction criterion above.
5. Although our data contain only a small sample of workers, it is important to note that the counts on which these definitions of continuity are based were generated by Danmarks Statistiks from the full population of employees at all plants. Thus we avoid the sampling and inference problem confronted by Bender et al. in their analysis of the French data in this volume.

Table 6.1 Labor Market Characteristics (Ranking out of 53 countries)

Country	Flexible hiring and firing	Low legislative restrictions on firing	Unemployment Insurance "meanness"
Belgium	39	46	52
Canada	10	11	24
Denmark	1	10	46
U.K.	8	5	10
U.S.A.	7	8	5

SOURCE: World Economic Forum (1997).

Table 6.2 Macroeconomic Environment in Belgium and Denmark

	Time to displacement year				
Characteristic	−2	−1	0	1	2
Year					
Belgium	1981	1982	1983	1984	1985
Denmark	1986	1987	1988	1989	1990
Real GDP growth rate					
Belgium	−1.4	1.5	−0.1	1.3	2.1
Denmark	3.6	0.3	1.2	0.6	1.4
Employment growth rate					
Belgium	−0.1	−2.0	−1.3	−1.1	0.0
Denmark	2.6	0.5	−0.6	−0.5	0.0
Unemployment rate					
Belgium	7.8	10.0	11.7	12.9	12.9
Denmark	7.9	7.9	8.7	9.5	9.7
Inflation					
Belgium	7.6	8.7	7.7	6.3	5.2
Denmark	3.3	4.0	4.5	4.6	2.6
Growth in real manufacturing wages					
Belgium	1.4	−1.4	−1.7	−2.1	1.4
Denmark	1.5	0.4	2.0	0.3	1.8

Table 6.3 Incidence of Displacement among Private Sector Workers in Belgium and Denmark (%)

Group of workers	Total	Firms shrinking	Firms dying
Belgium			
All displaced	4.78	2.67	2.11
≥ 3 yr. tenure	3.41	1.80	1.61
Denmark			
All displaced	6.61	4.96	1.65
≥ 3 yr. tenure	3.45	2.84	0.61

SOURCE: Authors' calculations.

Table 6.4 Characteristics of Displaced Workers with Tenure of at least Three Years in Belgium and Denmark

Group	Belgium		Denmark	
	Mean	Std. error	Mean	Std. error
All displaced workers				
Proportion men	0.68	0.002	0.68	0.02
Proportion white-collar	0.36	0.002	0.48	0.021
Age (yr.)	38.66	0.056	41.1	0.49
Tenure (yr.)	5.09	0.006	5.77	0.088
Proportion with more than 6 yr. tenure	0.56	0.002	0.56	0.496
Proportion displaced because of closure	0.48	0.002	0.18	0.016
Average daily wage lost job (BF or DKr)	1942	6.77	128.8	2.7
Average size of firm (no. of workers)	23.37	0.82	45.7	5.39
Number of observations	42,255	n.a.[a]	547	n.a.
Displaced workers in dying firms				
Proportion men	0.656	0.003	0.667	0.049
Proportion white-collar	0.332	0.003	0.563	0.051
Age (yr.)	37.95	0.080	40.4	1.18
Tenure (yr.)	5.104	0.008	5.57	0.212
Proportion with more than 6 yr. tenure	0.567	0.003	0.479	0.051
Proportion displaced because of closure	1.000	n.a.	1.00	n.a.
Average daily wage lost job (BF or DKr)	1.865	8.87	125.3	6.14
Average size of firm (no. of workers)	20.330	1.242	27.3	4.40
Number of observations	20,294	n.a.	96	n.a.
Displaced workers in shrinking firms				
Proportion men	0.707	0.003	0.683	0.022
Proportion white-collar	0.393	0.003	0.457	0.023
Age (yr.)	39.32	0.079	41.2	0.540
Tenure (yr.)	5.082	0.008	5.81	0.097
Proportion with more than 6 yr. tenure	0.555	0.003	0.528	0.023
Proportion displaced because of closure	0	n.a.	0	n.a.
Average daily wage lost job (BF or DKr)	2,014	10.10	129.6	3.01
Average size of firm (no. of workers)	24.824	1.057	50.8	6.77
Number of observations	21,961	n.a.	451	n.a.

	Belgium		Denmark	
Group	Mean	Std. error	Mean	Std. error
Nondisplaced workers in displacing firms				
Proportion men	0.704	0.002	0.660	0.019
Proportion white-collar	0.369	0.002	0.544	0.020
Age (yr.)	39.746	0.057	40.7	.4400
Tenure (yr.)	5.772	0.008	5.68	0.084
Proportion with more than 6 yr. tenure	0.542	0.003	0.497	0.020
Proportion displaced because of closure	n.a.	n.a.	n.a.	n.a.
Average daily wage lost job (BF or DKr)	2,053	8.54	127.4	2.03
Average size of firm (no. of workers)	24.824	1.057	69.5	11.03
Number of observations	39,231	n.a.	608	n.a.
Other workers				
Proportion men	0.732	0.000	0.668	0.004
Proportion white-collar	0.454	0.000	0.542	0.004
Age (yr.)	39.288	0.010	41.0	0.087
Tenure (yr.)	5.386	0.001	6.14	0.017
Proportion with more than 6 yr. tenure	0.703	0.000	0.608	0.004
Proportion displaced because of closure	n.a.	n.a.	n.a.	n.a.
Average daily wage lost job (BF or DKr)	2,294	1.35	131.2	.499
Average size of firm (no. of workers)	49.120	1.548	66.7	2.03
Number of observations	1,104,004	n.a.	14,705	n.a.

[a] n.a. = Not applicable.
SOURCE: Authors' calculations.

Table 6.5 Factors Affecting the Probability of being Displaced, Compared with Nondisplaced Workers in Belgium[a] and Denmark[b]

Worker group	Belgium relative to		Denmark relative to	
	All workers	Workers in displacing plants or firms	All workers	Workers in displacing plants or firms
Male	0.043 (.004)	−0.008 (0.009)	0.025 (0.023)	0.171 (0.048)
White-collar	−0.122 (0.003)	−0.014 (0.008)	−0.176 (0.022)	−0.213 (0.047)
log(wage)	−0.291 (0.004)	−0.066 (0.009)	−0.117 (0.025)	−0.206 (0.054)
Aged 20–29[c]	0.153 (0.008)	−0.133 (0.024)	−0.112 (0.037)	−0.104 (0.080)
Aged 30–39	0.161 (0.008)	−0.270 (0.024)	−0.137 (0.041)	−0.188 (0.088)
Aged 40–49	0.161 (0.008)	−0.304 (0.025)	−0.119 (0.042)	−0.236 (0.090)
Aged 50–59	0.172 (0.009)	−0.304 (0.025)	−0.135 (0.048)	−0.344 (0.098)
Aged 60 or over	0.250 (0.013)	−0.245 (0.032)	0.044 (0.093)	−0.160 (0.185)
Tenure of 1 yr.[d]	0.128 (0.005)	−5.95 (0.062)	−0.234 (0.029)	−0.279 (0.061)
Tenure of 2 yr.	0.017 (0.007)	−6.16 (0.063)	−0.333 (0.036)	−0.414 (0.074)
Tenure of 3 yr.	−0.051 (0.007)	−6.13 (0.063)	−0.473 (0.046)	−0.539 (0.092)
Tenure of 4 yr.	−0.020 (0.007)	−6.02 (0.064)	−0.445 (0.051)	−0.463 (0.102)
Tenure of 5 yr.	−0.033 (0.008)	−6.09 (0.064)	−0.470 (0.063)	−0.407 (0.126)
Tenure of 6 yr.+	−0.209 (0.005)	−6.16 (0.063)	−0.594 (0.033)	−0.340 (0.069)
Pseudo R^2	0.026	0.106	0.045	0.044
Sample size	1,861,806	142,275	37,319	3,494

NOTE: Standard errors are in parentheses.
[a] For Belgium, probit analysis of being displaced during 1983 (dependent variable = 1 if displaced).
[b] For Denmark, probit analysis of being displaced during 1988 (dependent variable = 1 if displaced).
[c] Omitted age is "less than 20."
[d] Omitted tenure is "less than one year."

**Table 6.6 Unemployment for Long-Tenure Displaced Workers in the
       Three Years after Displacement**

	Belgium	Denmark
Proportion of displaced workers with some unemployment	0.65 (0.002)	0.31 (0.020)
Mean number of months unemployed[a]	15.22 (0.068)	5.31 (0.585)
Percentile		
5	0.69	0.15
10	1.38	0.24
25	4.16	0.89
50	13.86	2.09
75	25.40	5.33
90	32.10	16.73
95	33.49	25.48

NOTE: Standard errors are in parentheses. Does not include non-employment spells that are not registered as unemployment.
[a] Maximum is set to 36 months.
SOURCE: Authors' calculations.

**Table 6.7 Reemployment[a] after Displacement in Belgium and Denmark
(Share of workers employed)**

	Years after displacement			
Group	0	1	2	3
Belgium				
Displaced workers	1	0.370 (0.002)	0.583 (0.002)	0.664 (0.002)
Nondisplaced workers at displacing firms	1	1	0.712 (0.002)	0.785 (0.002)
Other workers	1	0.930 (0.000)	0.871 (0.000)	0.892 (0.000)
Denmark				
Displaced workers	1	0.718 (0.019)	0.750 (0.019)	0.746 (0.019)
Nondisplaced workers at displacing firms	1	1	0.911 (0.012)	0.859 (0.014)
Other workers	1	0.957 (0.002)	0.918 (0.002)	0.879 (0.003)

NOTE: Standard errors are in parentheses.
[a] Proportion employed at the end of the year (Belgium) or in November of the year (Denmark).
SOURCE: Authors' calculations.

**Table 6.8 Duration Analysis of Reemployment for Long-Tenure
Workers in Belgium and Denmark**

Group of workers	Belgium	Denmark
Male	0.095 (0.014)	0.117 (0.202)
White-collar	0.142 (0.013)	–0.325 (0.193)
Log(wage)	0.192 (0.015)	0.221 (0.412)
Aged 20 to 29[a]	–0.090 (0.057)	–0.315 (1.082)
Aged 30 to 39	–0.200 (0.057)	–0.234 (1.094)
Aged 40 to 49	–0.417 (0.058)	–0.366 (1.108)
Aged 50 to 59	–0.941 (0.059)	–0.577 (1.105)
Aged 60 or over	–1.686 (0.075)	–0.709 (1.226)
Tenure of 4 yrs.[b]	–0.019 (0.020)	–0.282 (0.298)
Tenure of 5 yrs.	0.106 (0.021)	0.615 (0.364)
Tenure of 6+ yrs.	0.137 (0.017)	0.163 (0.230)
Sample size	42,223	135

NOTE: Standard errors are in parentheses. Cox non-parametric estimation of reem-
ployment hazard, compared to all nondisplaced workers, workers with three or more
years of tenure only.
[a] Omitted age is "less than 20."
[b] Omitted tenure is "three years."

**Table 6.9 Average Annual Earnings and Earnings Growth for Long-
        Tenure Workers by Years after Displacement**

Panel	−1 yr.	0	1 yr.	2 yr.	3 yr.
A. Average earning level of workers					
Belgium (1981 BF)[a]					
Displaced	397,783 (1,114)[b]	327,101 (1,354)	366,496 (1,516)	370,934 (1,548)	n.d.[c]
Nondisplaced	402,002 (1,157)	394,304 (1,390)	323,612 (1,435)	350,049 (1,575)	n.d.
Other	498,963 (245)	489,596 (313)	491,471 (321)	484,745 (330)	n.d.
Denmark (1988 DKr)[d]					
Displaced	185,375 (5,003)	169,031 (4,687)	174,887 (5,017)	170,386 (5,199)	n.d.
Nondisplaced	194,045 (4,350)	189,703 (4,388)	181,627 (4,333)	179,697 (4,118)	n.d.
Other	201,811 (840)	197,817 (865)	197,601 (899)	196,941 (931)	n.d.
B. Earnings growth of workers[e]					
Belgium (1981 BF)[a]					
Displaced	n.d.	n.d.	−0.393 (0.004)[f]	−0.094 (0.004)	−0.026 (0.004)
Nondisplaced	n.d.	n.d.	−0.044 (0.002)	−0.387 (0.004)	−0.091 (0.004)
Other	n.d.	n.d.	−0.076 (0.000)	−0.064 (0.000)	−0.086 (0.000)
Denmark (1988 DKr)[c]					
Displaced	n.d.	n.d.	−0.060 (0.018)	−0.049 (0.025)	−0.083 (0.030)
Nondisplaced	n.d.	n.d.	−0.031 (0.010)	−0.044 (0.012)	−0.062 (0.015)
Other	n.d.	n.d.	−0.013 (0.002)	−0.015 (0.003)	−0.015 (0.003)

[a] BF = Belgian francs. Sample selection = wage rate positive at end of relevant year.
[b] Earnings growth for long-tenure workers is in parentheses.
[c] n.d. = No data available.
[d] DKr = Danish kroner. Sample selection = wage rate positive in November of relevant year.
[e] Growth is measured by log(Earnings$_t$) – log(Earnings$_0$).
[f] Standard errors are in parentheses.
SOURCE: Authors' calculations.

Table 6.10 Average Wages and Wage Growth for Long-Tenure Workers

Panel	Years after displacement				
	−1	0	1	2	3
A. Average wage level of workers					
Belgium (1981 BF)[a]					
Displaced	1,870	1,776	2,012	2,077	n.d.[b]
	(6.52)[c]	(7.75)	(5.36)	(5.49)	
Nondisplaced	1,824	1,882	1,773	1,716	n.d.
	(7.61)	(4.414)	(5.83)	(6.60)	
Other	2,124	2,122	2,102	2,082	n.d.
	(0.92)	(1.24)	(1.16)	(1.63)	
Denmark (1988 DKr)[d]					
Displaced	129	134	133	134	n.d.
	(2.70)	(3.97)	(3.82)	(3.46)	
Nondisplaced	127	129	132	133	n.d.
	(2.03)	(2.94)	(2.23)	(2.31)	
Other	131	133	139	142	n.d.
	(0.50)	(0.61)	(0.61)	(0.57)	
B. Wage growth of workers[e]					
Belgium					
Displaced			−0.038	−0.065	−0.088
			(0.002)[f]	(0.002)	(0.002)
Nondisplaced			0.008	−0.038	−0.076
			(0.002)	(0.002)	(0.002)
Other			−0.018	−0.032	−0.051
			(0.000)	(0.000)	(0.000)
Denmark					
Displaced			−0.032	−0.015	0.001
			(0.021)	(0.020)	(0.021)
Nondisplaced			0.004	0.023	0.031
			(0.008)	(0.010)	(0.11)
Other			0.008	0.049	0.065
			(0.002)	(0.002)	(0.002)

[a]Daily wage rates in 1981 Belgian francs. Sample selection: wage rate positive at end of the relevant year.
[b] n.d. = no data available.
[c] Wage growth for long-tenure workers is in parentheses.
[d] Hourly wage rates in 1988 Danish kroner. Sample selection: wage rate positive in November of the relevant year.
[e] Wage growth is measured as $\log(\text{Wage}_t) - \log(\text{Wage}_0)$.
[f] Standard errors are in parentheses.
SOURCE: Authors' calculations.

Table 6.11 Regression Analysis of Wages in Subsequent Job

Variable	Belgium	Denmark
Log wage on lost job	0.587 (0.005)	0.382 (0.054)
20 < Age ≤30	–0.022 (0.016)	0.595 (0.133)
30 < Age ≤ 40	–0.006 (0.016)	0.611 (0.134)
40 < Age ≤50	–0.020 (0.016)	0.614 (0.135)
50 < Age ≤60	–0.016 (0.016)	0.498 (0.137)
Age > 60	–0.159 (0.022)	0.332 (0.215)
Male	0.148 (0.004)	0.174 (0.043)
White-collar	0.167 (0.004)	0.073 (0.041)
Tenure = 4 yr.	0.003 (0.006)	–0.062 (0.059)
Tenure = 5 yr.	–0.010 (0.006)	–0.099 (0.068)
Tenure = 6 yr. or more	–0.003 (0.005)	–0.051 (0.049)
Lost job firm dead	0.033 (0.003)	0.027 (0.048)
Size of lost job firm	0.001 (0.001)	0.008 (0.014)
Adjusted R^2	0.60	0.26
Sample size	27,567	408

NOTE: Standard errors are in parentheses. OLS for wage in a new job in Belgium in 1985 (two years after a displacement in 1983) and in Denmark in 1990 (two years after displacement in 1988). Controls for region and occupation are included.
SOURCE: Authors' calculations.

Appendix
Data Selection and Definitions

EMPLOYER SIDE

Plants or Firms

For the Belgian data set the unit is firms, but for the Danish data set it is plants. However, the Danish data set contains a variable that indicates if a worker transfers from one plant to another in the same firm. These workers are not considered displaced workers in this study; they are placed in the control groups (the group of stayers or nondisplaced workers in displacing plants). Nevertheless, the difference between firm unit and plant unit is probably the major problem in this study with respect to comparability between the two countries.

The Jacobson, Lalonde, and Sullivan (1993) study (hereinafter called "JLS") appears to analyze firms. JLS (p. 706) stated that the basic statistics are based on "Pennsylvania Unemployment Insurance (UI) tax reports and the state ES202 data on firms' employment." The issue is perhaps not quite clear, however, since they have no explicit discussion about plants or firms as units. JLS (p. 687) mentioned "firm" but it also mentioned "geographical location." Both a plant and a single-plant firm have a "geographical location," while this term is not unambiguous for a multi-plant firm, either.

Size Reduction of Plants or Firms

In our study workers are considered displaced if they separate from a firm (Belgium) or plant (Denmark) which experiences a 30 percent reduction in the workforce from one year to the next. This 30 percent rule will produce more displaced workers when applied to plants than when applied to firms. In general one would expect that it is more serious to separate from a downsizing firm than from a downsizing plant, as firms can reallocate the separated workers to another of their plants. These reallocated workers are not considered displaced in our Danish data set, however, as mentioned.

The JLS study also applied a 30 percent downsizing threshold, but they did not apply this rule to year-to-year changes in employment. Instead they applied the following definitions: ". . . separators whose firms' employment in the year following their departure was 30 percent or more below their maximum level during the late 1970s" (JLS, p. 688).

Size of Plant or Firm (Cutoff Point)

In this study we eliminate firms (Belgium) and plants (Denmark) with five or fewer employees. This cutoff point is applied to one particular year. The main reason for the comparatively small cutoff point is that a higher one would reduce the sample size of displaced workers for Denmark to too low a level. The JLS study had a cutoff point of 50 employees in one particular year, 1979 (p. 688).

Identity of Establishments (False Death Problem)

In Belgium, firms are identified by a unique taxpayer number that can survive a change in ownership. A firm ID number will change only if the firm disappears as a corporation and all its debts have been paid in full. It will not change if the corporation is taken over. Given the nature of Belgian industrial organization (big holding companies holding shares in many corporations), corporations rarely disappear. Mergers do happen, however, although they are probably more rare than in the United States. Some firms also die and revive under a different name. To control for that possibility we proceeded as follows: dying firms from which at least 70 percent of the workers were rehired (so as not to meet our criteria for being called a displacing firm) and 70 percent of those rehired were rehired in a single firm were not considered to be displacing firms.

For Denmark, the IDA database[1] considers an establishment as continuing if just one of the following four criteria is satisfied: 1) same owner and same industry, 2) same owner and same employees, 3) same employees and same industry, or 4) same employees and same address. More precisely, "same industry" means the same ISIC code at the five digit level, and "same employees" (in case 2) means that either at least 30 percent of the earlier employees remain at the plant or these employees make up at least 30 percent of the second-year employees, while "same employees" (in case 3 and 4) means that at least 30 percent of the earlier employees remain at the plant *and* they make up at least 30 percent of the second-year employees. Moreover, a reduction in the workforce in a plant could also take place when one would not consider the workers as genuinely displaced. This could be the case if a share of the workers at a plant were taken over by another plant. The IDA database contains variables to take this situation into account. For continuing plants, these plants are considered "non-identical" if at least two workers find employment in another plant. The creators of the IDA database called these workers "spin offs." A second such situation would concern closed plants which are considered "taken over" by another plant if the other plant employs at least two of the earlier workers *and* these workers constitute at least 30 percent of the workforce in the closed plant. The creators of the IDA database called these workers "take

overs." For the present purpose, to ensure maximum comparability between Belgium and Denmark, the following rules apply: The "spin offs" are considered displaced workers (although "spin offs" within a firm are not). The "take overs" are not considered displaced workers (they are placed in the category "other workers").

For the U.S. case, JLS stated p. 707: ". . . [it is] important to account for cases in which a firm's employer identification number (EIN) changes from one period to the next, . . ." and "In cases of mergers and divestitures that occurred during the sample period, we treated the separate parts as a single firm, even in years when they were legally distinct."

Public Sector Exclusion

The present study considers displacement only from the private sector. The analysis of displacement from the public sector is problematic in both the Belgian and Danish cases. The Belgian data set contains no observations for some of their public sector employees. The present version of the Danish IDA database contains considerable measurement errors with respect to plant size. Therefore public sector employees are excluded from the initial state of analysis. If a worker displaced from the private sector gets a job in the public sector, the observation is kept in the sample and the subsequent wage rate in the public sector job enters into the calculations.

In the JLS study, there was no explicit discussion of this topic. Perhaps U.S. economists are supposed to know if the public sector is included in "ES202 data on firms' employment."

EMPLOYEE SIDE

Multiple Jobholders, Identification of Main Employer, Timing during the Year

For the identification of a worker's main employer in Denmark, the IDA definition is used. This means that employed workers at one particular date in the middle of November are assigned to the plant from which they received their main earnings. For Belgium, the employer that comes closest to an employment relationship in November is used: in most cases this amounts to the last employment relationship during the calendar year.

The JLS study allowed only one employer-employee relationship within a year, that where there was the "greatest amount of earnings during the year" (p. 707).

Multiple Jobholders, More Than One Employment Relationship by the End of the Year

For Belgium, those workers who have two jobs at the time of displacement and fulfill the tenure condition of three or more years of employment in *both* of them are deleted from the sample. For Denmark, IDA contains an indication of "side employment" besides the main job (the one with the highest earnings) in November. There is no tenure variable for these "side jobs." Displaced workers with "side jobs" are retained in the calculations.

Wages

For Belgium, wages are wage income per day. In calculating this figure the numerator is the wage income during the year in the firm and the denominator is the number of days employed in the firm. For Denmark, wages are wage income per hour. In calculating this figure the numerator is the wage income during the year in the plant and the denominator is the number of estimated hours employed in the plant. The assessment of the number of hours worked is based on weekly contributions to a pension scheme, for which the size of the contribution depends on the number of working hours. There are some measurement errors contained in the IDA data on the number of hours worked.

The JLS study did not consider wages.

Earnings, Annual

For both Belgium and Denmark we consider wage earnings during the calendar year, including the wage income from all plants or firms in which the worker has been employed. Nominal earnings are deflated by the consumer price index in the two countries (this index is also used for deflating wages). We select workers with positive wage rates. In the Danish case we have wage rates only for workers who are employed at the November date when workers are assigned labor market status including plant affiliation. These workers are the ones that are included in Table 6.10, the table describing the development of wages after displacement (that is the only possibility for Denmark since we do not have wage rates for workers who are not employed at the November date). The figures used in such an earnings table are the early earnings (wage income) from all employers (not only the employer at the November date). Such an earnings table ensures comparability with the table over wage losses since the drop in earnings can be decomposed into a wage loss and a drop in hours. Precisely the same individuals figure in the wage table and the earnings table. This means, however, that we exclude many workers who have positive earnings during the year, but who are not employed at the November date. Such workers might be unemployed most of the year and have just a small

number of working hours placed somewhere during the year, but not at the November date.

We also include displaced workers who do not have a positive wage rate. In the previous procedure we included only those workers who were fortunate enough to have a positive wage rate after displacement. The conjecture must be that those workers who do not have positive wage rates fare worse with respect to early earnings (or income). To the extent that there is a difference in the transition rates into other states than employment between the displaced workers and the control group, the above selection will underestimate the drop in yearly earnings as a consequence of displacement. A minimal extension of the sample in the previous procedure is to include workers who have positive yearly earnings in each of the years after displacement. This would be a sample selection where we come as close to the JLS selection scheme as we can with the databases at hand. A further procedure would be to extend the sample to workers who have positive earnings in just one of the years after displacement.

Tenure Condition

In some cases we consider only displaced workers with three or more years of tenure at the year of separation. In the Danish data set we run into sample-size problems if the tenure condition is set higher. The Danish tenure variable is plant tenure while the Belgian one is firm tenure.

In the JLS study the tenure condition was higher—". . . workers who had six or more years of tenure by the beginning of 1980" (p. 689).

Migration and Commuting from the Area of Interest

In the JLS study for Pennsylvania migration and commuting presented a potentially severe problem. The solution applied by JLS is (p. 689): ". . . we have eliminated from our sample the approximately 25 percent of high-tenured separators who subsequently never have positive earnings in our data," and "Finally, to reduce biases due to sample attrition, we required that every worker receive some wage or salary earnings during each calendar year."

For Belgium and Denmark this is probably not a major problem, as the amount of commuting and immigration to other countries is limited compared to other states in the United States.

Reemployment

In the Danish data set a worker is considered reemployed if the worker has a job the next November, when each Danish resident is assigned a particular labor market status. For Belgium an employment and labor market status is constructed for each worker by the end of the year. This construction should come as close to the IDA definition as possible.

In the JLS study (p. 689) workers were considered reemployed if the wage income is positive each calendar year.

Comparison Groups (for Income and Wage Losses)

For Belgium and Denmark we select employees in one particular year, and comparison groups are found among these workers. Workers who enter employment in subsequent years are excluded from the analysis. The main comparison groups to the displaced workers considered in this study are all other workers and nondisplaced workers in displacing establishments.

The JLS study considered different variants of control groups. JLS (p. 690) considered "separators," which must be all workers leaving a firm. The separators were divided in "non-mass layoffs" and "mass layoffs" (the displaced workers according to the different selection criteria). The rest of the workers were labeled "stayers."

OTHER ISSUES

Years, Sample Period

For Belgium the sample period is 1978 to 1985. Dismissal is considered from 1983 to 1984. This makes it possible to trace the effect of displacement two years after its occurrence. The maximum length of tenure in the Belgian data is six years. For Denmark the sample period is 1980 to 1991. Dismissal is considered from 1988 to 1989. Calculations on the consequences two years after displacement are possible. The maximum length of tenure in the Danish data for the year 1988 is eight years.

In the JLS study, the sample period was 1974 through 1986. The observation unit was quarterly, and the data are quarterly observations, although some of the conditioning was performed on a yearly basis.

Aggregate Economic Conditions

For Belgium and Denmark, the years of displacement were moderate to severe with respect to economic activity.

For the JLS study, the conditions were unusually severe in Pennsylvania.

Unemployment

For Belgium, there is information on the number of days unemployment benefit has been paid out. There is also information on the number of days of employment. For Denmark there is information on a quarterly basis on the share of the normal working time when unemployment benefits have been paid out. For both Belgium and Denmark we calculate the length of the unemployment spell after displacement before the entrance into a new job. The unit of measurement is months.

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