Volume Title: Research Findings in the Economics of Aging

Volume Author/Editor: David A. Wise, editor

Volume Publisher: The University of Chicago Press

Volume ISBN: 0-226-90306-0

Volume URL: http://www.nber.org/books/wise08-1

Conference Dates: May 10-13, 2007

Publication Date: February 2010

Chapter Title: Labor Market Status and Transitions during the Pre-Retirement Years: Learning from International Differences

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Chapter URL: http://www.nber.org/chapters/c8192

Chapter pages in book: (63 - 92)

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Labor Market Status and Transitions during the Pre-Retirement Years
Learning from International Differences

Arie Kapteyn, James P. Smith, Arthur van Soest, and James Banks

3.1 Introduction

Increasing labor force participation among older workers is an important issue on the scientific and policy agenda in the United States and other industrialized countries. Major categories of individuals who are out of the labor force at later ages consist of persons drawing disability benefits, unemployment benefits, and early retirement benefits. Cross-country differences in the prevalence of early retirement are clearly related to differences in financial incentives (Gruber and Wise 2003; Börsch-Supan 2007). The fraction of workers on disability insurance is vastly different across countries with similar levels of economic development and comparable access to modern medical technology and treatment.

Health is also a major determinant of economic inactivity, and those who have a health problem that limits them in their daily activities or in the amount or kind of work they can do (a "work disability") are much less likely to work for pay than others (Stapleton and Burkhauser 2003). In view of the aging of the workforce in developed countries, reducing work disability among the working population and particularly among older workers may have a major impact on the sustainability of social security and health care systems, among other things. Institutional differences in eligibility rules,

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We are grateful to Tania Andreyeva for research assistance, to Michael Hurd for comments, and to the National Institutes on Aging (Grant# P01-AG022481-01) and the Social Security Administration, through the Michigan Retirement Research Center, for research support.

workplace accommodation of older or sick workers, or generosity of benefits, contribute to explaining the differences in disability rolls (cf., e.g., Bound and Burkhauser 1999; Autor and Duggan 2003; and Börsch-Supan 2007). Recent survey data show, however, that significant differences between countries are also found in self-reports of work-limiting disabilities and general health (Banks et al. 2009).

In this chapter we use data from the Panel Study of Income Dynamics (PSID) and the European Community Household Panel (ECHP) to study the labor force dynamics in the United States and in thirteen European countries. To focus on labor market dynamics in the pre-retirement years and because these dynamics are likely to differ by gender, we concentrate on the age group between forty and sixty-five and consider males and females separately. We also investigate the dynamics of work disability (i.e., the extent to which work disability varies over time and its reversibility) and how this varies across countries. One of the questions we address is whether we can explain the prevalence of self-reported work disability as a function of individual characteristics, including general health.

The remainder of the chapter is organized as follows. In section 3.2 the details of the data that are used are described. Section 3.3 discusses some pertinent characteristics of institutions in Europe and the United States that relate especially to the incentives and institutions of work disability programs. Section 3.4 presents the model that is used to describe labor force dynamics in the various countries. The model is estimated for each country separately. Section 3.5 presents the estimation results. In section 3.6, we summarize the implications of these results by showing simulations, where we assign U.S. parameter values to the models for the European countries. The implied differences in outcomes can be seen as a counterfactual simulation of the impact U.S. policies and institutions would have when implemented in European countries. Section 3.7 concludes.

3.2 Data

Our data come from two sources: the European Community Household Panel (ECHP) and the Panel Study of Income Dynamics (PSID). Both data sets have reasonably comparable measures of labor force activity and self-assessed work disability for the countries that will be included in our analysis. We discuss some issues related to the comparability of measurement of these key concepts in section 3.5.

The ECHP is an annual longitudinal survey of households in the EU.[1] Data were collected by national statistical agencies under the supervision and coordination of Eurostat (the statistical office of the EU). Table 3A.1,

1. See Nicoletti and Peracchi (2002) and Peracchi (2002) for more information on ECHP.

taken from Eurostat (2003, 15), gives an overview of the waves of ECHP in all fifteen countries that participated in the ECHP project.

The ECHP started in 1994 and was terminated in 2001. The first wave covered some 60,500 households and some 130,000 adults age sixteen and above from all countries except Austria, Finland, and Sweden. Austria and Finland were added in the second and third waves. As of the fourth wave, the original ECHP survey was terminated in Germany, Luxembourg, and the United Kingdom. Comparable data for these countries were obtained from existing national panels. For the United Kingdom this was the British Household Panel Survey (BHPS), for Germany the Socio-Economic Panel (SOEP), and for Luxembourg the PSELL (Panel socio-économique Liewen zu Lëtzebuerg). For these countries we will use the existing national panels rather than the few waves of the ECHP. As of the fourth wave, data for Sweden were obtained from the Swedish Living Conditions Survey. Since this is not a panel, we will exclude Sweden from our analysis. We will also not use the Luxembourg data, since it provides no information on self-reported disability.

The Panel Study of Income Dynamics (PSID) has gathered almost thirty years of extensive economic and demographic data on a nationally representative sample of approximately 5,000 (original) families and 35,000 individuals who live in these families. Details on labor market activity and family income and its components have been gathered in each wave since the inception of PSID in 1968. The PSID has been collecting information on self-reported general health status (the standard five-point scale from excellent to poor) since 1984 and has always collected good information on work-related disabilities. To provide comparability in the time period with the EHCP, our analysis will use the PSID waves between 1995 and 2003. It should be noted that after the 1999 wave the PSID is no longer annual, but biannual.

3.3 Institutions

There exists great variation in labor market institutions across the Organization for Economic Cooperation and Development (OECD) countries; regulations with respect to disability insurance are certainly no exception. To get a very broad overview for a majority of countries in our sample, figure 3.1 reports a crude measure of the generosity of disability benefits—the fraction of gross domestic product (GDP) accounted for by public expenditures on disability benefits. Considerable variation across OECD countries is readily apparent, with France and Italy spending less than 1 percent of GDP and three countries—Sweden, Denmark, and the Netherlands—spending more than twice that level. Using this metric, the United States ranks lower than any of the OECD countries listed in figure 3.1. The variation in spending

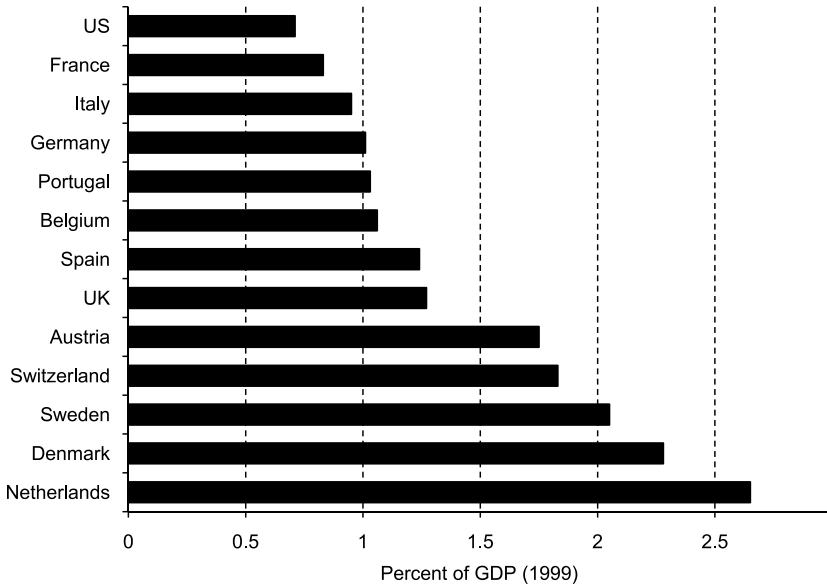

Fig. 3.1 Public expenditure on disability benefits
Source: OECD (2003b, chapter 2).

levels can of course be due to variation in benefit levels or variation in eligibility, or some combination of both.

Looking more deeply into international variation than the simple generosity measure previously presented, various dimensions can be distinguished. The main ones are the loss of earnings capacity required to qualify for benefits and the way in which such loss of earnings capacity is assessed, eligibility requirements based on work or contribution history, and benefit levels in relation to loss of earnings capacity. Table 3A.2 provides an overview of the main features of disability insurance systems in the countries we study in this chapter.

Table 3A.2 illustrates the complexity of these disability programs across countries. For example, while many countries have a basic five year's minimum period of eligibility (e.g., Germany, Austria, Italy, Portugal), basic eligibility is as low as six months in Belgium and one year in France, while one is not fully covered unless one has worked for ten years in the United States. Similarly, while the loss of normal earnings capacity is sufficient to qualify for eligibility in Spain, one must have a loss of two-thirds of earnings capacity in France, Belgium, and Portugal.

Not surprisingly, the variation in Disability Insurance (DI) systems identified in table 3A.2 is correlated with differences in prevalence of DI receipt across countries and in the disability status of individuals receiving DI. Börsch-Supan (2007) showed that a cross-sectional context variation in

Table 3.1 **Expenditures on disability insurance and self-reported male work disability, 2001**

	DI expenditure as a % of GDP	Self-reported male work disability, 40–65, 2001 (%)
Germany	1.6	40.3
Denmark	2.7	22.0
Netherlands	4.0	24.5
Belgium	2.2	14.3
France	1.7	20.5
United Kingdom	2.2	13.1
Ireland	1.3	15.7
Italy	2.0	8.0
Greece	1.6	13.3
Spain	2.3	15.5
Portugal	2.4	22.9
Austria	2.3	17.8
Finland	3.1	29.0
United States	1.1	19.3

Source: DI expenditures: World Bank (2006). Self-reported male disability: ECHP and PSID data used in this chapter; unbalanced panels, weighted.

incentives and institutional rules across a series of European countries and the United States can account for differences across these countries in the fractions of individuals on work disability programs. In contrast, variation in demographic attributes and health across these countries did little to explain these differences.

In this chapter, we do not attempt to analyze being on the disability rolls but instead aim at explaining the cross-sectional and dynamic variation across countries in self-assessed work disability and work. Table 3.1 shows for 2001 the relation between what is probably the best single measure of the scope of a country's disability program, the fraction of disability benefits as a fraction of GDP, and the fraction of men who self-report that they have a work disability.[2] There appears to be almost no correlation between these two measures. Although the incentives and institutions across countries appear to have a great deal to do with the fraction of workers who are on disability programs, these incentives and institutions appear to be only weakly related to the fraction of men who claim that they are work disabled.

Table 3A.3, taken from a recent OECD study, provides information on some characteristics of DI recipients for most of the countries we are considering in this chapter. The first column shows that a substantial fraction

2. The exact question on work disability in ECHP is: "Are you hampered in your daily activities by any physical or mental health problem, illness or disability?" In the PSID, it is: "Do you have any physical or nervous condition that limits the type of work or the amount of work you can do?"

of the people on DI declare that they have no work disability. This fraction varies a lot across countries and is particularly large in Sweden (48.9 percent) and the United States (46.7 percent). Either people are granted DI benefits while not acknowledging disability status, or those who recover from their disability are not able to find a job and instead stay on DI, or some combination of both. The third column of table 3A.3 shows indeed that exit rates from DI are extremely low. The United Kingdom and the Netherlands seem to be the exceptions in this respect, but this might have to do with reforms in the disability insurance system in these countries.

The second column of table 3A.3 shows the other side of the coin—many people who report to have a (moderate or severe) work disability receive neither earnings nor DI or other benefits. Again, variation across countries is substantial. In Sweden, almost everyone with a work disability has earnings from work or receives benefits, but in Spain and Italy, 28 or 29 percent receive neither of the two. The United States has an intermediate position in this respect.

Column (4) shows that the expected negative relation between disability and the chances of being employed holds in all countries: the relative employment rate is always less than one. Still, there are substantial differences across countries. In Spain, someone with a work disability is 0.41 times as likely to do paid work as someone without a work disability, compared to 0.79 in Switzerland. Again, the United States is somewhere in the middle with 0.58. Column (5) shows that there is an earnings differential between workers with and without a work disability, but in most countries, it is not very large. Here the United States and (surprisingly) Sweden are the exceptions—with workers with a disability earning almost 30 percent less than workers without disability.[3]

On the other hand, for those with a work disability, working seems to be an effective way of increasing income, as is borne out by column (6). This is particularly true in the United States, where the disabled who work have an average income that is 2.84 times as high as the average income of disabled who do not work. In Europe, the differences are smaller, but even in Sweden and Denmark, the countries with the lowest income differentials between working and nonworking disabled persons, the difference is still 37 or 38 percent. These cross-country differences seem to be in line with the generosity of disability insurance systems (as indicated by figure 3.1, for example).

3.4 The Model

In this section, we outline our model of the interrelated dynamics of self-reported work disability and labor force status (work versus no work). The equation for disability of individual i in time period t is specified as:

3. A complete analysis of this effect would need to account additionally for differential selection into the labor market across countries.

$$(1) \qquad D_{it}^{*} = X_{it}'\beta^{D} + \gamma_{D}^{D\prime} D_{i,t-1} + \gamma_{W}^{D} W_{i,t-1} + \alpha_{i}^{D} + \varepsilon_{it}^{D}$$
$$D_{it} = 1[D_{it}^{*} > 0].$$

Here D_{it} indicates the presence of self-reported work disability; 0 means no disability and 1 means disability. Lagged labor force status is denoted by an indicator variable $W_{i,t-1} = 1$ if the respondent worked in the previous period and $W_{i,t-1} = 0$ otherwise. The error terms ε_{it}^{D} are assumed to be independent standard normal; α_{i}^{D} is an individual effect, normally distributed with variance σ_{α}^{2}. The ε_{it}^{D} and α_{i}^{D} are assumed mutually independent and independent of the vector of explanatory variables X_{it}.

Thus, there are two direct sources of persistence in the disability equation: the lagged dependent variable $D_{i,t-1}$ and the unobserved heterogeneity term α_{i}^{D}. We allow for a lagged effect of workforce status on work disability, but not for a contemporaneous effect. That is, we are effectively assuming no contemporaneous "justification bias" in self-reported disability (justification bias would imply that people say they have a work disability to justify their nonwork status).

The second equation explains whether respondents do paid work or not. Labor force status W_{it} is explained by a Probit equation as follows:

$$(2) \qquad W_{it}^{*} = X_{it}'\beta^{W} + \gamma_{D}^{W} D_{i,t-1} + \gamma_{W}^{W} W_{i,t-1} + \delta_{d}^{W} D_{i,t} + \alpha_{i}^{W} + \varepsilon_{it}^{W}$$
$$W_{it} = 1[W_{it}^{*} > 0].$$

Thus, we allow for both a contemporaneous and a lagged effect of work disability on labor force status. The assumptions about individual effects and error terms are the same as before. We do not allow for correlation between the error terms in the two equations, but we do allow for correlated individual effects. Also here, there are two direct sources of persistence: lagged labor force status $W_{i,t-1}$ and the individual effect α_{i}^{W}.

The variance-covariance matrix of the individual effects is unrestricted. For estimation purposes we parameterize it as follows. Let $u_{i} = (u_{i}^{D}, u_{i}^{W}) \sim N_{2}(0,I)$. Then we specify the vector of individual effects $\alpha_{i} = (\alpha_{i}^{D}, \alpha_{i}^{W})$ as $\alpha = \Lambda u$, with

$$(3) \qquad \Lambda = \begin{pmatrix} \lambda_{D}^{D} & 0 \\ \lambda_{D}^{W} & \lambda_{W}^{W} \end{pmatrix},$$

a lower triangular matrix. The parameter estimates summarized in the next section include the estimates of the entries in Λ.

To account for the initial conditions problem, we follow Heckman (1981), Hyslop (1999), and Vella and Verbeek (1999) and specify separate equations for wave 1. These equations have the same exogenous regressors and contemporaneous dependent variables on the right-hand side as the dynamic equations just presented, but do not include the lagged dependent variables. No restrictions are imposed on the coefficients or their relation to the

coefficients in the dynamic equations. These coefficients are estimated jointly with the parameters in the dynamic equations and can be seen as nuisance parameters.

In the initial condition equations, we include arbitrary linear combinations of the individual effects in the two dynamic equations. This is the same as including an arbitrary linear combination of the two entries in u_i. The estimated coefficients of these linear combinations can be seen as nuisance parameters.

The previous equations must be slightly adapted for the PSID data. In the PSID, the frequency of interviewing was reduced from once a year to once every two years starting in 1997.[4] As a result, for the more recent years a lagged variable in the PSID model refers to a value two years ago. Hence, in the model for the PSID data we include separate coefficients for the lagged variables for the case that the previous wave is one year ago and the case that the previous wave is two years ago.[5]

3.5 Results

Our focus in this research is on the dynamics of disability and labor force activity during the pre-retirement years. These labor market dynamics are likely to be very different than those that characterize the period of labor market entry when people are first entering the labor market. Therefore, we estimate our models on samples of people who are age forty and over. Separate models are estimated for men and women given that the dynamics of labor force behavior are potentially very different.

A problem that requires special attention in an exercise like this is the international comparability of variable definitions. For example, if schools are organized in very different ways in different countries (as they are), it would be very difficult to know what it would mean to make comparisons across countries that "assume" that the schooling levels of workers are the same.

For that reason we have only used a very limited set of covariates: age dummies for the age groups forty to forty-four, forty-five to forty-nine, fifty to fifty-four, fifty-five to fifty-nine, sixty to sixty-four; year dummies; marital status (married or not, where married includes cohabitation), and two health dummies.

International comparability of self-reported health is a very difficult problem in itself. Because of this, we have adopted the following simple approach: in the United States and European data, respectively, we find the weighted frequency distributions for ages forty to sixty-five (balanced panel) in the top

4. To be precise, we use PSID waves 1994, 1995, 1996, 1997, 1999, 2001, and 2003.

5. To be precise, for the years 1995, 1996, and 1997, only the one-year lags are included; for the years 1999, 2001, and 2003, only the two-year lags are included.

Table 3.2 **Self-reported health in the PSID and the ECHP data**

United States		European Union	
	Original classification		
Excellent	21.3%	Very good	16.2%
Very good	26.6%	Good	43.4%
Good	29.5%	Fair	29.8%
Fair	10.1%	Bad	8.6%
Poor	2.5%	Very bad	2.0%
	Combined classification		
Excellent	57.8%	Excellent	59.6%
Good	29.5%	Good	29.8%
Fair	12.7%	Fair	10.6%

panel of table 3.2. Based on this we collapse the five categories into three; combining the first two and the last two, essentially ignoring the wording differences. This leads to the distribution of self-reported health in the bottom panel of table 3.2. The health distribution is now similar in the United States and the European countries. In the analysis section following, we discuss what the implications for work disability and labor market participation would be if health were "the same" in all countries.

Table 3A.4 summarizes for men and women separately some of the key dynamic parameters (relating disability and work) estimated from our empirical models. While there are differences between our estimates for men and women, these tend to be concentrated in the "off-diagonal" terms—the effects of disability on work status or vice versa. In most countries (but not all), the effects of lagged disability on current disability is similar for men and women within each country. To the extent that the effect of lagged disability on current disability measures the pure transitions of work-related health between the waves, the similarity between men and women may not be that surprising. In most countries, the effects of lagged employment on current employment are higher for men than for women. The traditionally more transitory nature of employment for women would imply a smaller estimated impact of lagged employment.

With the exception of Belgium and Finland, the estimated effects of disability on employment are somewhat larger (in absolute value) for men than for women. Disability programs whose generosity depends on a past series of contributions would imply greater generosity for men compared to women, and this is what we find. Finally, the effects of lagged employment on disability may reflect in part the health effects of work. More likely this is picking up the unobserved effects of health, which is very incompletely captured in this data. Better health increases the likelihood of work and makes disability less likely.

Both disability and work status are highly persistent, and significantly so,

across all countries. Current disability is negatively associated with current work status in most countries, and the relationship is particularly strong in the United States (and for women in Belgium). The evidence for lagged disability affecting current work status over and above the contemporaneous effect is weaker. There is evidence of lagged employment status affecting current work disability, however.

As one would probably expect, the parameter estimates for the effects of lagged work status on current work status tend to be relatively low in the United States, reflecting a higher turnover than in the European countries (both from working to not working and from not working to working). At the low end of the European scale in this respect are the United Kingdom and Spain, with the other European countries demonstrating somewhat larger effects.

3.6 Discussion

To gain a better understanding of the differences between the countries, we carry out four simulations. The first simulation simply generates values of work and self-reported disability over the sample period in each country, using the estimated models. The second simulation replaces the country-specific parameter estimates for the disability equation by the corresponding U.S. coefficients, but retains the own country work parameters. Conversely, the third simulation replaces the country-specific parameter estimates of the work equation by U.S. coefficients, but retains the own country disability equation. Finally, the fourth simulation replaces the country-specific parameters in both equations by U.S. coefficients. In all simulations the initial conditions are generated according to the country-specific estimates.

The figures in the appendix present time paths of two variables: the percentage of individuals with a work disability and the percentage of individuals working. For each of these variables we produce four values, according to the four scenarios sketched previously.

Let us first concentrate on work disability. The lines represent the scenarios where the U.S. disability parameters are used (the lines with triangles) or where both the disability parameters and the work parameters come from the United States (the lines with the x). The graphs suggest that the initial conditions only have an effect during the first couple of years of the simulations. The path of disability moves away from its initial position very quickly.

In countries where self-reported disability tends to be low, moving to U.S. parameters will lead to an increase in self-reported work disability. This is the case for female disability in Belgium, United Kingdom, and the Southern European countries, and for disability among males in the United Kingdom, Italy, and Spain. In some other cases the simulations with U.S. parameters do not lead to very different time paths of disability, like for Belgian, Greek,

and Portuguese males. In a number of countries, adopting U.S. parameters leads to a dramatic fall in disability. These cases include males and females in Germany and Finland, and females in Denmark and the Netherlands.

Another noteworthy aspect of the graphs is that these lines tend to be on top of each other for most countries. This suggests that the feedback from work to disability is quantitatively similar to that in the United States (since the line with triangles uses country-specific work parameters this should generate deviations from the all-U.S. parameters if work had an appreciably different effect on disability in Europe compared to the United States). Cases where the feedback from work to disability appears to make a difference include females in the Netherlands, Belgium, Ireland, Italy, Greece, Spain, and Austria. For males the difference in feedback from work to disability seems to be essentially immaterial, with the possible exception of Belgium. Inspecting the second column of table 3A.4 suggests that the cases with the biggest differences between the triangled and x lines are indeed the cases where the estimated values of γ_W^D, the effect of lagged work on disability, deviate most from the U.S. estimate.

Now consider the bottom part of the graphs; that is, the simulation of employment under the different scenarios. The simulations with all U.S. coefficients lead to final values that are quite similar across countries: from 0.66 (Portugal) to 0.75 (Belgium, Ireland) for women, and from 0.76 (Germany) to 0.86 (several countries) for men. The main sources of differences are initial conditions and demographic and health differences. A second observation is that the simulation with all U.S. coefficients leads to the highest employment rate in almost all countries, although often it makes only a negligible difference whether European or U.S. coefficients are used for the work disability equation. Exceptions are Italy and the United Kingdom, where replacing EU disability coefficients by U.S. coefficients leads to higher work disability and thus lowers employment. As a consequence, the highest employment rate is attained with U.S. work and EU disability coefficients.

This argument, however, does not always work: to further isolate the effect of labor market institutions from the effect of disability, it is of interest to consider the difference between the line with triangles (only disability parameters from the United States) and the lines with x (all parameters from the United States) in more countries. It is instructive to take the Netherlands as an example. When looking at females, we note that the simulation with U.S. disability coefficients but Dutch work coefficients yields essentially the same employment rate, despite the fact that disability is much lower with U.S. disability coefficients. Table 3A.4 tells us immediately why this is so. The parameter γ_D^W is close to zero for Dutch females. We also note, however, that the line with x (all U.S. parameters) is about 25 percentage points higher than the line with triangles. This suggests that independent of the disability status of Dutch women, American institutions would generate a much higher employment rate. The story for Dutch males is qualitatively similar, but since

the employment rate is already high, adopting U.S. coefficients can only have a limited effect. With this example in mind we observe that in all countries, with the possible exception of Denmark, the United Kingdom, and Ireland, labor market institutions, rather than disability, cause the employment rate to be low relative to the United States.

One can further investigate this by looking at the lines with squares (EU disability parameters, but U.S. work parameters). The relevant comparison now is between the lines with squares and the lines with diamonds (all EU parameters). Once again we find that labor market institutions explain the differences in employment rates, rather than differences in disability.

A different way to obtain insight into the different dynamics across the various countries is to consider transition matrices. These are given in table 3A.5 (for disability) and table 3A.6 (for work). These key dynamics relate to the transitions between work and nonwork and disability and nondisability. Each can be summarized by two off-diagonal transitions. For work, the two transitions are the transition from work to nonwork and the transition from nonwork to work. Similarly, for disability the off-diagonal transitions are from not disabled to disabled and from disabled to not disabled. Because our interest concerns how all these transition patterns vary across our set of countries, tables 3A.7 (for disability) and 3A.8 (for work) summarize the key parameters by organizing them by the magnitude of the transitions with the country names attached. Finally, since the United States will be the benchmark for all countries in our simulations, we list the U.S. parameter at the bottom of each list.

Consider first the disability transitions. We observe considerable variation in the inflow rates into disability (the transition from being not disabled in one period to being disabled the next period). For men these rates vary from 18 percent in Germany to 4 percent in the United States, United Kingdom, and Italy. For women the rates vary from 21 percent in Germany to 5 percent in Ireland, Italy, and Belgium. The United States is near the bottom with 6 percent. On the other hand, outflow rates out of disability (the transition from being disabled in one period and not disabled in the next period) vary less, at least in relative terms. For men the rates vary from 42 percent in Italy to 23 percent in Germany and Denmark, while for women the rates vary from 49 percent in Italy to 22 percent in Germany.

There are a number of salient patterns to these disability transitions. First, while the levels differ between men and women, the country rankings are remarkably similar by gender, suggesting that the variation across countries is at least partly due to institutional variation affecting men and women in a similar way. To illustrate, Germany ranks highest on the transition into disability for both sexes, while Italy ranks highest in the transition from work disability into nonwork disability. Second, for almost all the countries listed there exists considerable churning between work and nonwork disability, indicating that work disability is far from a permanent condition even at

these older ages (cf. Kapteyn, Smith, and Van Soest 2007). Consequently, cross-sectional analysis of work disability status will not be able to capture some of the main features of work disabilities during the pre-retirement years. Third, compared to the European countries, the United States ranks very low on the transition into work disability, while it ranks in the middle of the pack in the transitions out of work disability.

Work disability will tend to be high when the transition into work disability is high, while the transition out of work disability is low. Germany, Denmark, and Finland would be the best prototypes of such behavior. On the other hand, other countries have a relatively low transition into disability, matched with a relatively high transition out of disability. Italy, Greece, and Spain would be good illustrations of that behavior and in those countries the steady-state levels of work disability will be low.

Consider next the ranking of the transitions between work and nonwork for countries listed in table 3A.8. First, we note that the variation in transitions from work to nonwork varies less across countries than the transitions from nonwork to work. Thus, most of the variation across countries in labor market dynamics relates to whether persons who are out of the labor force are likely to transit back into the labor force. To illustrate, for men, transition rates from nonwork to work vary from 31 percent in the United Kingdom to as low as 3 percent in Austria and Belgium. Indeed, the countries where moving back into the labor force appears to be least likely are very similar for men and women alike. These countries would include Italy, France, Belgium, and Austria.

In contrast, the United States has a relatively high rate of transition back into the labor force for both sexes compared to all countries. It is in comparisons between the United States and Italy, France, Belgium, and Austria, that the effects on employment are quite dramatic. For example, the chart for Austria in the appendix shows a very low employment rate toward the end of the observation period. For women, among the European countries the United Kingdom has the highest inflow into employment (16 percent), while Belgium has the lowest inflow (3 percent). The chart for Belgium in the appendix confirms that female employment in Belgium is very low in comparison with other countries.

In sharp contrast, table 3A.8 shows much less variation in transitions from work to nonwork, especially for men. The full range of values for men in table 3A.8 is only from 0.03 (Denmark) to 0.08 (Germany), with the United States at a value of 0.07. In fact, eight of the thirteen European countries in table 3A.8 for men lie within 2 percentage points of the U.S. transition value from work to not work. Thus, the source of the labor market dynamic differences among these countries appears not to lie in the ease or difficulty of the transition from work to not-work. Instead, it is the relative rigidity of some European countries in discouraging reentry into the labor force that appears to be the major issue.

This is further illustrated by table 3A.9. The last four columns of table 3A.9 contain the same transition rates as table 3A.8, but in addition, the first two columns contain measures of employment protection and replacement rates at retirement. The employment protection measure is taken from OECD (2004) and is the sum of three main components reflecting, respectively, (a) difficulty of dismissal, (b) procedural inconveniences an employer faces in the dismissal process, and (c) severance pay provisions (OECD 2004, 65). The measure presented here is "version 2, late 1990s" (see table 2.A2.4 in OECD [2004]). The replacement rate shown in the table is the replacement rate of a worker with average earnings in a country, as calculated in OECD (2005). The countries in table 3A.9 have been ranked according to the employment protection measure. Somewhat remarkably, it is particularly the transitions from nonwork to work that are affected by the employment protection index: for both women and men, more employment protection implies a smaller transition rate back into employment. A similar finding is reported in OECD (2004). On the other hand, the protective effect seems to be limited; transition rates out of employment do not correlate significantly with the employment protection measure.

In view of the age range we are considering, a measure of a retirement replacement rate has been included, since one would expect that some workers who are temporarily out of the labor force will transit into retirement rather than back into employment if that alternative is sufficiently attractive. Table 3A.9 indeed shows the expected negative correlation. However, when regressing the transition rates on both the employment protection measure and the replacement rate measure we find the former to be significant, but not the latter.

3.7 Conclusion

In this chapter, we have investigated the dynamics of labor force and work disability behavior among individuals between forty and sixty-five in several Western European countries and the United States. We estimated the dynamics of labor force and disability behavior separately for men and women using high quality panel data in thirteen European countries and the United States. We find substantial differences in labor force dynamics between the countries. Adopting U.S. parameters (i.e., U.S. institutions and norms) often leads to considerable reductions in self-reported disability. Although this has some effect on employment rates, most of the action is in the labor market institutions themselves, where adopting U.S. coefficients may generate substantially higher employment rates. Comparison of transition rates with aggregate measures of employment protection suggests that these play a major role in generating the observed differences across countries.

Appendix

Simulated Time Paths of Mild and Severe Disability and of Labor Force Status

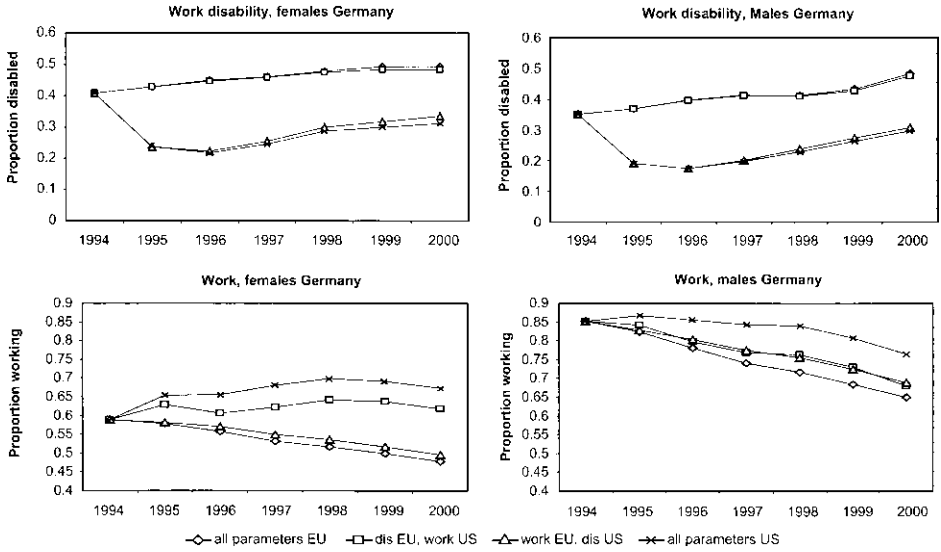

Fig. 3A.1 Germany

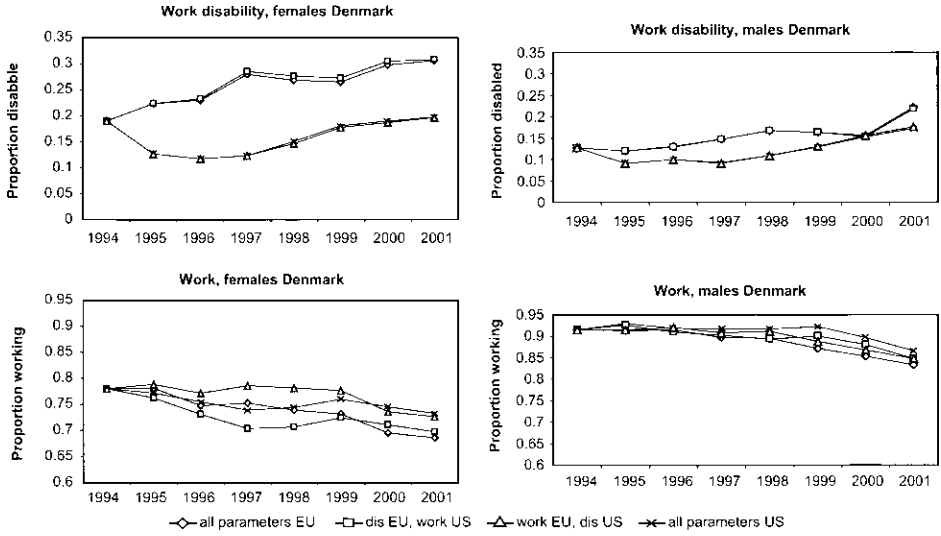

Fig. 3A.2 Denmark

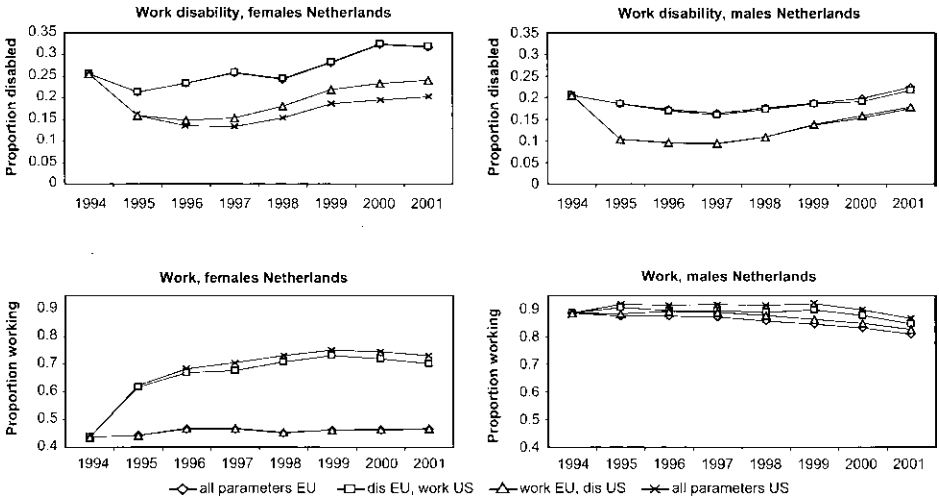

Fig. 3A.3 The Netherlands

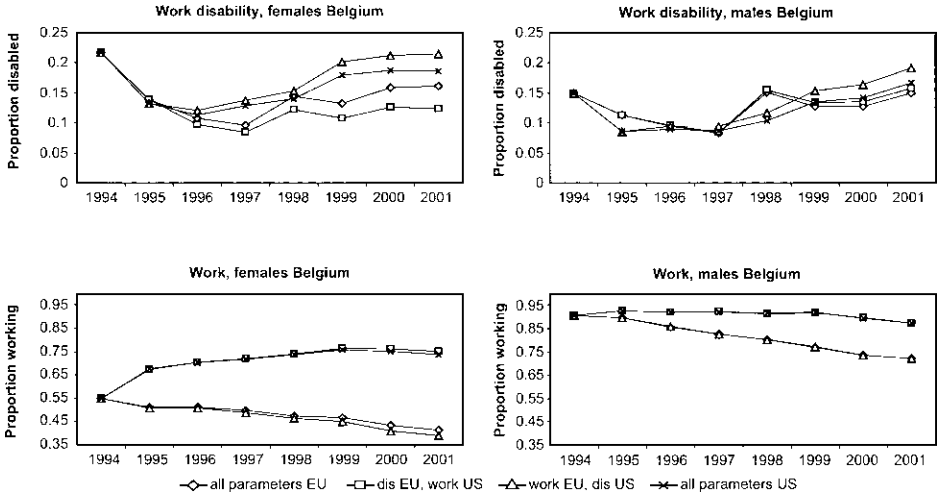

Fig. 3A.4 Belgium

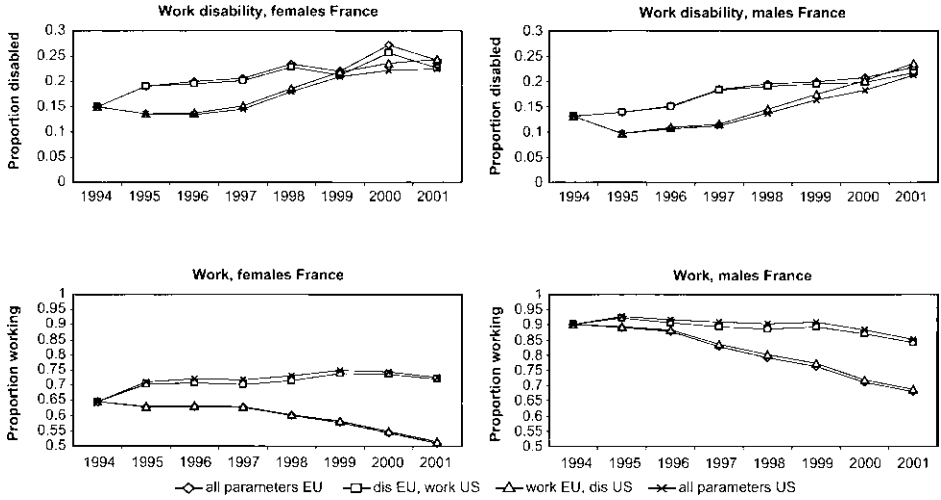

Fig. 3A.5 France

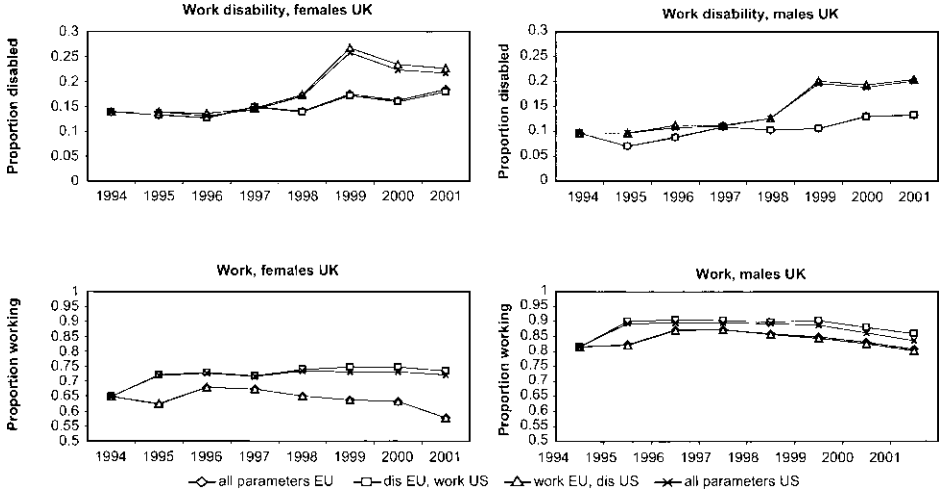

Fig. 3A.6 United Kingdom

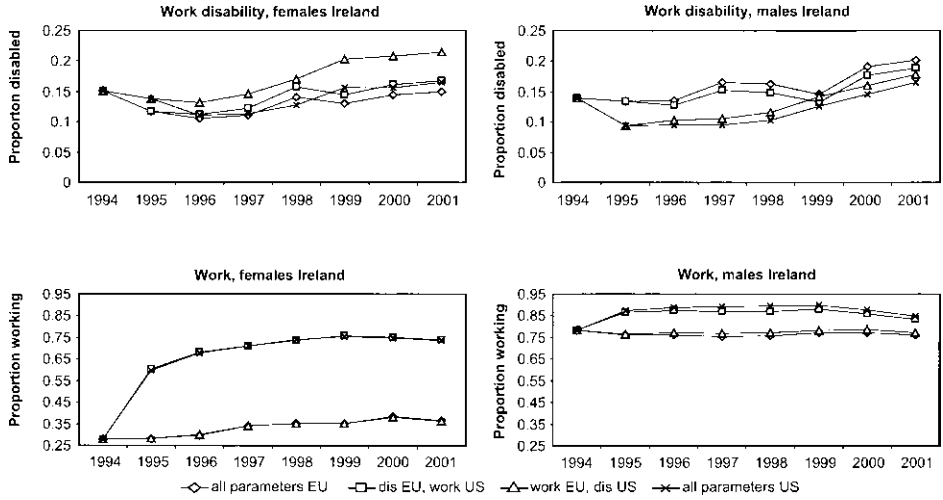

Fig. 3A.7 Ireland

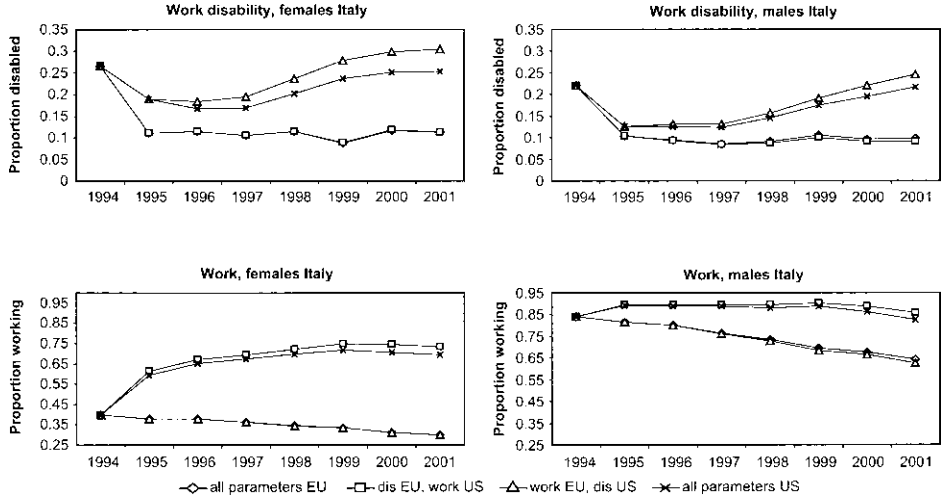

Fig. 3A.8 Italy

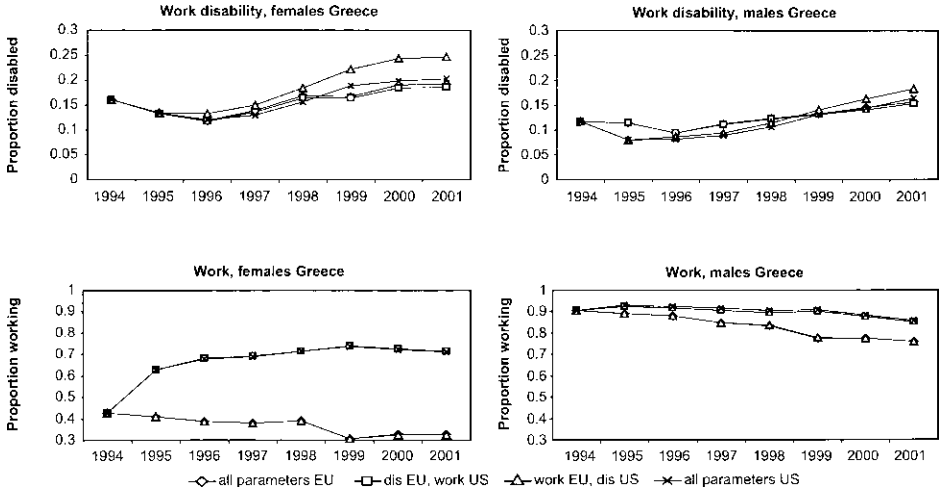

Fig. 3A.9 Greece

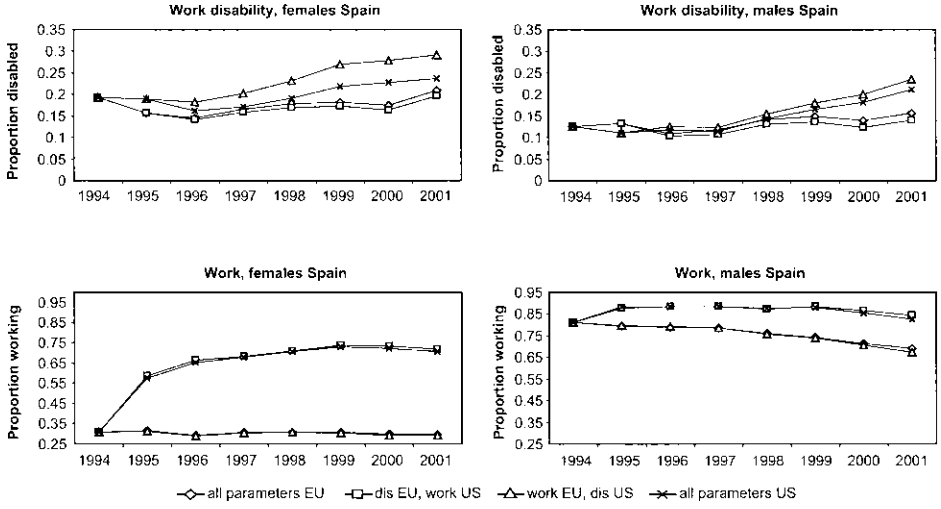

Fig. 3A.10 Spain

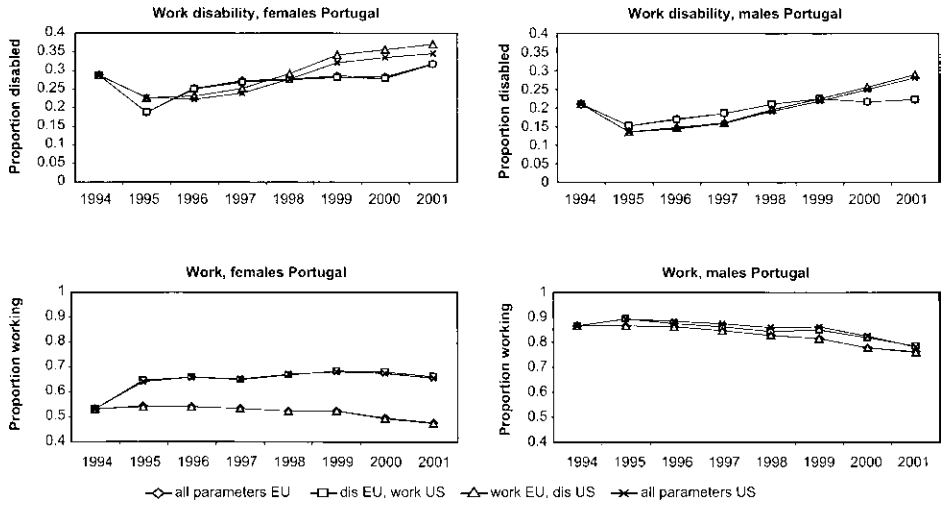

Fig. 3A.11 Portugal

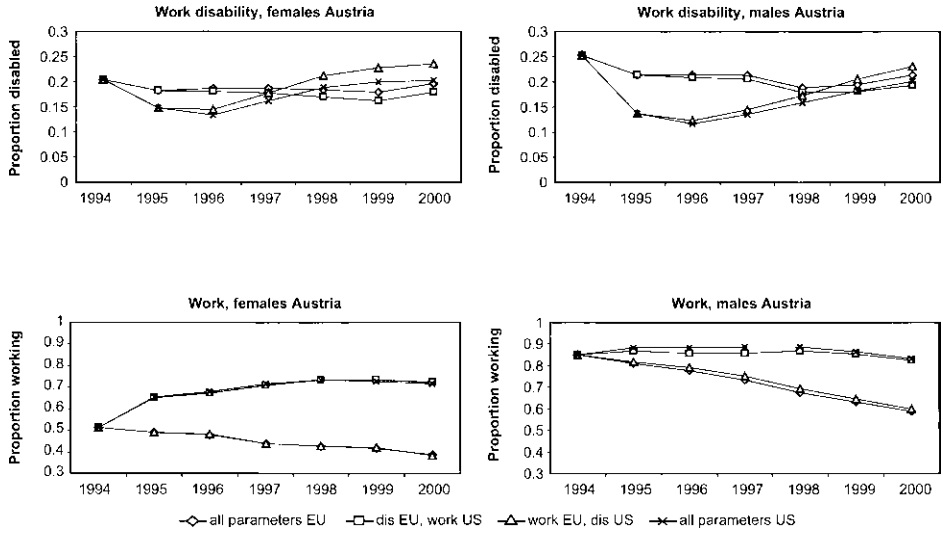

Fig. 3A.12 Austria

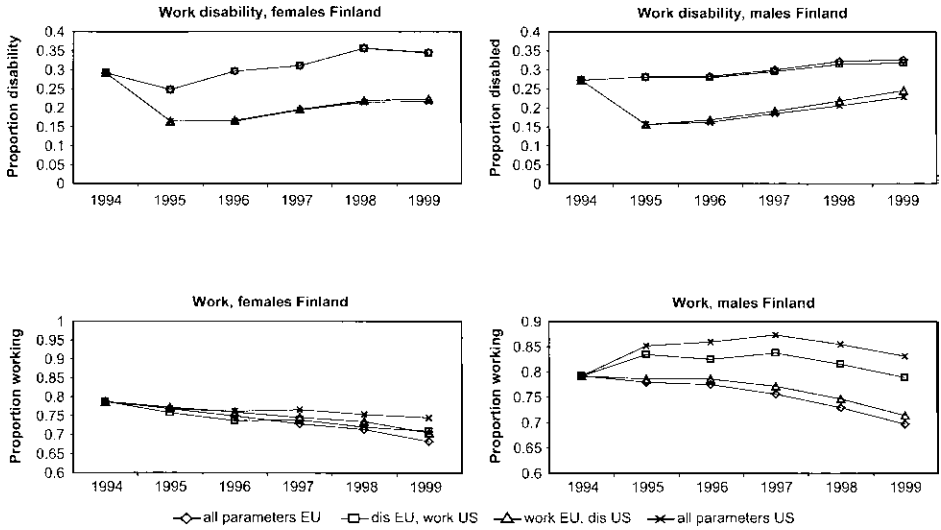

Fig. 3A.13 Finland

Table 3A.1 Overview of ECHP waves

	Subsample																	
			D							L							UK	
	B	DK	ECHP	SOEP	EL	E	F	IrI	I	ECHP	PSELL	NL	A	P	Fin	S	ECHP	BHPS
1994											—		—		—	—		
1995															—	—		
1996																—		
1997			—							—							—	
1998			—							—							—	
1999			—							—							—	
2000			—							—							—	
2001			—							—							—	

Note: ECHP = European Community Household Panel; SOEP = Socio-Economic Panel; PSELL = Panel socio-économique Liewen zu Lëtzebuerg; BHPS = British Household Panel Survey. Dashed cells denote missing waves.

Table 3A.2 **Selected characteristics of disability pension policies across countries**

	Qualifying conditions		
	Loss of earning capacity	Minimum period of contributions	Permanent disability benefits
Austria	≥ 50% compared to person with the same education	60 months + 1 month for each month (from age 50) in the last 10 years (plus 2 months for each month from age 50)	60% of assessment base (= average earnings in the best 16 years, up to an annual maximum of €3,013)
Belgium	2/3 in the usual occupation	6 months, incl. 120 days of actual/ credited work	65% of lost earnings (s.t. ceiling) for an insured w/ dependents; 40% if no dependents; 50% if no dependents but living w/ others with no income. Payable > 1 year disability (1st year-sickness benefit)
Denmark	Reduced working capacity and inability to assure subsistence	Disability pension and supplement (both income-tested) payable age 18 = 64 w/ ≥ 3 years' residence from age 15	13,895 kroner monthly for single, 11,810 kroner if not living alone; disability supplement (income test): 6,000 kroner a year
Finland	60% if earnings-related disability pension	Universal disability pension (income-tested) permanent incapacity for suitable work	Universal disability—Income tested €11.21 to €496.38 a month; earnings-related disability: 1.5% of wage for each year of service up to disability onset
France	2/3 of earning capacity in any occupation under age 60	12 months insurance before disability onset and 800 hrs. employment in last 12 months	50% of average earnings in the best paid 10 years if incapable of any professional activity, up to a maximum of €1,238 a month. Partial disability 30% of average earnings in best yrs., min. pension €241/ month
Germany	Full reduction (cannot work > 3 hours/day in any form of employment) or partial reduction (cannot work > 6 hours/day in any form of employment)	5 years of contributions and 36 months of compulsory contributions in the last 5 years	Total of individual earnings points (individual annual earnings divided by the average earnings of all contributors multiplied by the entry factor) multiplied by pension factor and pension value
Greece	At least 80% disabled	Max 4,500 days of contributions (1,500 days if the insured began working after 1993); 300 days if younger than 21	For an assessed degree of disability of 80% or more (severe), 100% of the pension is paid; for an assessed degree of disability of 67% to 79.9% (ordinary), 75% of the pension paid; min. pension €392.16/ month.
Ireland	Invalidity pension—permanent incapacity for work; disability allowance (means-tested): aged 16–66, physically/mentally disabled	260 weeks of paid contributions with 48 weeks paid or credited in the last tax year	Invalidity pension: €140.30 a week; €167.30 a week if aged 65 or older; disability allowance (means-tested): up to €134.80 a week, + €89.40 a week for a qualified adult and €16.80 for each dependent child

Italy	Total and permanent inability to perform any work	5 years of contributions, including 3 in the 5 years before the claim. No other forms of income, including earnings from self-employment and unemployment benefits	Pension based on a progressive percentage (0.9% to 2%) of salary multiplied by the number of years of contributions, up to a maximum of 40
Netherlands	At least 80% of earning capacity in the current occupation for full pension	Partial pension: The loss of 15% to 80% of earning capacity for employed workers	Up to 70% of earnings for loss of earning capacity of at least 80%; 14% to 50.75% of earnings for a loss of earning capacity of 15% to 80%. €167.70 a day maximum
Portugal	2/3 of earning capacity	5 years of contributions (120 days of registered pay)	2% of average adjusted lifetime salary for each year of contributions
Spain	Loss of normal earning capacity	1/4 of period from age 20 to the onset of disability, with at least 5 years of contributions and at least 1/5 of the required contributions in the last 10 years	Permanent total disability, pension 100% of the benefit base (min €411.76). For permanent occupational disability, award 55% of benefit base, plus 20% if aged 55+ & not employed (min €411.76).
Sweden	Work capacity reduced by at least one-quarter	Earnings-related sickness compensation independent of insurance periods	94,320 kronor for an insured person with 40 years of residence and without an earnings-related benefit
Switzerland	At least 40% disabled	Contributions in all years from age 21. Special pension for nationals not meeting required min. contribution period for disability base pension	9,146 francs a year plus a variable amount calculated by multiplying annual income by 13/600 if income < 37,080
United Kingdom	Long-term incapacity benefit and disability living allowance (noncontributory, no means test)	3 years before the claim, age before 65	Long-term incapacity benefit £72.15 a week, plus £43.15 a week for a dependent adult; Allowance £57.20, £38.30, or £15.15 a week according to needs
United States	Disability pension: Incapable of permanent substantial gainful activity; Disability supplemental income benefit (means-tested): disabled and blind persons age < 65 low income	Quarter of coverage for each year since age 21 up to the year of the onset of disability, up to a maximum of 40 quarters of coverage, 20 quarters of coverage in the 10-year period	Pension based on the average covered earnings since 1950 (or age 21, if later) and indexed for past wage inflation, up to the onset of disability, excluding up to 5 years with the lowest earnings. Max. monthly pension $2,036 (certain conditions)

Source: SSA, Social Security Programs Throughout the World: Europe, 2004. Available at: http://www.ssa.gov/policy/docs/progdesc/ssptw/2004–2005/europe/.

Table 3A.3 **Characteristics of DI recipients: men, late 1990s**

	% of disability benefit recipients declaring that they are not disabled	% of disabled persons ages 20–64 with neither income from work nor income from benefits	Annual rates of outflow from disability benefits	Relative employment rate of disabled persons age 20–64 vs. nondisabled ages 20–64	Relative income from work of disabled over nondisabled persons working	Relative average personal income of disabled persons working over disabled persons not working
Austria	27.7	14.2	1.04	0.60	0.97	1.96
Germany	n.a.	11.9	1.25	0.67	0.92	1.79
Sweden	48.9	1.1	n.a.	0.69	0.70	1.37
Netherlands	30.6	19.5	3.34	0.60	0.87	1.45
Spain	18.3	28.0	0.57	0.41	0.86	2.07
Italy	43.9	28.8	n.a.	0.60	0.94	1.94
Portugal	28.6	20.9	0.97	0.59	n.a.	1.81
France	33.3	11.7	n.a.	0.72	n.a.	1.83
Denmark	26.2	6.3	n.a.	0.61	0.88	1.38
United Kingdom	43.3	9.1	5.64	0.53	0.84	1.61
United States	46.7	18.8	1.16	0.58	0.71	2.84
Switzerland	29.8	14.2	n.a.	0.79	0.98	n.a.
Belgium	43.4	16.2	n.a.	0.54	0.90	1.91

Notes: n.a. = data not available. These tables are summaries of more detailed information in OECD (2003b). The underlying data sources are ECHP 1996 or 1997 for the European countries and SIPP for the United States.

Source: OECD (2003a, chapter 3, tables 3.7 and 3.8).

Table 3A.4 **Work disability and employment dynamics: Key parameter estimates**

		Disability equation		Work equation		
		Lagged disability γ_D^D	Lagged employment γ_W^D	Lagged disability γ_D^W	Lagged employment γ_W^W	Current disability δ_D^W
Germany	Men	0.725	–0.422	–0.432	1.973	–0.200
	Women	0.572	–0.244	–0.285	1.356	–0.143
Denmark	Men	1.011	–0.763	–0.587	1.841	–0.575
	Women	0.780	–0.743	–0.559	1.826	–0.497
Netherlands	Men	0.842	–0.789	–0.236	2.007	–0.762
	Women	0.854	0.041	–0.068	1.516	–0.095
Belgium	Men	1.225	0.231	–0.193	3.105	–0.211
	Women	0.983	–1.344	–0.500	2.452	–1.221
France	Men	0.814	–0.348	–0.234	2.541	–0.306
	Women	0.875	–0.446	–0.184	2.495	–0.139
United Kingdom	Men	1.153	–0.249	–0.037	1.541	–0.157
	Women	0.835	–0.244	–0.075	1.418	0.037
Ireland	Men	0.948	–0.728	–0.197	2.034	–0.670
	Women	1.133	–0.030	–0.073	1.723	–0.532
Italy	Men	1.023	–0.315	–0.198	2.093	–0.403
	Women	0.683	0.011	0.012	1.725	–0.076
Greece	Men	0.935	–0.255	0.165	2.063	–0.411
	Women	0.931	–0.122	–0.021	1.510	–0.161
Spain	Men	0.738	–0.665	–0.650	1.701	–0.541
	Women	0.749	–0.147	–0.239	1.175	–0.416
Portugal	Men	1.021	–0.104	0.127	2.316	–0.459
	Women	0.958	–0.097	–0.108	1.920	–0.110
Austria	Men	0.758	–0.437	–0.375	2.863	–0.444
	Women	0.936	–0.266	–0.413	2.213	–0.199
Finland	Men	0.977	–0.348	–0.284	1.765	–0.284
	Women	0.978	–0.038	–0.363	1.403	–0.524
United States	Men	1.064	–0.643	–0.308	1.643	–0.995
	Women	0.841	–0.558	–0.202	1.447	–0.778

Notes: Results for the United States are coefficients on one-year lagged variables, although two-year lags are also included to control for the varying periodicity of PSID data. All specifications also include year dummies, controls for education, age group, marital status, self-reported general health status, and (in the U.S. case) ethnicity. Equations for the initial conditions use the same variable.

Table 3A.5 **Transition probabilities for disability status actual**

	Men		Women	
	Not disabled	Disabled	Not disabled	Disabled
Germany				
Not disabled	0.82	0.18	0.79	0.21
Disabled	0.23	0.77	0.22	0.78
Denmark				
Not disabled	0.82	0.12	0.88	0.12
Disabled	0.23	0.77	0.28	0.72
Netherlands				
Not disabled	0.92	0.08	0.89	0.11
Disabled	0.29	0.71	0.26	0.74
Belgium				
Not disabled	0.95	0.05	0.95	0.05
Disabled	0.34	0.66	0.29	0.71
France				
Not disabled	0.91	0.09	0.90	0.10
Disabled	0.31	0.69	0.30	0.70
United Kingdom				
Not disabled	0.96	0.04	0.93	0.07
Disabled	0.26	0.74	0.31	0.69
Ireland				
Not disabled	0.93	0.07	0.95	0.05
Disabled	0.31	0.69	0.34	0.65
Italy				
Not disabled	0.96	0.04	0.95	0.05
Disabled	0.42	0.58	0.49	0.51
Greece				
Not disabled	0.94	0.06	0.93	0.07
Disabled	0.37	0.63	0.37	0.63
Spain				
Not disabled	0.93	0.07	0.91	0.09
Disabled	0.37	0.63	0.40	0.60
Portugal				
Not disabled	0.92	0.08	0.90	0.10
Disabled	0.28	0.72	0.27	0.74
Austria				
Not disabled	0.91	0.09	0.91	0.09
Disabled	0.35	0.65	0.36	0.64
Finland				
Not disabled	0.88	0.12	0.87	0.13
Disabled	0.25	0.75	0.26	0.74
United States				
Not disabled	0.96	0.04	0.94	0.06
Disabled	0.26	0.74	0.29	0.71

Table 3A.6 **Transition probabilities for labor force status actual**

	Men		Women	
	Does not work	Works	Does not work	Works
Germany				
Does not work	0.89	0.11	0.91	0.09
Works	0.08	0.92	0.10	0.90
Denmark				
Does not work	0.84	0.16	0.86	0.14
Works	0.03	0.97	0.06	0.94
Netherlands				
Does not work	0.86	0.14	0.92	0.08
Works	0.04	0.96	0.09	0.91
Belgium				
Does not work	0.97	0.03	0.97	0.03
Works	0.04	0.96	0.07	0.93
France				
Does not work	0.92	0.08	0.94	0.05
Works	0.05	0.95	0.06	0.93
United Kingdom				
Does not work	0.69	0.31	0.84	0.16
Works	0.06	0.94	0.10	0.90
Ireland				
Does not work	0.87	0.13	0.93	0.07
Works	0.04	0.96	0.11	0.89
Italy				
Does not work	0.91	0.09	0.97	0.03
Works	0.07	0.93	0.10	0.90
Greece				
Does not work	0.88	0.12	0.94	0.07
Works	0.05	0.95	0.15	0.85
Spain				
Does not work	0.85	0.15	0.94	0.06
Works	0.07	0.93	0.14	0.86
Portugal				
Does not work	0.89	0.12	0.92	0.08
Works	0.04	0.96	0.09	0.91
Austria				
Does not work	0.97	0.03	0.96	0.04
Works	0.07	0.93	0.09	0.91
Finland				
Does not work	0.87	0.13	0.87	0.13
Works	0.06	0.94	0.07	0.93
United States				
Does not work	0.80	0.20	0.74	0.2603
Works	0.07	0.93	0.037	0.97

Table 3A.7 Ordering of transitions in disability states by country

Men		Women	
Transition	Countries	Transition	Countries
	A Not disabled to disabled		
.18	Germany	.21	Germany
.12	Denmark, Finland	.13	Finland
.09	France, Austria	.12	Denmark
.08	Netherlands, Portugal	.11	Netherlands
.07	Ireland, Spain	.10	France, Portugal
.06	Greece	.09	Austria, Spain
.05	Belgium	.07	Greece, United Kingdom
.04	Italy, United Kingdom	.05	Belgium, Ireland, Italy
	United States = .04		United States = .06
	B Disabled to not disabled		
.42	Italy	.49	Italy
.37	Greece, Spain	.40	Spain
.35	Austria	.37	Greece
.34	Belgium	.36	Austria
.31	France, Ireland	.34	Ireland
.29	Netherlands	.31	United Kingdom
.28	Portugal	.30	France
.26	United Kingdom	.29	Belgium
.25	Finland	.28	Denmark
.23	Germany, Denmark	.27	Portugal
		.26	Netherlands, Finland
		.22	Germany
	United States = .26		United States = .29

Table 3A.8 Ordering of work transitions by country

Men		Women	
Transition	Countries	Transition	Countries
	A Work to not work		
.08	Germany	.15	Greece
.07	Italy, Spain, Austria	.14	Spain
.06	United Kingdom, Finland	.11	Ireland
.05	France, Greece	.10	Germany, United Kingdom, Italy
.04	Netherlands, Belgium	.09	Netherlands, Portugal, Austria
	Ireland, Portugal	.07	Belgium, Finland
.03	Denmark	.06	Denmark, France
	United States = .07		United States = .04
	B Not work to work		
.31	United Kingdom		
.16	Denmark	.16	United Kingdom
.15	Spain	.14	Denmark
.14	Netherlands	.13	Finland
.13	Ireland, Finland	.09	Germany
.12	Greece, Portugal	.08	Portugal, Netherlands
.11	Germany	.07	Ireland, Greece
.09	Italy	.06	Spain
.08	France	.05	France
.03	Belgium, Austria	.04	Austria
		.03	Belgium, Italy
	United States = .20		United States = .26

Table 3A.9 Transition rates, employment protection, and retirement replacement rates

	OECD employment protection measure	Replacement rate at median	Men		Women	
			Work to not work	Not work to work	Work to not work	Not work to work
Portugal	3.7	79.8	0.04	0.12	0.09	0.08
Greece	3.5	99.9	0.05	0.12	0.15	0.07
Italy	3.1	88.8	0.07	0.09	0.10	0.03
Spain	3.0	88.3	0.07	0.15	0.14	0.06
France	2.8	68.8	0.05	0.08	0.06	0.05
Germany	2.6	71.8	0.08	0.11	0.10	0.09
Belgium	2.5	63.1	0.04	0.03	0.07	0.03
Austria	2.4	93.2	0.07	0.03	0.09	0.04
Netherlands	2.3	84.1	0.04	0.14	0.09	0.08
Finland	2.2	78.8	0.06	0.13	0.07	0.13
Denmark	1.8	54.1	0.03	0.16	0.06	0.14
Ireland	1.2	36.6	0.04	0.13	0.11	0.07
United Kingdom	1.0	47.6	0.06	0.31	0.10	0.16
United States	0.7	51.0	0.07	0.20	0.04	0.26
correlation with		0.81	–0.02	–0.57	0.45	–0.70
OECD measure[a]		[.001]	[.96]	[.03]	[.10]	[.005]
correlation with			0.28	–0.46	0.46	–0.50
replacement rate[a]			[.32]	[.09]	[.10]	[.07]

Note: See text for explanation.

[a]Significance level in square brackets.

References

Autor, D., and M. Duggan. 2003. The rise in the disability rolls and the decline in unemployment. *Quarterly Journal of Economics* 118 (1): 157–206.

Banks, J., A. Kapteyn, J. P. Smith, and A. van Soest. 2009. Work disability is a pain in the *****, especially in England, the Netherlands, and the United States. In *Health in older ages: The causes and consequences of declining disability among the elderly,* ed. D. Cutler and D. Wise, 251–94.

Börsch-Supan, A. 2007. Work disability, health, and incentive effects. Paper presented at NBER Economics of Aging Conference. August, Carefree, Arizona.

Bound, J., and R. Burkhauser. 1999. Economic analysis of transfer programs targeted on people with disabilities. In *Handbook of labor economics,* vol. 3C, ed. O. Ashenfelter and D. Card, 3417–528.

Eurostat. 2003. *ECHP UDB description of variables data dictionary, codebook and differences between countries and waves.* European Commission, Brussels.

Gruber, J., and D. Wise, eds. 2003. *Social Security programs and retirement around the world: Micro estimation.* Chicago: University of Chicago Press.

Heckman, J. J. 1981. The incidental parameters problem and the problem of initial conditions in estimating a discrete time-discrete data stochastic process. In *Structural analysis of discrete data with econometric applications,* ed. C. F. Manski and D. L. McFadden, 179–95. London: MIT Press.

Hyslop, D. R. 1999. State dependence, serial correlation and heterogeneity in intertemporal labor force participation of married women. *Econometrica* 67:1255–94.

Kapteyn, A., J. P. Smith, and A. van Soest. 2007. Dynamics of pain and work disability. *Journal of Health Economics* 27 (2): 496–509.

Nicoletti, C., and F. Peracchi. 2002. Aging in Europe: What can we learn from the Europanel? In *Pensions: More information, less ideology,* ed. T. Boeri, A. Börsch-Supan, A. Brugiavini, R. Disney, A. Kapteyn, and F. Peracchi, 153–88. Dordrecht: Kluwer.

Organization for Economic Cooperation and Development. 2003a. *OECD employment outlook 2003: Towards more and better jobs.* Paris: OECD.

———. 2003b. *Transforming disability into ability: Policies to promote work and income security for the disabled.* Paris: OECD.

———. 2004. *OECD employment outlook 2004: Employment protection regulation and labour market performance.* Paris: OECD.

———. 2005. *Pensions at a glance; public policies across OECD countries.* Paris: OECD.

Peracchi, F. 2002. The European community household panel: A review. *Empirical Economics* 27 (1): 63–90.

Stapleton, D.C., and R. V. Burkhauser, eds. 2003. *The decline in employment of people with disabilities: A policy puzzle.* Kalamazoo, MI: W. E. Upjohn Institute for Employment Research.

Vella, F., and M. Verbeek. 1999. Two-step estimation of panel data models with censored endogenous variables and selection bias. *Journal of Econometrics* 90 (2): 239–63.

World Bank. 2006. Social safety nets in OECD countries. *Social Safety Nets in OECD Countries, no. 25.*