

# Institutional Determinants of Employment Chances

## The Structure of Unemployment in France and Sweden

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Linked employer–employee data for Sweden and France are used to test competing hypotheses about the structure of unemployment in France and Sweden derived from a comparison of their welfare-state structures, labour-market institutions, and the linkages between their educational system and labour market. Contrary to standard predictions derived from welfare-state theory, the unemployment structure of France does not conform to the classic insider–outsider labour-market model that scholars generally attribute to conservative welfare-state regimes. Instead, France has a flexible two-tier labour market that produces relatively high entry rates into employment along with the strong age and educational gradients in exit rates that would be expected for a country with high firing costs. Even during the deep recession of the early 1990s, Sweden was also characterized by a strong age gradient in the rate of exit from an employer. However, Swedish rates do not show a strong education gradient, which is the expected consequence of Sweden's loosely linked school and work institutions, and extensive active labour-market policies. Active labour-market policies during the Swedish recession of the early 1990s appear to have further changed the shape of the age–unemployment curve in that country by raising the exit rate of older workers more than would have resulted from the dynamics of labour demand alone.

### Introduction

A satisfactory explanation for unemployment is one of the outstanding issues of current labour-market research. Since the appearance of stagflation in the early 1970s, social scientists have been challenged by persisting cross-national differences in unemployment in Europe, where several European nations have unemployment rates lower than the United States (OECD, 1999), even as most Europeans live in societies with persisting high rates of unemployment (OECD, 1994).

While there is no shortage of theories, consensus on the causes and even the nature of European unemployment is still elusive. Most available explanatory accounts are based on economic models

(see e.g. the review in Bean, 1994), but sociological theories of the welfare state and the labour market also make important predictions about the structure of unemployment. Nonetheless, despite burgeoning sociological interest in the issue of unemployment (e.g. Brauns *et al.*, 1999; Esping-Andersen and Regini, 1999; and Gallie and Paugam, 1999), empirical assessments of theoretical predictions are still rare. Even within economics, empirical analysis tends to be macroeconomic in character, and lacks information on the micro-level dynamics that would allow one to adjudicate between theories.

Sweden and France provide a comparison that allows us to evaluate competing hypotheses about the link between a nation's institutional arrangements and its structure of unemployment. The

French–Swedish comparison is revealing for two reasons. First, the two countries' recent history with unemployment is very different. In several European countries, of which France is a typical case, each upward shift in unemployment in response to a demand shock has tended to become permanent. At least until the early 1990s recession, Sweden instead displayed the cyclical pattern of unemployment that has been more typical of the US experience. Unemployment, however, surged in Sweden from 1.5 per cent in 1990 to 8 per cent in 1993, with little change in the following years. This transition brought Sweden in line with the more dismal European experience, though unemployment is now falling rapidly in Sweden, and the strong French–Swedish contrast of the late 1980s may be re-established.

The French–Swedish comparison is also illuminating for theoretical reasons. France and Sweden are typically classified as having different types of welfare systems. Furthermore, their labour markets are different in important respects. This paper, therefore, provides a comparative analysis of the structure of unemployment in France and Sweden, with specific reference to the transition rates that determine unemployment (the rate of job entry, the rate of separation from the employer, and the probability of rapid re-employment, given a separation), and to the dependence of transition rates on education and labour-force experience. We address the overall question of why the structural features of unemployment in France and Sweden have been so different in terms of three institutionally grounded questions. First, to what extent are French–Swedish differences due to contrasts between the French and Swedish welfare systems, specifically their different conceptions of social insurance, and differences in the way social insurance is financed? Second, to what extent do French–Swedish differences arise from the institutional structures that define and protect labour contracts, and that facilitate or hinder job mobility? Third, to what extent is the structure of unemployment in France and Sweden explainable in terms of the institutional linkages between education and the labour market that condition the school-to-work transition? We use unusually rich longitudinal data that match workers with their employing organizations in order to answer these questions.

## Theoretical Background

Much of the received wisdom about European unemployment stems from a comparison with the USA. According to conventional wisdom, the US labour market works better than the average European labour market because it is less constrained by institutional rigidities. Empirical studies based on macro data indicate, however, that such a simple view may be highly misleading (Gregg and Manning, 1997; Nickell, 1997; Nickell and Layard, 1999; OECD, 1999). Cross-sectional correlations at the country level between unemployment rates and indicators of labour market regulation in different countries are generally weak, with no consistent pattern. One reason for the low correlation in country-level data may be that a country's structure of unemployment derives from multiple institutions, which themselves are not highly inter-correlated. Using the countries of France and Sweden as a point of departure, we argue that competing predictions about their structure of unemployment can be drawn from a consideration in turn of the structure of these countries' welfare states, labour markets, and school-to-work linkages.

### Welfare State Structure

In a well-known typology, Esping-Andersen (1990; see also Titmuss, 1958; Furniss and Tilton, 1977; Esping-Andersen, 1999) distinguishes three worlds of welfare capitalism: the liberal, the conservative, and the social democratic regimes. Paramount examples of the liberal regime are the Anglo-Saxon countries including the United States, while the conservative model prevails in continental Europe, and the social democratic regime in the Nordic countries. The conservative welfare state model differs from the social democratic and liberal models in its focus on the family rather than the individual as the main recipient of social protection. Some social welfare theorists have argued that the specific characteristics of the conservative welfare state, in combination with characteristics of the industrial relations system, have created an 'insider–outsider' labour market in much of continental Europe (e.g. Esping-Andersen, 1996; Mayer, 1999). To quote from Esping-Andersen (1996: 79):

To safeguard the family wage, unions cannot allow low-wage markets; social contributions raise fixed labour costs, thus making the hiring of one additional worker marginally very costly. And fixed social contributions have been rising steeply. Catholic familism aside, the very heavy transfer burdens (and public debt payments) with which European welfare states are already burdened would prohibit any significant public employment strategy.

The proposed mechanism linking social institutions and the structure of unemployment is clear: high wages plus high social contributions equals high labour costs, which price low-skill workers out of the market, while ‘Catholic familism’ reduces female labour supply via a set of institutionally induced incentives (e.g. tax incentives) and constraints (e.g. the unavailability of child care, the use of irregular school-ending times, or the cancellation of classes when a teacher is sick to reduce the child-care function the school system would otherwise have). These ‘familistic’ institutions are actually more applicable to German-speaking countries and the Netherlands than to France, which, for example, offers extensive child-care to facilitate female employment (Bergmann, 1996). However, the high labour cost structure imposed on employers by the welfare state clearly applies to France as well as to the German-speaking countries.<sup>1</sup>

Sweden is frequently viewed as a contrasting case by welfare-state scholars. Esping-Andersen argues that Sweden and other Scandinavian countries avoided the insider–outsider labour market via the strategy of public employment (Esping-Andersen, 1996: 77). Strictly speaking, the social democratic welfare state produces the same structure of high labour costs as do the conservative welfare states. The predicted effect – the pricing of low-skill labour out of the market – is, however, mitigated by the public-employment policies of social democratic welfare states.

The form of social-welfare benefits themselves may have an impact on the structure of the labour market. In particular, the level and duration of benefits triggered by unemployment would be expected to affect the rate of transitions between unemployment and employment. Nickell (1997) has argued that the duration of benefits rather than their level has the relatively greater impact on the

transition rate from unemployment to employment, and that the duration of unemployment benefits in France is longer than is the duration in Sweden (see also OECD, 1994). Since a low rate of transitions between unemployment and employment is one of the defining characteristics of an insider–outsider labour market, this institutional difference should heighten the contrast between the structure of unemployment in France and Sweden.

The conservative welfare state of France should have a tendency to produce a relatively static insider–outsider labour market in which low-skill and other marginalized workers are outsiders. Recognizing that ‘skill’ is a function of both education and labour-force experience, the welfare state model implies low transition rates between unemployment and employment, low transition rates between employment and unemployment, and a strong education and age-gradient on transition rates, particularly with respect to the transition from unemployment to employment. The skill-gradient in Sweden should be less pronounced because of its relatively larger public sector, and the rate of transitions between unemployment and employment should be higher because of the shorter duration of unemployment benefits in Sweden.

### Labour-Market Institutions

Comparative research on micro-level employment relations has so far been scarce, but the literature that exists points to important differences between the French and Swedish labour markets. Employment relations in France have a dualistic character: they create employment security and relatively high mobility barriers for more senior workers, but offer little protection for new workers (Maurau, 1993; Marsden, 1999). Employees with more than two years’ seniority receive strong protection from employment security legislation. The French barriers to mobility are perhaps reinforced by the French wage bargaining system. Wages are, in practice if not formally, determined at the level of the firm (Blanchard and Summers, 1988; Goux and Maurin, 1999a). Local wage determination typically raises mobility barriers around organizations. Furthermore, while unions are much weaker in France than in Sweden, they are traditionally much more focused

on protecting the jobs of the employed than on creating jobs to lower the rate of unemployment.

Employment relations in Sweden, by contrast, are marked by flexible internal markets (Osterman, 1988: 123ff.). Job classifications are few in number and broad in character. Managers typically face weak restrictions in redeployment of the labour force. Crucially, seniority considerations normally play an insignificant role in internal placement decisions. It is important to note that this system of employment relations is structurally integrated with welfare state policies and bargaining procedures. 'There is a balance of power in which firms, as it were, are given conditional rights to manage the internal labour market with great discretion but are also put on notice that the privilege can be withdrawn if abused. Put another way, the unions deliver considerable flexibility to the firms but ask for security in return' (Osterman, 1988: 124–5). This security is neither job- nor firm-based, but rests on a general employment guarantee (albeit less than absolute). Barriers to inter-firm mobility tend to be low in Sweden, and mobility is further increased by the strong restrictions on inter-firm wage differentials, which speed up industrial restructuring by closing the low-wage escape route for unprofitable organizations. Active labour-market policies then help facilitate the movement of workers from contracting to expanding firms (see e.g. Edin and Topel, 1997). An implication of this model is that the strong labour demand among firms with excess profits absorbs most or all of the excess labour from weak firms, including their lower-skill workers.<sup>2</sup>

Labour-market rigidities that are (as in France) connected to a tiered system of firing costs – high in the case of high-tenure workers, but low in the case of low-tenure workers – should, we argue, generate a 'flexible' two-tier labour market rather than the classic insider–outsider market predicted by welfare-state theorists. A flexible two-tier labour market is characterized not by low transition rates from unemployment to employment, but rather by a combination of high entry rates and high exit rates from the employer for the group of workers who are not covered by employment security regulations. In the flexible two-tier market, workers who pass the tenure threshold have relatively 'permanent' jobs, while other workers are 'transients'; they can work, but their employment durations tend to be short.

Exit rates, we predict, will have a strong age (or, equivalently, labour-force experience) gradient. Younger workers (especially lower-skill younger workers) will, according to this model, experience a labour-market 'churn' as they move into and out of firms. At each employment spell a fraction of these workers will 'stick' with a firm long enough to pass the tenure threshold and attain employment security. It is the operation of this non-zero probability of 'sticking' that creates the age-gradient in transition rates.

In contrast, the active labour-market policies of Sweden produce a market in which mobility is governed primarily by the structure of labour demand at the firm level. Workers at all skill levels are forced to change jobs as a consequence of industrial restructuring, but active labour-market policies (when successful) aid these workers in finding new employment with expanding firms. In other words, exit rates are demand driven rather than skill driven, and transitions usually lead to new jobs in other firms rather than to unemployment when overall demand is sufficient.

It is, of course, a historical fact that active labour-market policies were not sufficient to counter the collapse of demand during the steep recession of the early 1990s and to prevent Swedish unemployment rates from rising. The active labour-market policies of Sweden, however, arguably still influenced the structure of transition rates during this period as part of an effort to preserve work under conditions of reduced labour demand for mid-career workers. During the recession, Swedish firms sometimes obtained permission from trade unions to set aside the 'last in, first out' layoff rule and instead induce older workers to exit by providing extra severance pay (Wadensjö, 1996). Disability pensions for older workers also jumped sharply during the recession. Occupational annuities to those whose capacity to earn income had been reduced for health reasons rose sharply from the middle 1980s up to 1993. Finally, firms began using what Wadensjö referred to as 'guarantee' pensions (purchased from private insurance companies) as an inducement to older workers to leave so that a firm could downsize and yet hold on to its younger workers. In short, it would appear that the recession in Sweden stimulated a set of policies that may have increased the flow of older workers out of

establishments beyond what would be predicted from demand changes alone, as part of an effort to preserve jobs for mid-career and younger workers.

### Linkages between Education and the Workplace

Important similarities exist between France and Sweden with respect to the structure of linkages between the educational system and the labour market, but important differences also exist. In contrast to Germany or the Netherlands, both Sweden and France have only moderate vocational specificity in their educational system. Furthermore, France has only moderate stratification in its school system, and Sweden's educational system is dominated by comprehensive schools that do not uniformly practice curriculum tracking (Müller and Shavit, 1998; see also Goux and Maurin, 1998; and Erikson and Jonsson, 1998). Mayer (1999) also ranks Sweden and France as similar in having educational systems that focus on schooling as opposed to training. Consequently, Sweden has 'loose' education–occupation links (Mayer, 1999), and France has a low correspondence between the skills demanded by employers and the qualifications supplied by the formal schooling system (Mansuy *et al.*, 1999). The weak linkages between school and work make it more difficult for firms to identify appropriately trained school leavers, and for school leavers to identify jobs that are appropriate for their talents and interests. The result is arguably the kind of serial matching between workers and jobs at all skill levels (possibly with short intervening spells of unemployment) that characterizes the American labour market. Such a pattern implies a strong age gradient in rates of separation from an employer and relatively high 'frictional' unemployment among young workers as a by-product of the high rates of separation. These workers may also have relatively high re-employment rates to the extent that loose school–work linkages create vacancies in the kind of entry-level jobs for which younger workers are favoured.

The weak linkages between school and work have a particularly dualistic character in France. French firms are required to train workers or else pay a special tax that is used by the state for training

programmes, but the workers who actually receive training generally work in relatively skilled jobs in large firms (Goux and Maurin, 1999*b*). These are the workers whose probability of mobility is already low. In contrast, younger, less-skilled workers in smaller firms are significantly less likely to receive training in France (OECD, 1999). The situation in Sweden is clearly different. The participation ratio between younger and older workers is much higher in Sweden than in France, and training rates are more similar across skill categories in Sweden than in any other country that was included in a recent OECD comparison (OECD, 1999). The dualistic system of training in France will arguably enhance the mobility differential between younger and older workers, and between lower- and higher-skill workers.

These considerations suggest competing models for the structure of unemployment in France and Sweden. The 'welfare-state' prediction would be for an insider–outsider labour market in France that is largely age- and education-biased, in which transition rates are relatively low. The partially effective Swedish use of public employment to provide an employment haven for lower-skill workers would create a difference in degree, but not in kind, between Sweden and France. Labour-market considerations centred on the structure of firing costs and institutional support for mobility in the two countries suggest that France should instead have strongly age-biased as well as education-biased transition rates, in which transitions among employment states should be relatively high, especially for young workers. Labour-market considerations suggest that Sweden, in contrast, should have a labour market characterized by high mobility rates, but lacking the dualistic character of the French market. This difference is reflected in the higher re-employment rates when demand is adequate. During the Swedish recession, Sweden's 'active-labour-market policies' should have pushed its mobility structure away from a purely demand-driven pattern towards especially high transitions by older workers. Finally, the loose school–work linkages in both countries imply a strong age-gradient to transition rates and possibly also an education-gradient, while the dualistic character of the French training system should further enhance the age and educational differential in mobility rates.

## Model Specification and Methods of Estimation

To test these hypotheses, we develop a model in which unemployment is conceptualized as the potential outcome of flows involving specific employment relationships. In early work using a flow approach to the study of unemployment (e.g., Smith, Vanski, and Holt, 1976; DiPrete, 1981; Clark and Summers, 1982) the focus was on transition rates of individuals between the generic states of employment, unemployment, and out of the labour force. More recently, the focus has expanded to include establishment-level analyses of inflows and outflows of workers and the creation and destruction of jobs (Blanchard and Diamond, 1992; Davis, Haltiwanger, and Schuh, 1996; Schettkat, 1996). Our approach differs from most existing research in its explicit treatment of the link between the worker and employer. This approach allows us to distinguish empirically the process of destroying employment relationships (separation from the employer) and the process of creating employment relationships (movement from a previous job or unemployment to a new job with a different employer). Such a model that would empirically distinguish these two processes has not previously been attempted in the study of unemployment so far as we know (for an example of a ‘two-step’ model in a different context, see Yamaguchi and Kandel, 1987).

The ‘transition tree’ presented in Figure 1 provides the framework for our empirical investigation. As represented by this tree, the exit and entry processes are sequential; workers must first exit an employer in order to get a job with a new employer. Similarly they must stay with their current employer in order to change jobs with the same employer. Exit and entry, in other words, can be viewed as two different aspects of the transition process. At the beginning of the period, each individual  $i$  in our sub-sample of the population is either employed ( $E_i=1$ ) or unemployed ( $E_i=0$ ). If s/he is unemployed, s/he can either experience a transition towards employment ( $UE_i=1$ ) or remain unemployed ( $UE_i=0$ ). If s/he is employed at the beginning of the period, s/he can either experience a separation ( $FS_i=1$ ) or remain with the same employer ( $FS_i=0$ ). Those who experience a separation can either be

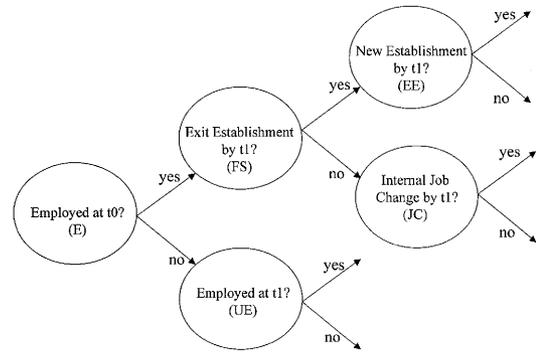


Figure 1. *The transition tree*

re-hired by another employer ( $EE_i=1$ ) or remain unemployed ( $EE_i=0$ ). Finally, workers who do not experience a separation can either change jobs within their firm ( $JC_i=1$ ) or remain in their initial job ( $JC_i=0$ ).

The initial state (unemployment or employment) and each of the potential transitions from this state plays a part in generating the age–unemployment relationship. The impact of UE, FS, and EE is of course obvious, but JC also plays a potentially important role, for the following reason. Assuming that internal mobility is on average a desirable occurrence, it follows that high rates of internal mobility raise the expected value of the current employment relationship. Low rates of internal mobility correspondingly reduce the expected value of the current employment relationship, and thus increase the probability that the relationship will be broken either by the employer or the employee.

Because even a consideration of only two time points involves five possible outcomes, and because of the inherent censoring described in Appendix I (one cannot observe all outcomes for all individuals), we estimate the outcomes simultaneously. The complete likelihood function (described in Appendix I) consists of a summation over univariate, bivariate, and trivariate normal distribution functions. By estimating the transition equations in a multivariate context, we obtain estimates that (assuming the validity of our model specification) are corrected for selection bias arising from the fact that we can only observe transitions for the sub-sample of respondents who were at risk for each of the possible

transitions (i.e., we observe establishment exit only for respondents who were employed, we observe within-employer mobility only for employed workers who did not exit the employer, etc.).<sup>3</sup>

## Data Sources and Variable Definitions

Our strategy for estimating the parameters of the transition tree model is distinguished by the use of longitudinal multi-level (employer and employee) data to model the effects of establishment and firm dynamics on individual-level transitions. Recent research (e.g. Leonard, 1987; Davis, Haltiwanger, and Schuh, 1997) has documented tremendous heterogeneity in firm- or establishment-level trends in demand even within the same industry at the same point on the business cycle. Consequently, we develop a model for employment dynamics that takes into account the changing demand for labour by the employee's own establishment or firm using longitudinal data that explicitly link the employee and employer. This technical innovation has important theoretical implications. By taking explicit account of the dynamics of demand at the employer level, we are able to distinguish cross-national differences that are linked to the structure of labour demand from cross-national differences caused by the institutional arrangements that shape the consequences of labour demand for employment transitions.

The data for France and Sweden are taken from each country's Labour Force Surveys and from administrative data about changes in the size of establishments over time. Because we have linked these two sources of data at the individual level, we can measure changes in the size of the employing organizations for the respondents of the labour-force surveys. Data for France cover the period from 1992 to 1993. Data for Sweden cover the longer period of 1987 through 1994 so that both the full-employment and the recession period can be compared. In both countries, however, the focus of the analysis is on one-year transition rates. The details of our data sources can be found in Appendix II. Because of the special character of female transition rates (which often involve transitions into and out of the labour force as well as between employment and unemployment), we limit our attention in this

paper to men who were either working or unemployed at the first time point. This data selection rule allows us to test the set of competing hypotheses discussed above, which are framed in terms of age, education, and the pattern of transition rates in the presence of controls for firm-level demand.<sup>4</sup>

We fit a common model to data from both countries. Because of computational considerations arising from the complexity of our model, we defined our exogenous variables as a set of dummy variables. For labour-force experience, we used the following cut points: 0–5 years of experience, more than 5–10 years, more than 10–20 years (the omitted category), more than 20–35 years, and more than 35 years, where experience is measured as the number of years between leaving school and the survey date.<sup>5</sup> We distinguished four levels of education: primary (this lowest educational level is the omitted category), lower secondary and vocational, upper secondary, and tertiary. We then defined a variable that took the value '1' if the establishment/firm was stable or growing in size, and '0' if the establishment/firm was contracting (or if size was missing) and we interacted this variable with each of the five experience groups used in our analysis.<sup>6</sup> We also included a dummy variable to indicate whether size or size change information was missing. We used four dummy variables for the size of establishments/firms (0–9 workers, 10–49, 50–999, and 1000 or higher). We included dummy variables to indicate whether a worker was married or cohabiting, and whether a worker's sector was private or public. Finally, we included a dummy variable to distinguish the 1991–3 recession period in Sweden from the earlier period, and we also included an interaction between recession and workers with more than 35 years of labour-force experience.<sup>7</sup>

## Results

Differences in the structure of unemployment in France and Sweden are clearly visible in descriptive tabulations from the national labour-force surveys (see Table 1). The unemployment rate in France during 1992, which is reasonably representative of French experience during the past couple of decades, is much higher than was the Swedish unemployment rate of

**Table 1.** Rates of job mobility and unemployment for males, by age

Age	Unem ( $t$ )	Emp ( $t+1$ )/ Unemp ( $t$ )	Employer exit	Emp ( $t+1$ )/exit	Count
<i>France, 1992</i>					
20–24	21.7	39.3	35.8	41.5	1 155
25–29	11.1	42.0	17.7	63.1	2 241
30–34	8.5	40.3	14.1	61.5	2 622
35–39	7.4	35.8	11.2	58.7	2 868
40–44	5.8	38.1	8.7	54.5	3 184
45–49	5.8	31.3	9.4	54.5	2 458
50–54	7.2	26.5	10.3	42.9	1 762
55–59	14.1	8.7	17.7	16.5	1 471
All	9.4	32.2	15.1	46.4	18 572
<i>Sweden, 1987–1990</i>					
20–24	2.9	59.2	24.8	70.4	1 370
25–29	2.2	69.3	18.0	78.1	1 371
30–34	1.5	56.8	13.7	89.7	1 507
35–39	1.2	67.6	8.9	87.1	1 586
40–44	0.4	73.1	7.0	82.3	1 756
45–49	0.7	42.5	6.4	78.9	1 445
50–54	1.0	74.0	4.4	67.9	1 181
55–59	1.1	41.8	5.4	40.3	975
All	1.4	61.4	11.3	77.4	11 191
<i>Sweden, 1991–1993</i>					
20–24	13.8	29.9	25.6	22.1	884
25–29	7.6	37.5	18.0	36.6	1 141
30–34	6.3	38.6	13.4	50.4	1 098
35–39	4.9	33.1	8.6	48.3	1 102
40–44	3.0	35.0	8.8	43.2	1 279
45–49	2.5	32.9	6.7	39.5	1 268
50–54	2.1	14.9	8.5	27.6	932
55–59	2.6	53.1	10.4	14.3	733
All	5.3	34.1	12.1	35.1	8 437

*Note:* These statistics include self-employed as well as wage and salaried workers.

the late 1980s. The Swedish rate rose substantially during the 1991–3 recession.

The data also show a strong age gradient to unemployment in both countries. A comparison between France in 1992 and Sweden in 1987–90 is instructive. Despite Sweden's dramatically lower unemployment rate during this time, the yearly rate of separation from the employer in Sweden is remarkably high, especially among young workers. The probability of new employment, given an exit, is also very high in Sweden during these years. The data, in other words, are consistent with the argument that Sweden's labour market was strongly influenced by a

combination of active labour-market policies and loose education–workplace linkages, which together produced a pattern of repeated matching between employers and workers that gradually diminishes with labour-force experience. Interestingly, the pattern of separation rates is rather similar in Sweden during the recession years in comparison with the earlier full-employment period. The major differences between the two periods are the sharp drop in the probability of re-employment, given a separation from the employer, and the sharp drop in the probability of employment at time  $t+1$ , given unemployment at  $t$ .

The pattern in France, which is closer to being a steady-state representation of the French economy for a broad period of time, is also one of strongly age-graded separation rates. The unemployed as a group are clearly not shut out of the labour market, however. In this respect, the classic insider–outsider market does not satisfactorily describe the French data. The insider–outsider market model is also strongly contradicted by the fact of high separation rates, especially at young ages. The age gradient in the unemployment rate appears to stem largely from the combination of a falling separation rate with age, and a rate of re-employment, given separation, that is much higher for workers aged 25 or older than for younger workers.

To examine the joint effects of education and age in the presence of controls for the dynamics of firm-level labour demand, we estimated the multivariate probit model described in the previous section, and present our results in Tables 2 and 3.<sup>8</sup> For the most part, we focus our discussion on the effects which are most pertinent to the hypotheses discussed earlier in this paper. In interpreting these tables, it is useful to keep two facts in mind. First, the *z* statistic reports the statistical significance of the contrast between an effect and the reference category; contrasts between other effects can be statistically significant even when the *z* statistics for the two coefficients are less than 2. Secondly, the use of probit (or for that matter logit) equations in a cross-national study creates problems of interpretation due to the non-linear character of the model and the fact that logit or probit parameters are only identified up to an arbitrary scale. When appropriate, therefore, we rely on interpretations of the marginal effects of the particular dummy variable on the probability in question.<sup>9</sup>

### Employment at $t_0$

The effects of experience on the risk of unemployment at  $t_0$  trace a notably different curve in France than in Sweden. In France, very low levels of experience (0–5 years) created a higher risk for unemployment relative to higher levels of experience. The risk of unemployment was lowest in France at 21–35 years of experience. The sharp jump in French unemployment in the highest experience category can largely be attributed to

the structure of French welfare policies.<sup>10</sup> In Sweden the risk of unemployment was very low at all levels of experience during the ‘full employment years’.<sup>11</sup> During the recession the risk of unemployment was roughly equal for Swedish male workers with between zero and 20 years of experience. The risk then steps down for workers with more than 21 years of experience. Both countries show a strong education bias in the composition of unemployment.

### Employer Exit by $t_1$ , Given Employment at $t_0$

Table 2 confirms that both countries have strong age-gradients in their separation rates with the age-gradient being even stronger in France than in Sweden. In Figure 2, we graph the probabilities of separation by age for workers in contracting and expanding establishments in both countries.<sup>12</sup> It is not surprising that exit rates are higher in contracting firms than in expanding ones. It is notable, however, that young French workers exit the employer at high rates regardless of whether the employing firm is growing or contracting. Sweden also shows an age gradient, but it is not as steep as that of France. Sweden also shows a sharp rise in the exit rate by older workers in 1991–3, which is the expected result of the Swedish labour policies designed to protect jobs of mid-career and younger workers during the recession.

The coefficients in Table 2 also confirm an education-gradient in the rate of separation for both countries. In other words, less educated workers were more likely to exit the employer than were more highly educated workers. This education gradient, however, is especially strong in France.

### Re-employment by $t_1$ , given unemployment at $t_0$

Among workers who were unemployed at  $t_0$ , the effect of experience on the rate of entry into employment is quite different in France and Sweden. In Sweden, there were no significant differences in the probability of re-employment by experience level. In France, however, the probability of employment was relatively high for workers with fewer than ten years of work experience. It was also relatively high for low-skill workers. In other words, the workers

**Table 2.** Multivariate probit estimates for males in the labour force at time  $t_0$  in France and Sweden

	France		Sweden	
	Coeff.	Z	Coeff.	Z
<i>Employment at <math>t_0</math> (E)</i>				
Intercept	1.142	48.086	1.950	25.183
Exp 0–5	–0.513	–12.261	–0.021	–0.247
Exp 6–10	–0.249	–6.198	–0.089	–1.065
Exp 21–35	0.154	4.743	0.481	5.859
Exp 36+	–0.308	–8.648	0.280	3.084
Lower secondary/vocational	0.308	8.768	0.240	3.308
Upper secondary	0.370	8.605	0.284	3.606
Tertiary	0.554	13.291	0.659	7.460
Recession			–0.732	–12.674
Living w/o partner	–0.481	–12.157	–0.346	–5.649
<i>Employer Exit (FS)</i>				
Intercept	–0.932	–5.137	–0.991	–13.345
Exp 0–5	0.805	8.686	0.528	7.542
Exp 6–10	0.275	4.450	0.390	5.344
Exp 21–35	–0.187	–3.944	–0.183	–2.810
Exp 36+	0.307	4.449	–0.262	–2.874
Lower secondary/vocational	–0.137	–2.021	–0.089	–1.822
Upper secondary	–0.147	–1.867	–0.131	–2.325
Tertiary	–0.332	–3.164	–0.143	–2.616
Recession			–0.062	–1.511
Growing*exp 0–5	–0.103	–2.587	–0.204	–2.828
Growing*exp 6–10	–0.249	–7.011	–0.388	–4.410
Growing*exp 11–20	–0.157	–2.727	–0.260	–3.434
Growing*exp 21–35	–0.148	–5.133	–0.305	–3.922
Growing*exp 36+	–0.192	–5.987	–0.435	–4.140
Size missing	0.140	3.837	0.048	–3.577
Recession*exp 36+			0.602	5.837
Size=0–9	0.090	3.142	0.016	0.293
Size=50–999	–0.099	–2.805	–0.215	–4.976
Size=1000+	–0.303	–9.673	–0.409	–5.862
Living w/o partner	0.090	0.765	0.040	0.934
Private sector	–0.066	–1.115	0.082	1.771
<i>Employment at <math>t_b</math> given unemployment at <math>t_0</math> (UE)</i>				
Intercept	–1.671	–21.533	1.120	0.050
Exp 0–5	0.420	6.504	–0.003	–0.011
Exp 6–10	0.311	4.240	–0.150	–0.266
Exp 21–35	–0.094	–1.543	–0.069	–0.016
Exp 36+	–0.393	–3.525	–0.391	–0.122
Lower secondary/vocational	–0.153	–2.431	–0.165	–0.069
Upper secondary	–0.176	–2.412	0.207	0.094
Tertiary	–0.207	–1.494	0.283	0.052
Recession			–0.961	–0.196
Living w/o partner	0.214	2.507	–0.402	–0.169

*Internal job mobility, given no employer exit (JC)*

Intercept	-1.506	-13.971	-1.648	-11.357
Exp 0-5	-0.127	-1.622	-0.118	-0.695
Exp 6-10	0.047	0.819	0.068	0.455
Exp 21-35	0.101	2.051	-0.355	-3.652
Exp 36+	-0.066	-1.093	-0.431	-3.456
Lower secondary/vocational	0.089	2.276	-0.018	-0.214
Upper secondary	0.077	1.802	0.008	0.090
Tertiary	0.183	4.194	0.110	0.890
Size=0-9	0.026	0.793	-0.118	-1.183
Size=50-999	0.015	0.406	0.299	4.232
Size=1000+	0.244	5.975	0.299	3.319
Recession			-0.005	-0.058
Growing*exp 0-5	0.097	0.969	0.036	0.280
Growing*exp 6-10	0.069	1.137	-0.016	-0.100
Growing*exp 11-20	0.062	0.859	-0.055	-0.592
Growing*exp 21-35	-0.041	-1.097	0.072	0.758
Growing*exp 36+	-0.049	-1.016	-0.087	-0.508
Size missing	0.067	1.655	0.022	0.177
Living w/o partner	-0.125	-2.078	0.055	0.684
Private sector	-0.134	-1.592	-0.009	-0.165

*Employment at  $t_b$  given employer exit (EE)*

Intercept	-0.522	-3.747	-0.513	-1.264
Exp 0-5	-0.385	-3.506	-0.136	-0.727
Exp 6-10	-0.129	-1.591	0.152	1.122
Exp 21-35	-0.198	-2.816	-0.076	-0.602
Exp 36+	-1.378	-13.020	-1.183	-5.786
Lower secondary/vocational	0.077	1.147	0.157	1.444
Upper secondary	0.253	3.387	0.189	1.432
Tertiary	0.142	1.328	0.507	3.053
Size=0-9	0.098	2.460	0.085	0.781
Size=50-999	-0.164	-3.861	-0.051	-0.533
Size=1000+	0.009	0.128	-0.217	-1.328
Recession			-0.982	-5.951
Recession*exp 36+			0.481	2.047
Living w/o partner	-0.239	-2.719	-0.280	-2.830
Private sector	0.244	2.087	0.206	2.180

in France who have especially high probabilities of exiting from the employer are also the workers who have relatively high probabilities of making the transition from unemployment to employment. The picture that emerges for France is not that of a classic insider-outsider market, but rather of an age- and education-biased, flexible, dual labour market, where the problem is not getting a job, but rather keeping a job. For Sweden, in contrast, it is the workers with the highest levels of education who

had the highest transition rates from unemployment to employment.

### Internal Job Change, Given No Exit from Employer

The transition structure for internal job change further reinforces the view of France as having a flexible two-tier labour market. Internal job mobility is an indicator that a worker has attained a level

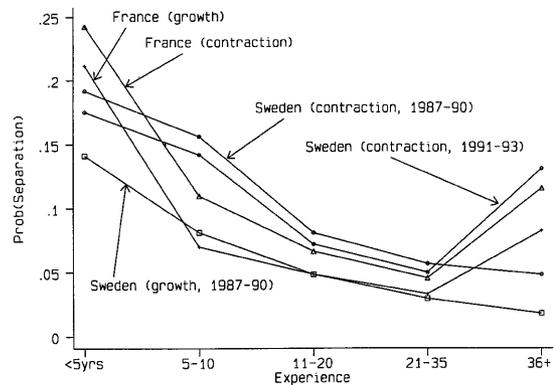
**Table 3.** Multivariate probit estimates for males in France and Sweden, including short-term contracts

	France		Sweden	
	Coeff.	Z	Coeff.	Z
<i>Employer exit (FS)</i>				
Intercept	-0.997	-3.567	-1.221	-15.521
Exp 0-5	0.710	3.635	0.378	5.296
Exp 6-10	0.218	1.982	0.339	4.628
Exp 21-35	-0.158	-2.159	-0.135	-2.035
Exp 36+	0.358	2.892	-0.207	-2.253
Lower secondary/vocational	-0.273	-1.511	-0.042	-0.855
Upper secondary	-0.133	-0.979	-0.066	-1.153
Tertiary	-0.105	-0.932	-0.087	-1.548
Recession			-0.068	-1.630
Growing*exp 0-5	-0.169	-1.430	-0.205	-2.769
Growing*exp 6-10	-0.279	-2.325	-0.369	-4.091
Growing*exp 11-20	-0.157	-1.834	-0.237	-3.121
Growing*exp 21-35	-0.156	-1.859	-0.321	-4.091
Growing*exp 36+	-0.205	-1.716	-0.427	-4.149
Size missing	0.129	2.410	-0.058	-0.813
Recession*exp 36+			0.632	6.128
Size=0-9	0.095	1.846	0.024	0.430
Size=50-999	-0.111	-1.935	-0.182	-4.120
Size=1000+	-0.313	-4.720	-0.390	-5.452
Living w/o partner	0.055	0.292	0.004	0.095
Private sector	-0.085	-0.991	0.223	4.530
Fixed term contract	0.955	12.884	0.994	16.845

of permanence in the firm. In France, internal mobility is lowest among the least experienced workers (especially in establishments that are not growing), and among the least educated workers. In contrast, inexperienced workers in Sweden do not have internal mobility rates that are low in comparison to more experienced workers. Furthermore, the contrast in mobility rates across educational categories is small in Sweden.

### Re-employment by $t_1$ , Given Separation

For the case of France, the age-gradient in rates of re-employment, given separation, reinforces the age-gradient that comes from the separation process. Inexperienced workers are significantly less likely to be re-employed in year  $t+1$ , given that they have separated from their former employer between  $t$  and  $t+1$ . This age pattern forms a sharp contrast with the situation in Sweden, where the effect of labour-force



**Figure 2.** Labour-force experience contrasts in the probability of establishment exit

experience is weaker. In both countries, however, the rate of re-employment, given separation, is skill-biased, and the education gradient appears to be even stronger in Sweden than in France. Sweden is

also characterized by rather high re-employment rates for older workers during the recession. As we noted earlier, this was the group that was especially affected by Swedish labour policies during this period of time.

### Fixed-Term Contracts and Employment Transitions

Inherent in the concept of the flexible, dual labour market is the distinction between jobs that offer high employment security and those that do not. In reaction to high unemployment rates coupled with widespread corporate unhappiness about labour market 'rigidities', many European countries (including France and Sweden) created the 'fixed term contract' (FTC) during the 1980s. FTCs lowered firing costs by allowing firms to terminate workers' employment after their FTC expired without formal procedures or severance pay (Auer and Büchtemann, 1990; Büchtemann, 1993). Not surprisingly, European employers have used FTCs predominately for younger workers (young workers are disproportionately new and recent hires) and for less educated workers (Auer and Büchtemann, 1990; Lyon-Caen, 1993; Abraham and Houseman, 1994; Lollivier, 1994; Fougère, 1996).<sup>13</sup> In general, a worker on a FTC can be retained at the expiration of his or her contract only if s/he is converted to an ITC. In practice, workers at the end of their FTC have a non-zero probability for each of the three possible outcomes (exit, renewal on an FTC, and conversion to an ITC).

In principle, differences in the rates of utilizing FTC, renewing FTC, or converting workers from FTC to ITC could produce differences in unemployment rates between France and Sweden. Both Swedish and French employers made substantial use of FTCs during the period under study (Lyon-Caen, 1993; Lollivier, 1994; Fougère, 1996; Korpi and Levin, 1998). However, the implication of FTC for separation rates may have differed in the two countries. Available evidence suggests that it was not difficult to renew FTC contracts in Sweden (Korpi and Levin, 1998).<sup>14</sup> In France, by contrast, renewal was not allowed except under limited circumstances. If renewal of FTC and conversion of FTC workers to ITC were less likely in France than Sweden, it would follow that young workers would have higher separation rates and lower rates of internal mobility

in France than in Sweden, even controlling for their contract status. This disadvantage might be especially large in contracting firms, which arguably are especially reluctant to retain or convert FTC workers.

To assess whether differences in the transition rates of Sweden and France are due to the frequency with which FTC are used as opposed to differences in the consequences of FTC status for transition rates, we re-estimated our models but included a measure of FTC status at  $t_0$  in the equations for separation, internal mobility, and re-employment, given a separation. Table 3 shows the results for the employer exit branch of the transition tree, which is the one that is most likely to be affected by the type of employment contract.

Clearly, workers on fixed-term contracts had substantially higher probabilities of separation from the employer in both France and Sweden. The nearly identical size of the coefficient in the two countries suggests that renewal/conversion rates of FTC are similar in the two countries. Including FTC in the model suppresses the effect of tertiary education, particularly in France. In other words, the strong education gradient in exit probabilities appears due to the fact that highly educated workers are less likely to be employed in FTC in France and Sweden than are less-well-educated workers.

The relationship between labour-force experience and FTC is different in important respects from the relationship between education and FTC, however. Unlike the case of education, inclusion of the FTC variable has only a mildly suppressing effect on the strong age-bias in transition rates that is found in both countries. In other words, even controlling for FTC, younger workers are much more likely to exit from the employer than are older workers. Exit rates by younger workers are especially high in France when compared with Sweden. This result implies that the age-bias of the flexible two-tier labour market in France arises not simply from the age-composition of FTC holders, but also from differences in age-specific conversion rates between insecure and secure employment status.<sup>15</sup> Growing firms are different from contracting firms in having lower separation rates, but the age-graded character of transition rates – even controlling for the type of employment contract – exists in growing firms as well as in contracting firms. It follows, therefore, that the age- and education-biased flexible two-tier

labour market in France is linked with the institution of the FTC in two respects: first in the age and educational composition of FTC holders (primarily less well educated and younger) and second in the strongly age-specific transition rates when employment contract status is controlled. The pattern in Sweden is qualitatively similar, but the age-bias is less extreme.

## Discussion

By focusing on the transition process that underlies a country's structure of employment and unemployment, our results have produced new insights into the labour-market structure of France and Sweden. Our results demonstrate the inadequacy of commonly held beliefs about the employment problems of Europe. The assertion that conservative welfare-states produce insider–outsider labour markets characterized primarily by long-term unemployment is clearly not an adequate characterization of the French labour market. France does not have a classic insider–outsider labour market in which skilled workers have secure jobs and outsiders are unemployed. Instead, France has what might be termed a flexible two-tier labour market that is strongly age-biased as well as education-biased. Sweden's labour market has also been characterized by strongly age-graded rates of separation even during the years of full-employment. The big difference between France and Sweden during the Swedish full-employment years was not the strongly age-graded pattern of employment exit, but rather the ease of re-employment for Swedish workers who exited their employer, and the relative absence of education effects in the rate of separation. In short, the Swedish pattern appeared to derive primarily from the structure of education–workplace linkages, which encouraged a pattern of repeated matches at diminishing frequency as a worker aged, coupled with active labour-market policies that increased the probability of re-employment, given separation. When the recession hit, the probability of re-employment fell sharply, suggesting a problem of overall demand deficiency. It is of course always possible for demand deficiency to produce an insider–outsider market over time. But recent evidence shows that unemployment is again falling

rapidly in Sweden, which suggests a reassertion of the pattern of the 1980s.

The flexible but dual character of the French labour market is consistent with evidence showing that France has high firing costs, which make employers reluctant to employ workers on indefinite-term contracts. The institutional features of the French labour market which allow employers to escape these high firing costs if they do not extend employment past two years of tenure, appear to explain the high turnover rates in France. The fact that the French transition structure is so heavily age-graded even in the presence of controls for employment contract, is also consistent with evidence showing that France, like Sweden, has relatively loose school–work linkages. We expect that both of these institutional features are contributing to the pattern of transitions that we observe in the French data.

Our results reveal a strong effect of contraction on the rate of separation from the employer across the entire range of labour-force experience. Our results, however, suggest that firing costs dominate local labour demand in determining the structure of these transition rates. In a market where labour demand governs transition rates, one might expect the youngest workers (who have the least developed firm-specific skills) to be at greatest risk of job loss when the employer's demand for labour falls. When labour-market policy allows it, one might also expect the typically more expensive older workers to be targets of early retirement programmes in contracting firms, as employers try to cut costs and protect their investment in mid-career workers. Instead, we found that the relationship between separation and experience was very similar in both contracting and in expanding firms, except during the special conditions of the Swedish recession, when older workers separated at relatively high rates.

Other differences between the transition process in France and Sweden also appear to derive from identifiable institutional features of the two countries. The high rate of separation by older workers in France probably arises from the incentives for early retirement built into the French welfare state. The change in the separation rate of older Swedish workers during the recession is explainable in terms of active labour-market policies that allowed specific employers to target older workers as a mechanism for adjusting the workforce in the face of falling

labour demand. Interestingly, we find that older Swedish workers were less likely to be unemployed during the recession despite their much higher separation rate, which suggests that the response to job loss by older workers in Sweden was often to exit the labour force entirely.<sup>16</sup>

Our model, which is reasonably sophisticated by current standards, could also be extended in certain respects. First, while our specification allows us to estimate the relationship between establishment dynamics and separations or internal job changes, its current form precludes our studying the relationship between establishment dynamics and entry into the establishment. Another shortcoming of the current formulation is its inability to distinguish between exits from an establishment into unemployment and exits from the labour force. While this distinction is often ambiguous (e.g. Clark and Summers, 1982), it is quite important for studying the labour force behaviour of women or older workers. These problems are not insurmountable, however, and should be important topics for future research.

## Appendix I: Model Specification

To construct a model for the transition tree in Figure 1 it is necessary to take account of the fact that (even in principle) only a portion of the relevant information is observable. The  $UE_i$  variable is observed only for individuals who experienced  $E_i=0$ . Similarly,  $FS_i$  is only observed for individuals who experienced  $E_i=1$ .  $JC_i$  is measured only for individuals who experienced  $E_i=1$  and  $FS_i=0$ , and  $EE_i$  for individuals who experienced  $E_i=1$  and  $FS_i=1$ . Four of the relevant transitions, in other words, concern endogenously selected fractions of the population. Given this fact, it is necessary to analyse the various entry and exit processes simultaneously in order to account for selection biases. The entire process can be analysed with a multivariate model consisting of five equations, one for each of the five discrete outcomes:

an employment equation:

$$E_i = 1 \text{ if } \beta_1 X_{1,i} + u_{1,i} > 0 \quad (1)$$

a separation equation (conditional on employment):

$$FS_i = 1 \text{ if } \beta_2 X_{2,i} + u_{2,i} > 0 \quad (2)$$

a re-employment equation (conditional on unemployment):

$$UE_i = 1 \text{ if } \beta_3 X_{3,i} + u_{3,i} > 0 \quad (3)$$

an internal mobility equation (conditional on employment without separation):

$$JC_i = 1 \text{ if } \beta_4 X_{4,i} + u_{4,i} > 0 \quad (4)$$

and a job-to-job mobility equation (conditional on employment and separation):

$$EE_i = 1 \text{ if } \beta_5 X_{5,i} + u_{5,i} > 0 \quad (5)$$

In these equations,  $X_{1,i}$  represents a set of variables that may affect the probability of employment at the beginning of the period,  $X_{2,i}$  represents a set of characteristics of the worker and the employer which may explain the probability of separation of worker and employer during the period,  $X_{3,i}$  represents a set of variables able to explain the transition from unemployment to employment,  $X_{4,i}$  represents a set of worker and employer characteristics that influence the probability of internal mobility, and  $X_{5,i}$  represents a set of variables likely to explain job-to-job mobility during the period.

To handle the endogenous selection mechanisms that determine which of the transitions are observable for each individual, we assume that the residuals from equations 1 through 5 ( $u_1, u_2, u_3, u_4$ , and  $u_5$ ) have a multivariate normal distribution with covariance matrix:

$$\Omega = \begin{bmatrix} 1 & r_1 & r_4 & r_3 & r_6 \\ r_1 & 1 & s_1 & r_2 & r_5 \\ r_4 & s_1 & 1 & s_2 & s_3 \\ r_3 & r_2 & s_2 & 1 & s_4 \\ r_6 & r_5 & s_3 & s_4 & 1 \end{bmatrix},$$

where  $r_i \in \{-1;1\} \forall i$  and  $s_i \in \{-1;1\} \forall i$ .

The  $r_1$  parameter represents the correlation between the unmeasured determinants of employment at the beginning of the period and the unmeasured determinants of firm separation between the beginning and the end of the period. The  $r_2$  parameter represents the correlation between the unobserved determinants of firm separation and the unobserved determinants of job change

within the firm between the beginning and the end of the period. The  $r_3, r_4, r_5,$  and  $r_6,$  parameters are defined analogously.

Because we can never simultaneously observe  $FS_i$  and  $UE_i$ , the  $s_1$  parameter is not identified. Similarly, the  $s_2, s_3,$  and  $s_4$  parameters are not identified because we cannot simultaneously observe  $JC_i$  and  $EE_i$ , or  $UE_i$  and  $JC_i$ , or  $UE_i$  and  $EE_i$ .

The likelihood function is denoted  $L(\beta_1, \dots, \beta_5, r_1, \dots, r_6)$ . As shown in Figure 1, there are six possible paths for each individual:  $(E_i=1, FS_i=1, EE_i=1), (E_i=1, FS_i=1, EE_i=0), (E_i=1, FS_i=0, JC_i=1), (E_i=1, FS_i=0, JC_i=0), (E_i=0, UE_i=1),$  and  $(E_i=0, UE_i=0)$ . Each path corresponds to a specific contribution to the likelihood function. Let us first focus on the contribution of an individual  $i$  who is employed at the beginning of the period ( $E_i=1$ ), who then exited the employer ( $FS_i=1$ ) and was working for a new employer at the end of the period ( $EE_i=1$ ). Letting  $L(\beta_1, \dots, \beta_5, r_1, \dots, r_6)$  be this contribution, we obtain:

$$L_i(\beta_1, \dots, \beta_5, r_1, \dots, r_6) =$$

$$\int_{-X_{1,i}\beta_1}^{+\infty} \int_{-X_{2,i}\beta_2}^{+\infty} \int_{-X_{5,i}\beta_5}^{+\infty} \varphi_3(x, y, z, r_1, r_5, r_6) dx dy dz$$

where  $\varphi_3(x, y, z, r', r'', r''')$  is the density function of the standard trivariate normal. After some manipulation, this expression can be rewritten as

$$L_i(\beta_1, \dots, \beta_5, r_1, \dots, r_6) = 1 - \phi(-X_{1,i}\beta_1) - \phi(-X_{2,i}\beta_2) - \phi(-X_{5,i}\beta_5) + \phi_2(-X_{1,i}\beta_1; -X_{2,i}\beta_2; r_1) + \phi_2(-X_{1,i}\beta_1; -X_{5,i}\beta_5; r_6) + \phi_2(-X_{2,i}\beta_2; -X_{5,i}\beta_5; r_5) - \phi_3(-X_{1,i}\beta_1; -X_{2,i}\beta_2; -X_{5,i}\beta_5; r_1; r_5; r_6).$$

where  $\phi(\cdot)$  is the cumulative distribution function of the standard normal,  $\phi_2(\cdot, \cdot, r)$  is the cumulative distribution function of the standard bivariate normal with correlation  $r$ , and  $\phi_3(\cdot, \cdot, \cdot, r', r'', r''')$  is the cumulative distribution function of the standard trivariate normal with correlations  $r', r''$  and  $r'''$ . Similarly, the contribution of an individual  $i$  who is employed at the beginning of the period ( $E_i=1$ ), who does not exit his firm during the period ( $FS_i=0$ ), and who does not change job within this firm ( $JC_i=0$ ) is:

$$L_i(\beta_1, \dots, \beta_5, r_1, \dots, r_6) =$$

$$\int_{-X_{1,i}\beta_1}^{+\infty} \int_{-\infty}^{-X_{2,i}\beta_2} \int_{-\infty}^{-X_{4,i}\beta_4} \varphi_3(x, y, z, r_1, r_2, r_3) dx dy dz$$

which can be rewritten:

$$L_i(\beta_1, \dots, \beta_5, r_1, \dots, r_6) = \phi_2(-X_{2,i}\beta_2; -X_{4,i}\beta_4; r_2) - \phi_3(-X_{1,i}\beta_1; -X_{2,i}\beta_2; -X_{4,i}\beta_4; r_1; r_2; r_3).$$

The contribution to the likelihood of a given worker  $i$  can therefore be written:

$$L_i(\beta_1, \dots, \beta_5, r_1, \dots, r_6) =$$

$$1(E_i = 1 \text{ and } FS_i = 1 \text{ and } EE_i = 1)(1 - \phi(-X_{1,i}\beta_1) - \phi(-X_{2,i}\beta_2) - \phi(-X_{5,i}\beta_5) + \phi_2(-X_{1,i}\beta_1; -X_{2,i}\beta_2; r_1) + \phi_2(-X_{1,i}\beta_1; -X_{5,i}\beta_5; r_6) + \phi_2(-X_{2,i}\beta_2; -X_{5,i}\beta_5; r_5) - \phi_3(-X_{1,i}\beta_1; -X_{2,i}\beta_2; -X_{5,i}\beta_5; r_1; r_5; r_6) + 1(E_i = 1 \text{ and } FS_i = 1 \text{ and } EE_i = 0) \times (\phi(-X_{5,i}\beta_5) - \phi_2(-X_{1,i}\beta_1; -X_{5,i}\beta_5; r_6) - \phi_2(-X_{2,i}\beta_2; -X_{5,i}\beta_5; r_5) + \phi_3(-X_{1,i}\beta_1; -X_{2,i}\beta_2; -X_{5,i}\beta_5; r_1; r_5; r_6) + 1(E_i = 1 \text{ and } FS_i = 0 \text{ and } JC_i = 1) \times (\phi(-X_{2,i}\beta_2) - \phi_2(-X_{1,i}\beta_1; -X_{2,i}\beta_2; r_1) - \phi_2(-X_{2,i}\beta_2; -X_{4,i}\beta_4; r_2) + \phi_3(-X_{1,i}\beta_1; -X_{2,i}\beta_2; -X_{4,i}\beta_4; r_1; r_2; r_3) + 1(E_i = 1 \text{ and } FS_i = 0 \text{ and } JC_i = 0) \times (\phi_2(-X_{2,i}\beta_2; -X_{4,i}\beta_4; r_2) - \phi_3(-X_{1,i}\beta_1; -X_{2,i}\beta_2; -X_{4,i}\beta_4; r_1; r_2; r_3) + 1(E_i = 0 \text{ and } UE_i = 1) \times (\phi(-X_{1,i}\beta_1) - \phi_2(-X_{1,i}\beta_1; -X_{3,i}\beta_3; r_4)) + 1(E_i = 0 \text{ and } UE_i = 0) \times (\phi_2(-X_{1,i}\beta_1; -X_{3,i}\beta_3; r_4).$$

## Appendix II: Data Sources

### France

The data for France in this study are taken from the 1992 and 1993 Labour Force Surveys *Enquêtes Emploi*: (hereafter LFS) conducted by the Institut National de la Statistique et des Etudes Economiques (INSEE). The surveys take place in March of every year. The survey samples are representative of the population aged 15 and above. The sampling fraction is approximately 1/300. The following standard information is compiled for each interviewee: age, nationality, labour-market status (in employment, unemployment, not in labour force), occupation, job tenure, school-leaving date, and educational attainment.

A major advantage of the LFS is that only one-third of the sample is replaced each year. One can thus track the careers of sample members for a period of two years. We limited attention to men who were re-interviewed in the 1993 survey (so that we

could measure job mobility between 1992 and 1993), and who were not civil servants, self-employed, or out of the labour force in the first survey, which yielded 16 644 cases. A second advantage of the LFS is that it provides the name and address of the employee's establishment.<sup>17</sup> The data are assembled at a computing centre in Nantes for collation with the official national business register (SIRENE). In nearly 60 per cent of cases, the information gathered from the respondent allows a straightforward match with a single establishment in the official register. For all these cases, the national centre extracts the relevant information about the establishment (including location, industry, and identification number) from SIRENE.<sup>18</sup> In all, the establishment identification number is available for 80% of surveyed workers. In those cases, the national centre extracts the relevant information about the establishment (including location, industry, and identification number) from SIRENE.

Each respondent declares his labour-force situation at the date of the survey. The variable  $E_i$  is equal to 1 when individual  $i$  is employed in March 1992 and is equal to zero when he or she is unemployed. The variables  $UE_i$  and  $EE_i$  are equal to 1 when individual  $i$  is employed in March 1993 and are equal to 0 otherwise. Workers who are employed in March 1992 and who are not employed in March 1993 experience a separation by definition. For the workers who were employed in both March 1992 and 1993, the separation is estimated by comparing the identification numbers of the employer in 1992 and 1993, when they exist.<sup>19</sup> When at least one is missing, the INSEE survey local managers, compare the information obtained from the respondent on the actual address and name of the establishment where he works at both dates, and report whether the respondent switched employers between March 1992 and March 1993.

The LFS does not contain a direct measure of job changing within the same employer, so we instead used an indirect measure. For those workers who did not experience a separation, we compared the jobs they held in 1992 and in 1993, using information on occupation (coded with a detailed 300-category classification) and on the main function of their jobs.<sup>20</sup> We required both a change in the occupation and in the main function to code a worker as having changed jobs.

In our data, the firm ID number is available for 12 224 of the 16 644 observations (73.4%). For 8567 of these 12 224 observations (51.5% of the total sample), we could match the LFS with the Surveys of Corporate Tax Returns from 1991 and 1992, and thus could obtain information about the number of employees in the firm in 1991 and 1992. In France, we do not know a great deal about the nature of firms where we were not able to obtain information about size or size change, though we speculate that they are more unstable than the typical firm (which contributes to the lack of information about them).

### Sweden

Micro data for Sweden come from the Labour Force Surveys (*Arbetskraftsundersökningarna*, AKU), conducted every month by Statistics Sweden with national probability samples of individuals aged 16–64. The respondents participate in telephone interviews eight times (quarterly) during a period of 21 months. Each eight-interview wave has a sample size of about 26 000 with about a 10% non-response rate. About one-third of the cases (typically January respondents) are asked the questions needed for our mobility analyses. Our data consist of seven one-year panels of respondents interviewed in two consecutive years during 1987 through 1994. The total sample size is 180 608 individuals, of whom 152 493 responded on both occasions. In this paper we focus on men, of whom 25 261 were explicitly asked about job shifts. Of these, 18 281 were employees at the first interview, 2635 were self-employed, 670 were unemployed, and 3675 were not in the labour force. For our multivariate analyses, this number was reduced by sample exclusions and internal missing values to 17 568.

All individuals in employment at the time of the interview are considered to be employed, regardless of whether they were absent or on temporary lay-off, and regardless of working hours. Those without employment who are actively looking for work are defined as unemployed. Each respondent in our sub-sample was asked (a) whether he changed employer and (b) whether he changed position with the same employer at any time during the previous calendar year. We used this information to measure internal and external job changes. We defined those who were employed at the first interview but not

the second as having left employment, and those who were not employed at the first interview but who are employed at the second as having entered employment.

Macro data for Sweden come from the Annual Register of Regional Employment (ÅARSYS), assembled by Statistics Sweden. This register contains employment data for the entire national population of individuals aged 16 or older, and is a combination of the Central Register of Firms and Establishments (Centrala företags- och arbetsställeregistret, CFAR) and tax registers of individual earnings. The establishment of each employed person is identified through employers' reports to the tax authorities on all wages and salaries paid during a calendar year. There is one document (*kontrolluppgift*) for every establishment/individual combination for all transactions that resulted in taxable pay from employer to employee during each calendar year. Each of these documents contains the identification numbers of both parties, the amount of pay, and the time period (calendar months) that the pay concerns. These documents are used by Statistics Sweden to identify the principal establishment of each individual in November of every year. Summing over all individuals gives the personnel size of each establishment in November. Differencing sums across years gives the yearly change in size.

The micro and macro data are linked in two ways. First, by matching all respondents in the labour-force surveys by personal identification number with the Annual Register of Regional Employment, the establishment of each respondent in November every year is identified. Second, by matching all respondents by name and address of her/his establishment (as reported in the interview) with the Central Register of Firms and Establishments, the establishment number at the time of interview is identified. Both methods have advantages and disadvantages. The advantages of the first method are (a) it identifies establishments for a very high proportion of the micro-survey respondents (93% of all employees), and (b) this identity is very reliable in the sense that the respondent actually received pay from the identified establishment. The disadvantages are that (a) the establishment that formally paid the employee need not be the establishment where the respondent actually performed (most of) what he considers to be his (main) job, and

(b) there is a gap of 2–3 months between the time of interview and November of the preceding year, a time during which the respondent might have changed establishment. The main advantage of the second method is that it is highly reliable: the identified establishment is the one that the respondent himself considers to be the place where he actually works. The people who carried out the match between the name and address information from the interview and the register of establishments were also instructed to set the identity to missing if they were not quite sure about the identification. The high reliability was achieved at a cost, however; less than half (48%) of all employed respondents have identified establishments by this method.

In our analyses, we used both matching methods. We used the second procedure whenever possible, because we believe that its reliability is higher. We used the first procedure for the rest of the sample whenever possible. Altogether, size information was available for 94% of all employed respondents.<sup>21</sup>

Perfection is almost never achievable when comparing data for different countries. In our analyses the principal comparability problems involve:

1. The time period to which our measures of expansion or contraction apply. In Sweden, the measure was based on a one-year period lagged two to three months from the one-year period for which job mobility was reported. For France, the measure is also based on a one-year period, but the lag is one year instead of 2–3 months.<sup>22</sup>
2. The measure of contraction and expansion. In Sweden, the measure was defined at the establishment level, while in France only firm-level measures of contraction and expansion were available. However, by using a dummy-variable measure of expansion and contraction, we reduce the empirical consequences of the cross-national difference in measurement for this variable.
3. Internal job change. In Sweden this is measured by respondent self-reports, while in France it is measured by comparing occupation and function codes in adjacent years and thus may be inflated by coding error. These differences notwithstanding, we think the many respects in which excellent comparability is achieved between these two data-sets and the high quality of these data can provide accurate comparisons of the labour-market situation in Sweden and France.

## Notes

1. Esping-Andersen's prediction that the insider–outsider labour market is a product of continental welfare states is shared by Mayer (1999), who argues that the major life-course risk for people in 'Continental' welfare states (including France) as opposed to the social democratic welfare states is 'long-term unemployment and being pushed into the group of labour-market outsiders.'
2. OECD studies suggest that employment protection legislation is equally strict in France and Sweden (OECD, 1999). However, the availability of active labour-market policies to facilitate worker mobility between firms in Sweden, and the different character of employment protection in the two countries both suggest that firing costs may actually be higher in the French than in the Swedish labour market. As noted by the OECD (1999), one important feature of the French system of collective lay-offs is the requirement for compulsory social plans that must be approved by worker councils (Abowd and Kramarz, 1997). This requirement of a compulsory social plan is not present in Sweden.
3. For earlier though less elaborate versions of this type of selection model, see Poirier (1980); Abowd and Farber (1982).
4. The French sample also excludes tenured civil servants, who have lifetime jobs and no possibility of involuntary termination before retirement. Both the French and the Swedish sample exclude the self-employed at time  $t_0$ .
5. For Sweden we use the typical number of school years for respondents with the indicated credential.
6. Our measure of establishment dynamics (a dummy variable measuring the fact of contraction) may appear crude in contrast to more comprehensive measures of growth, contraction, dissolution, or merger used, e.g., in Haveman and Cohen's (1994) study of managerial careers in the savings and loan industry in California. However, it is more difficult to accurately distinguish mergers, dissolutions, and relocations in data that cover the establishments of all industries in an entire nation than it would be in a specialized data set for a single detailed industry. Secondly, it is important to keep in mind that employer decisions are based on expectations of future states, not on actual future outcomes, and not on contemporaneous organization-level outcomes (contemporaneous quantitative measures of organizational size change are in fact sometimes the consequences rather than the causes of an individual's mobility decision). Dichotomous measures of change are arguably better measures of these expected outcomes than are quantitative measures, and thus may be less subject to the biases that result when actual future outcomes are substituted for expected outcomes in models of labour-force dynamics.
7. Because of data limitations, we cannot control for tenure with the employer in the two countries. The coefficients for labour-force experience thus should be given a reduced-form interpretation. Also, we deliberately do not introduce controls for wages into the analysis. In principle, labour costs and wage opportunities in the current and alternative firms are important determinants of employer and employee-initiated mobility. However, observed wages are clearly endogenous to the process of separation and re-employment. For the current analyses we therefore rely on variables that are more clearly exogenous to the mobility process.
8. This model was implemented in GAUSS (using maxlik version 3.1.3, for France and maxlik version 4.0.24 for Sweden). Because of computer limitations, we estimated the model for both countries on a 50% random sub-sample.
9. These can be written as  $Prob[y = 1|X = x^*, d = 1] - Prob[y = 1|X = x^*, d = 0]$ , where  $d$  represents the dummy variable in question and  $X$  represents the intercept and the other variables in the model, which are set to meaningful values: see e.g. Long (1997). To focus attention on the substantive results, we have suppressed the error correlation estimates in Tables 2 and 3. These are available from the authors upon request.
10. Since 1975, early retirement from the labour force in France has been facilitated by generous unemployment compensation for those 56 years old or more as part of a programme in which redundancies at older ages were combined with the hiring of younger workers (Guillemard, 1991; Wadensjö, 1996).
11. This is apparent if one computes the estimated probabilities from the coefficients in Table 2.
12. The line marked 'France (growth)' shows the estimated probability of exit from stable or expanding firms in France, while the line marked 'France (contraction)' marks the estimated probability of exit from contracting firms in France. The line marked 'Sweden (growth, 1987–90)' shows estimated probabilities of separation from stable or expanding establishments in Sweden during the 1987–1990 period. Figure 2 shows two graphs for contracting establishments in Sweden. The line marked 'Sweden (contraction, 1987–90)' shows the estimated probability of exit from contracting establishments during the 1987–90 period, while the line marked 'Sweden (contraction, 1991–93)' shows the estimated probability of exit from contracting

- establishments during the 1991–3 recession. For ease of interpretation, the probability of exit from stable or expanding establishments/firms for workers with 11–20 years of experience is fixed at an identical arbitrary but plausible value (chosen to be consistent with the descriptive information in Table 1) in the two countries.
13. Workers with scarce and valuable skills are less likely to be hired on FTC because they have the market power to negotiate an indefinite-term contract from the date of hire.
  14. It is difficult to compute exact utilization rates; Labour Force Surveys typically record the current form of the contract, not the form as of the hire date.
  15. While we do not explicitly estimate the conversion rate from FTC to ITC, the fact that the strong age bias remains after controlling for FTC suggests that younger workers on FTC are less likely to have their contracts converted to ITC than are older workers, and/or that young workers in their first year of ITC status leave the firm at relatively high rates before passing the two-year security threshold inherent in French employment protection regulations.
  16. This result comes from supplementary analyses not reported in Table 2.
  17. Recall that an establishment is a physical location where work is performed. An employing firm will sometimes have multiple establishments.
  18. In about 20% of cases (typically establishments of the same enterprise with nearby or identical addresses), the information obtained from the respondent matches two possible establishments in SIRENE, and it is up to the local INSEE survey managers to choose the most likely one. In these cases, the LFS coding in year  $t$  takes into account the coding in year  $t-1$ , in order to ensure consistency. In the 20% or so remaining cases, the address given by the respondent is incorrect or incomplete, which precludes identification of the establishment. In such instances, the information included in the survey file is the information reported by respondents.
  19. The establishment ID number is a subset of the employing firm's ID number.
  20. The functions are production or fabrication; installation, maintenance, or repair; janitorial, security, or domestic; handling, storage, or transport; clerical work as a teller or at a counter or service desk, data entry, or secretarial work; administration; sales; research, data collection, or data processing; management; and education or health.
  21. Overall, 48% of the cases were matched by the name-and-address method, and 46% by the tax documents method. Of the remaining 6% of respondents in

employment, 1% have an identified establishment but there is no size information for this establishment, and 5% lack establishment identification. This latter category consists of workers with an ambiguous connection to any specific establishment, e.g. construction workers and itinerant salesmen.

22. The use of either a lagged or a contemporaneous measure involves statistical difficulties pertaining to measurement error (the measured value differs from the theoretically interesting expectation variable discussed earlier) and endogeneity. In any case, a contemporaneous measure of size change was not available for France.

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## References

- Abowd, J. and Farber, H. (1982) Job queues and union status of workers. *Industrial and Labor Relations Review*, **35**, 354–367.
- Abowd, J. and Kramarz, F. (1997) *The Costs of Hiring and Separations*. NBER working paper, No. 6110.
- Abraham, K.G. and Houseman, S.N. (1994) Does employment protection inhibit labor market flexibility? lessons from Germany, France, and Belgium. In Blank, R.M. (ed.) *Social Protection vs Economic Flexibility: Is there a Tradeoff?*. University of Chicago Press, Chicago, pp. 59–94.
- Auer, P. and Büchtemann, C.T. (1990) La dérégulation du droit du travail: le cas de la libéralisation du recours aux contrats de travail à durée déterminée.

- L'expérience de l'Allemagne Fédérale et de la France. In Auer, P. *et al.* (eds) *Chroniques internationale du marché du travail et des politiques d'emploi, 1986–1989*. La Documentation Française, Paris, pp. 179–190.
- Bean, C. (1994) European unemployment: a survey. *Journal of Economic Literature*, **32**, 573–619.
- Bergmann, B. (1996) *Saving our Children from Poverty: What the United States can Learn from France*. Russell Sage Foundation, New York.
- Blanchard, O.J. and Diamond, P. (1990) The cyclical behavior of the gross flows of US workers. *Brookings Papers on Economic Activity*, **2**, 85–155.
- Blanchard, O.J. and Diamond, P. (1992) The flow approach to labor markets. *American Economic Review*, **82/2**, 354–359.
- Blanchard, O. and Summers, L. (1988) Hysteresis and the European unemployment problem. In Cross, R. (ed.) *Unemployment, Hysteresis and the Natural Rate Hypothesis*. Blackwell, Oxford, pp. 306–364.
- Brauns, H., Gangl, M. and Scherer, S. (1999) Education and unemployment: patterns of labor market entry in France, the United Kingdom, and West Germany. Paper presented at the Annual Meetings of the American Sociological Association, Chicago.
- Clark, K.B. and Summers, L.H. (1982) The dynamics of youth unemployment. In Freeman, R. and Wise, D. (eds) *The Youth Labor Market Problem: Its Nature, Causes, and Consequences*. University of Chicago Press, Chicago, pp. 199–234.
- Davis, S.J. and Haltiwanger, J. (1992) Gross job creation, gross job destruction and employment reallocation. *Quarterly Journal of Economics*, **107**, 819–863.
- Davis, S.J., Haltiwanger, J.C. and Schuh, S. (1996) *Job Creation and Job Destruction*. MIT Press, Cambridge, Mass.
- DiPrete, T.A. (1981) Unemployment over the life cycle: racial differences and the effect of changing economic conditions. *American Journal of Sociology*, **87**, 286–307.
- Edin, P.-A. and Topel, R. (1997) Wage policy and restructuring: the Swedish labor market since 1960. In Topel, R. and Swedenborg, B. (eds) *The Welfare State in Transition. Reforming the Swedish Model*. University of Chicago Press, Chicago, pp. 155–201.
- Erikson, R. and Jonsson, J.O. (1998) Qualifications and the allocation process of young men and women in the Swedish labour market. In Shavit, Y. and Müller (eds) *From School to Work: A Comparative Study of Educational Qualifications and Occupational Attainment*. Clarendon Press, Oxford, pp. 369–406.
- Esping-Andersen, G. (1990) *The Three Worlds of Welfare Capitalism*. Polity Press, Cambridge.
- Esping-Andersen, G. (1996) Welfare states without work: the impasse of labour shedding and familism in continental European social policy. In Esping-Andersen, G. (ed.) *Welfare States in Transition: National Adaptations in Global Economies*. Sage, London, pp. 66–87.
- Esping-Andersen, G. (1999) *Social Foundations of Post-industrial Economies*. Oxford University Press, Oxford.
- Esping-Andersen, G. and Regini, M. (eds.) (1999) *Why De-Regulate the Labor Market?* Oxford University Press, Oxford.
- Fougère, D. (1996) Aspects of labour force dynamics in France. In Schettkat, R. (ed.) *The Flow Analysis of Labour Markets*. Routledge, London, pp. 152–166.
- Furniss, N. and Tilton, T. (1977) *The Case for the Welfare State*. Indiana University Press, Bloomington.
- Gallie, D. and Paugam, S. (eds.) (1999) *The Experience of Unemployment in Europe*. Oxford University Press, Oxford.
- Gregg, P. and Manning, A. (1997) Labour market regulation and unemployment. In Snower, D. and de la Dehesa (eds) *Unemployment Policy: Government Options for the Labour Market*. Cambridge University Press, Cambridge, pp. 395–432.
- Goux, D. and Maurin, E. (1998) From education to first job: the French case. In Shavit, Y. and Müller (eds) *From School to Work: A Comparative Study of Educational Qualifications and Occupational Attainment*. Clarendon Press, Oxford, pp. 103–42.
- Goux, D. and Maurin, E. (1999a) Persistence of inter-industry wage differentials: a reexamination using matched worker-firm panel data. *Journal of Labor Economics*, **17**, 492–533.
- Goux, D. and Maurin, E. (1999b) The returns to firm-provided training: evidence from French worker-firm matched data. *Labour Economics*, **7**, 1–19.
- Goux D., Maurin, E. DiPrete, T.W. and Tählin, M. (1999) *The Dynamics of Employment Relationships Reexamined: A Multivariate Probit Model for the Analysis of Censored Multi-Outcome Job Mobility*. Working Paper for the Centre de Recherche en Economie et Statistique, Paris.
- Guillemard, A.-M. (1991) France: massive exit through unemployment compensation. In Kohli, M., Rein, M., Guillemard, A.-M. and van Gunsteren, H. (eds) *Time for Retirement. Comparative Studies of Early Exit from the Labor Force*. Cambridge University Press, Cambridge, Mass., pp. 127–180.
- Haveman, H.A. and Cohen, L.E. (1994) The ecological dynamics of careers: the impact of organizational founding, dissolution, and merger on job mobility. *American Journal of Sociology*, **100**, 104–152.
- Korpi, T. and Levin, H. (1998) Precarious footing: temporary employment as a stepping stone out of unemployment. In Korpi, Tomas, *The Unemployment*

- Process: Studies of Search, Selection, and Social Mobility in the Labor Market*. Unpublished Dissertation, Dept. of Sociology, Stockholm University.
- Leonard, J.S. (1987) In the wrong place at the wrong time: the extent of frictional and structural unemployment. In Land, K. and Leonard, J.S. (eds) *Unemployment and the Structure of Labor Markets*. Blackwell, New York, pp. 141–163.
- Long, J.S. (1997) *Regression Models for Categorical and Limited Dependent Variables*. Sage, Thousand Oaks, Calif.
- Lollivier, S. (1994) L'évolution du marché du travail dans les années quatre-vingt. *Revue Economique*, **45**, 429–441.
- Lyon-Caen, A. (1993) Workers' protection and the regulation of labor relations in France during the 1980s. In Büchtemann, C.F. (ed.) *Employment Security and Labor Market Behavior: Interdisciplinary Approaches and International Evidence*. ILR Press, Ithaca, NY, pp. 347–357.
- Mansuy, M., Werquin, P., Couppié, T. and Recotillet, I. (1999) France. In *A Comparative Analysis of Transitions from Education to Work in Europe*. ESRI, Dublin, pp. 1–48.
- Marsden, D. (1999) *A Theory of Employment Systems: Micro-Foundations of Societal Diversity*. Oxford University Press, Oxford.
- Maurau, G. (1993) Regulation, deregulation, and labor market dynamics: the case of France. In Büchtemann, C.F. (ed.) *Employment Security and Labor Market Behavior: Interdisciplinary Approaches and International Evidence*. ILR Press, Ithaca, NY, pp. 358–373.
- Maurice, M., Sellier, F. and Silvestre, J.J. (1982) *The Social Foundations of Industrial Power: A Comparison of France and Germany*. MIT Press, Cambridge, Mass.
- Mayer, K. U. (forthcoming) The paradox of global social change and national path dependencies: life course patterns in advanced societies. In Woodward, A.E. and Kohli, M. (eds) *Inclusions/Exclusions*. Routledge, London.
- Müller, W. and Shavit, Y. (1996) The institutional embeddedness of the stratification process: a comparative study of qualifications and occupations in 13 countries. In Shavit, Y. and Müller (eds) *From School to Work: A Comparative Study of Educational Qualifications and Occupational Attainment*. Clarendon Press, Oxford, pp. 1–48.
- Nickell, S. (1997) Unemployment and labor market rigidities: Europe versus North America. *Journal of Economic Perspectives*, **11/3**, 55–74.
- Nickell, S. and Layard, R. (1999) Labour market institutions and economic performance. In Ashenfelter, O. and Card, D. (eds) *Handbook of Labor Economics*. North Holland, Amsterdam, pp. 3029–3084.
- OECD (1994) *The OECD Jobs Study*. Office of Economic Cooperation and Development, Paris.
- OECD (various dates) *OECD Employment Outlook*. Office of Economic Cooperation and Development, Paris.
- Osterman, P. (1988) *Employment Futures: Reorganization, Dislocation, and Public Policy*. Oxford University Press, New York.
- Poirier, D. (1980) Partial Observability in Bivariate Probit Models. *Journal of Econometrics*, **12**, 209–217.
- Schettkat, R. (ed.) (1996) *The Flow Analysis of Labour Markets*. Routledge, London.
- Smith, R.E., Vanski, J.E. and Holt, C.C. (1974) Recession and employment of demographic groups. *Brookings Papers on Economic Activity*, 3.
- Titmuss, R.M. (1958) *Essays on the Welfare State*. Allen and Unwin, London.
- Wadensjö, E. (1996) Leaving the labor market early: a comparison. In Wadensjö, E. (ed.) *The Nordic Labor Markets in the 1990s*. Elsevier Science, Amsterdam.
- Yamaguchi, K. and Kandel, D.B. (1987) Drug use and other determinants of premarital pregnancy and its outcome: a dynamic analysis of competing life events. *Journal of Marriage and the Family*, **49**, 257–270.

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