

Abstract

This paper sets out the issues surrounding the optimal amount of job reallocation. The key factors are the trainability of the workforce, the volatility of demand and the cost of contract termination. The paper uses an international dataset to characterise the nature of labour reallocation and to isolate the effect of country-specific factors. We investigate the extent to which these country differences can be explained by the trainability of the workforce and employment protection legislation. We find that both of these have a significant role to play in affecting the reallocation of labour. In addition, we show that the impact of the country-specific factors varies dramatically by age and industry: much larger differences are found among older workers than younger ones, and in retail trade than in manufacturing.

This paper was produced as part of the Centre's
National Economic Programme

Reallocation of Labour:

An International Comparison Using Job Tenure Data

Simon Burgess

March 1999

Series Editor: Graham Ingham

Published by
Centre for Economic Performance
London School of Economics and Political Science
Houghton Street
London WC2A 2AE

© Simon Burgess, submitted December 1998

ISBN 0 7530 1266 9

Individual copy price £5

Acknowledgements

I am very grateful to all the individuals who have responded to my request for data on job tenure. These people are: Pieter Gautier (Netherlands), Pietro Gennari (Italy), Hank Farber (USA), Francis Kramarz (France), Hartmut Lehmann (Poland), Antje Mertens (Germany), Carlos Garcia Serrano (Spain), Toshiaki Tachibanaki (Japan), Altin Vejsiu (Sweden) and Jonathan Wadsworth (UK, Poland and Russia). Also, thanks to Deborah Wilson for research assistance, and to the CEP for funding the research.

Simon Burgess is at the University of Bristol, Centre for Economic Performance and Centre for Economic Policy Research.

Reallocation of Labour: An International Comparison Using Job Tenure Data

Simon Burgess

1. Introduction	1
2. Modelling	2
a. issues in optimal job tenure	2
b. a simple model	3
c. analysis	4
3. Data	4
a. data sources	4
b. data request	4
c. data received	5
4. Results	6
a. results by personal characteristics	6
b. results by country	7
5. Conclusion	10
Tables	11
Data Appendix	23
References	26

Reallocation of Labour: An International Comparison Using Job Tenure Data

Simon Burgess

1. Introduction

Labour markets are characterised by both continuous pervasive change and by stability. Huge numbers of job matches are broken up and new ones formed each year. For example, in the UK, some 8m new hires are completed each year, relative to a workforce of around 25m. But there is also a lot of stability: some firms, jobs and matches are very long lasting. This continuous movement of workers and jobs, balanced with stability, is what this paper means by labour reallocation. One of the key roles of the labour market is to reallocate labour between competing uses: people across jobs and jobs between ‘lines of business’. The high rates of gross worker and job flows suggest that it handles a lot of traffic. The efficiency with which it does this matters and this process is the topic of this paper.

It matters for unemployment, growth, earnings inequality and feelings of security. For unemployment, the efficiency of the labour market in allocating workers and jobs clearly affects the duration of unemployment and of vacancies. It also influences the appropriateness of the new match and hence re-entry rates. At a deeper level, the reallocation process affects the proportion of job change that is accomplished via unemployment at all. Whilst somewhat neglected by the literature, labour reallocation influences the aggregate growth rate by determining the speed with which resources are moved around to the most profitable uses, and by influencing the incentives for stable job matches. Labour reallocation also matters for earnings dispersion: if firms pay different amounts to the same worker, then the allocation and reallocation of workers to firms matters for earnings inequality.¹ Finally, worker turnover appears to influence feelings of ‘insecurity’ (though quite how is not clear).

One initial question is how to measure the outcome of the process of labour reallocation. There are obviously a variety of possible measures: turnover rates, estimates based on matching function estimates, possibly mismatch measures. In this paper, we look at the tenure distribution. Turnover rates simply capture the average separation probability, and miss any possible dependence of the job separation hazard on duration. Different cuts of the whole tenure distribution, however, reflect the whole hazard function over most of its range. The fact that tenure distributions are often highly skewed implies that simply looking at the mean is often not very informative.

The first aim of this paper is to document different aspects of labour reallocation in ten countries on a consistent basis. This will establish some broad facts. There is of course a conventional wisdom on this matter, for example comparing aggregate tenure in the USA and Japan. But we know that tenure depends on things like gender, industry and age, and the distribution of these in the labour force can differ a lot between countries. Therefore, we need to control for the different age structure, industrial structure and the very different levels of female labour market participation among our set of countries before relating differences of job tenure to national institutional features.

The second aim is to sketch out some of the fundamental factors involved in determining the optimal rate of labour reallocation. These include the profitability of training

¹ See Burgess, Lane and Stevens (1997).

or incentive schemes. One of the determinants of this is the ‘trainability’ of the workforce, depending in turn on the quality of education in a country. In addition to these factors is a set of labour market institutions that have been argued to affect reallocation: for example, unions, wage setting systems, employment protection legislation and other labour laws.

The third aim is to see what we can learn about the impact of such institutions on labour reallocation by looking at the *structure* of differences in labour reallocation. For example, whether these forces have more impact on the labour market chances of particular groups such as the young.

After a very brief sketch of the literature, the rest of this paper is set out as follows: Section 2 discusses the modelling of labour reallocation and job tenure, Section 3 describes the data, Section 4 sets out the results and Section 5 concludes.

There is obviously a huge literature on worker flows and job flows. The former includes both employment flows and unemployment flows, at both an individual level (quits, separations, the unemployment outflow hazard) and at the aggregate level (matching functions, aggregate separation and hiring rates, gross worker and job flows). All such papers address aspects of the labour reallocation process, far too many to document here (see the survey chapters by Parsons (1986), Mortensen (1986), and Lilien and Hall (1986)). Hall (1979) also looks at the optimal employment duration and the relationship with unemployment. Another closely related literature is the work on contracts and the newer label of personnel economics (see surveys in Parsons, 1986, and Lazear, 1996).

Recent interest in job tenure has been largely due to the ‘end of jobs for life’ debate (see for example, Gregg and Wadsworth, 1995, 1998, and Burgess and Rees, 1996, 1998 for the UK, Farber, 1995, and Diebold, Neumark and Polsky, 1994 in the US). Recently the OECD (1997) looked at mean job tenure across countries and provided further evidence on the job security debate. In this paper, we think of job tenure as a measure of the ability of the labour market to reallocate.

2. Modelling

The proximate determinants of the tenure distribution are the separation rate and the hiring rate. In fact, in steady state only the separation rate matters; given a separation hazard (which may depend on elapsed duration) the steady state distribution of completed tenure can be derived. Out of steady state, the hiring rate also matters. Behind these factors lie the tightness of the labour market, the search behaviour of workers and firms, and the nature of wage contracts. If we take search behaviour as optimised given contracts and exogenous factors, then contracts are the key behavioural feature. First, however, we take a different tack and examine optimal job tenure from the perspective of an economy.

a. issues in optimal job tenure

To keep things simple, we can think in terms of a dichotomy between short jobs and long jobs. Both types of jobs have advantages for the economy. Short jobs allow the swift and cheap reallocation of jobs between product lines and people between jobs. Idiosyncratic shocks to productivity and tastes generate the need for reallocation, and the data suggest high magnitudes for these forces: labour markets have to absorb very high levels of turbulence. On the other hand, long jobs are required to reap the benefit of training and incentive schemes. With training this is clear: to secure the return on a training investment, the worker-firm match must be maintained for a considerable period. The same argument applies to non-human capital

settings. That is, incentive mechanisms generally require a long lasting relationship to work best in eliciting higher effort.

There is therefore a balance to be struck: a preponderance of short jobs gives high efficiency *across* firms, while a dominance of long jobs yields greater productivity gains *within* firms. Both of these factors influence an economy's growth. Aspects of this trade-off have been studied at an individual level², but the idea here is to focus on the economy as a whole.

b. a simple model

The following simple model does not display all the features of this process but captures the main points. The trade-off is easy to envisage. Imagine a social planner in a two period model (no discounting). There are N job slots, indexed by i , all of which are filled in both periods.³ These job slots are in different 'lines of business' and between the two periods with probability p a line of business disappears and is replaced by a new one. This requires the job match to be dissolved and a new one formed. Job matches can be formed on a one-period or two-period basis. The output of a one-year contract job match is 1. The output stream of a two-year contract is idiosyncratic and depends on the potential for productivity growth of a job slot.⁴ This is given by $\{1 - a, 1 + b_i\}$. Values of b_i are drawn from a distribution with probability density function $G(\cdot)$, with mean b and $\min(b_i) > a$. Everyone is risk neutral and the maximand is simply total output over the two periods. A long contract will be preferred for a particular job slot if the gain from training exceeds the expected loss from early termination.

The optimal proportion of short jobs (one-year contracts) is simply: $G(a/(1-p))$. This is increasing in p and a and decreasing in b . These predictions make sense: the more volatile is demand, the more the need for rapid reallocation; the lower the cost of training and the greater the capability to benefit from training the more attractive are long jobs.

Obviously, there are many ways to complicate this simple model; other factors one might want to include are the ease of retraining the workforce, hiring costs, the outside options of workers, the scope of firms in encompassing many disparate lines of business. But these are the fundamental factors that determine the optimal degree of labour reallocation. This is where the economics comes into the problem. Note that most of the factors included are not straightforward to measure.

In a decentralised economy, there is a distribution of firm sizes and each of these firms has to make similar decisions on optimal hiring and wage policy. This is part of the subject matter of personnel economics (broadly speaking, the analysis of the firm's joint decisions on wage premium, wage profile, turnover policy). These decisions determine the set of wage contracts available in an economy, and these in turn influence the degree of labour reallocation.

On top of these fundamental factors, we need to take account of a country's institutional structure. This impinges on this process in a number of ways. The main factor here is employment protection legislation (EPL) which influences the cost of dissolving job matches. Second, unions and wage-setting institutions more generally influence the set of allowable wage contracts. One simple way of modelling the effects of EPL is to assume that tight legislation reduces the probability of a match terminating, that is, it reduces p . We therefore find that tight EPL reduces the proportion of short jobs.

² See most recently Arulampalam and Booth (1997).

³ This is a steady state model with no unemployment.

⁴ Since job slots and workers are synonymous here, this can be thought of as either the 'trainability' of the worker, or the scope for learning by doing in the technology of the product line.

c. analysis

Given this background, we can set out the method of analysis. We will use statistics of the job tenure distribution to measure labour reallocation. Taking the base unit of analysis as the individual, let the separation rate for person i in country k at tenure t be s_{ikt} . This will in general depend on the characteristics of person i , denoted X_i , on the state of the labour market in country k , denoted M_k , and the labour market institutions in k , I_k . We partition X_i into X_{1i} and X_{2i} where we assume that X_{1i} is observed and X_{2i} is not. Focussing on the steady state, the tenure distribution can be derived from this function:

$$s_{ikt}(X_{1i}, X_{2i}, M_k, I_k, t) \quad \mathbf{P} \quad f(X_{1i}, X_{2i}, M_k, I_k)$$

Given information on X_1 we can then examine summary statistics of $f(\cdot)$ by X_1 and k :

$$m_{X1}([X_2]_{X1}, M_1, I_1) \text{ if } X_1 = X, k=1$$

where m indicates a particular summary statistic of the distribution $f(\cdot)$, and $[X_2]_{X1}$ denotes the mean of X_2 in country 1 conditional on $X_1 = X$. The aim of the analysis is to examine differences in $(m_{X1} - m_{X2})$ as functions of differences in the features of the countries. But note that differences between countries in $(m_{X1} - m_{X2})$ arise because of differences in $[X_2]_{Xk}$, and M_k , as well as differences in I . So to isolate the role of country-specific factors, we need as full a set of X_1 as possible and to control for the general macroeconomic environment.

3. Data

To measure the process of labour reallocation involves looking at the importance of both short jobs and long jobs in an economy. Simply focussing on the mean is unlikely to reveal the full picture.

a. data sources

Ideally, we would want to examine individual level surveys for a wide variety of countries, conducted on exactly the same basis and including the same rich set of conditioning variables. Sadly but unsurprisingly, this is not possible. The data in this paper is intended to go some way to mimicking that situation. Researchers in a dozen countries were contacted and asked to supply data on aspects of the elapsed job tenure distribution for a four dimensional disaggregation of the workforce.

b. data request

The data requested were: mean job tenure, proportion of those employed with tenure of no more than one year, proportion with tenure of at least 10 years, proportion with tenure of at least 20 years and the cell size. This information was requested for a breakdown on gender, age, education level and industry lines.

The source sample was to be a cross-sectional sample covering both private and public sectors and using full-time workers. The precise nature of the question in the survey no doubt differs from country to country, but the general basis was to be "How long have you been with your current employer?"

Selecting appropriately the date of the survey is one way to control for the state of the labour market, which as noted above may be an important influence on the tenure distribution. The calendar date is less important than the state of the labour market; this was left up to the country expert, with the simple guidance of some time in the mid-1990s when the labour market was roughly in equilibrium.

The cell definitions are:

[1] Countries: France, Germany, Holland, Italy, Japan, Poland, Spain, Sweden, UK, USA.

[2] Subsets

(i) Male, Female.

(ii) Age bands: ≤ 25 , 26-45, 46-60.

(iii) Education: 2 bands, broadly ‘compulsory education only’ and ‘post-compulsory’.

(iv) Industries: Total; Manufacturing; Engineering; Retail; Finance etc; Education.

Thus in principle there are 72 data points for each variable for each country. Note that when we refer to ‘Total’ below, we mean the figure reported for ‘Total’, not the sum of all the reported industries.

c. data received

Most of this data was received and the existence of the present paper is based on the generosity of the individuals listed on the cover page in providing it. Needless to say, the type of surveys used, industry definitions, and education definitions varied between countries, and the overall comparability of the surveys across countries must remain a worry. Furthermore, the state of the business cycle at the point the survey was collected may be different, and this also may have an impact. Details of the data sources country-by-country are provided in the Appendix.

There are also some more specific worries. First, there were many missing values for the engineering and education industries and so it was decided to drop these. The analysis below therefore focuses on the whole economy (‘total’), and then disaggregating into manufacturing, retail and finance. Second, some of the cell sizes are rather small, particularly in the smaller countries. To allow for this, the analysis is conducted using weighted statistics. Note that the weighting is carried out *within* countries to take account of different cell sizes, but not *between* countries (so for example the total weight of Sweden is the same as the total weight of the USA) because the unit of interest is the country. Third, job tenures are censored in the German survey at 11.5 years. To deal with this, we looked at the mean tenure of workers in the UK conditional on having a tenure of 11.5 years or less. This was compared to the same number for Germany and an adjustment factor calculated (done separately for six age and gender groups). Then we calculated mean tenure for the UK conditional on a tenure of at least 11.5 years; the adjustment factors were applied to this data, and together with information on the proportion of people censored⁵, this allowed the imputation of a mean tenure for all. Fourth, the published data supplied for Japan did not provide means by gender, age, industry *and* education. Since data from the other countries shows little variation by education (see below), we chose to assume that mean tenures are the same for both education categories within each age/gender/industry cell.⁶ Fifth, again for Japan, the published data referred only to ‘regular employees’; these were defined as ‘including persons hired for an indefinite period, as well as those hired for a fixed period longer than one month and temporary or daily workers

⁵ Kindly supplied by Antje Mertens.

⁶ This does **not** apply to the distribution cuts.

hired for 18 days or more in each of the two preceding months.’ This may therefore exclude a number of very short tenure individuals and bias the estimate of tenure in Japan upwards. It also appears that the survey excludes central and local government, a sector with typically long durations. Therefore, it seems likely that these two differences pull in opposite directions.

4. Results

We first show that the data set confirms the usual findings about job tenure and personal characteristics. We then turn to look at the patterns of labour reallocation country by country

a. results by personal characteristics

In the tables and figures below, we refer to jobs of elapsed duration no more than one year as ‘short’ jobs. This is slightly misleading as clearly some fraction of them will eventually last 30 years or more. Following Hall (1982), we also refer to job matches that have been in progress for at least 20 years as ‘lifetime’ jobs.

First we look at industry affiliation. Different industries principally suggests different technologies and different product demand processes. Table 1 shows mean job tenure and the distribution in short and lifetime jobs by gender across four industries. The results are largely as we would expect: tenure tends to be higher in manufacturing, considerably lower in retail, and high in education as this is largely a public sector activity.⁷

Table 2 provides the same information by gender for our different age groups. Perhaps counter to the conventional wisdom, the table reveals little difference between men and women among young and middle-aged workers. Among the young, there is no difference, and in the middle category, only minor differences are apparent. This age group is generally the most common for women to take a career break for family responsibilities. So in the older group, much greater differences in tenure do emerge, with more men in lifetime jobs.

Age is by far the most important influence on job tenure, in all industries and for both men and women. This is for a number of reasons. First, there is a simple accounting reason: young people simply have not had the time to accumulate long years of work at their employer. Second, there is the behavioural reason that young people are more mobile and have higher separation rates.

In Table 3, we investigate the impact of educational qualifications on mean job tenure. The data show clearly that tenure varies very little with human capital levels; in fact what differences there are often portray less educated workers staying in their jobs for longer. This reminds us that tenure depends on the separation rate as a whole, and it may well be that the more educated have a higher quit rate and this dominates the possibility that the less educated may be more at risk of redundancy.

All of these points are confirmed in a multivariate context in Table 4. Age matters a lot for mean job tenure, education matters not at all, and gender matters but only really for the older group. Note the standard finding in grouped data that the percentage of variation explained is very high.

b. results by country

(i) country factors

⁷ Indeed, in the Netherlands, the industry we have *is* government services.

Before introducing further analysis of tenure by country, we look briefly at some factors that may influence the job tenure distribution: see Table 5. One of the central factors cited as an influence on separation rates is employment protection legislation (EPL). This is difficult to measure but some authors have constructed indices of the tightness of EPL, and Lazear (1990) has collected cardinal data on aspects of EPL. The most useful index for our purposes, because it covers the most countries, is that derived by Bertola (1990) from Emerson's (1988) survey of EPL. Wells and Grubb (1993) have produced a different index, which more or less correlates with Bertola/Emerson, though disagreeing on the relative positions of Belgium and the Netherlands.

A related feature is the role and prevalence of temporary contracts. The fifth column of the table shows the proportion of recently unemployed on temporary contracts. The main point to note is the extraordinarily high number for Spain, and the high value for France (see the discussion in Bentolila and Saint-Paul, 1992). Both of these countries tried to offset the tightness of their EPL by introducing temporary contracts alongside existing contracts. Finally, the table gives the female participation rate and shows substantial differences across the countries we are studying here. This suggests for example that it might be the case that the women working in Italy are more 'special' relative to their non-participating peers than the women working in Sweden; this needs to be borne in mind when interpreting the results given below.

The other factor that the model suggested would be important is the potential return to training or incentive schemes. This is likely to depend on the quality of the workforce a country produces, therefore on the quality of its education. A number of attempts have been made to measure this in the growth literature, and we adopt the approach of Hanushek (1995). The measure is constructed from adjusted test score data gathered by the IEA (International association for the evaluation of educational achievement) and the IEAP (International assessment of educational progress). Hanushek uses a regression model to estimate the values of the quality measure for non participating countries using explanatory variables such as education spending, pupil-teacher ratios, schooling quantity etc.

(ii) country effects on labour reallocation, and age

Table 6 looks in depth at the four measures of job tenure for the whole economy: mean tenure and the distribution over short, long (10 years plus) and lifetime jobs. It contains a lot of data and we shall just highlight the main features here. Most of what is noted applies equally to men and women, but there is more of a selection issue among older women. First, consider panel A dealing with mean job tenures. There are obviously differences between the countries. Many of these are in line with the conventional wisdom: for example, mean tenure among older men ranges from 20 years in France, Italy and Japan, to about 14 in the UK and the US. But within that there are some interesting features. Consider the age profiles by country, specifically the ratio of mean tenure among young men to old men. Most of the countries have a ratio around 7 (Germany, $17.31/2.37 = 7.2$, US 7.0, Netherlands 7.5, Italy 6.1, Japan, 8.2), but in France and Spain the slope is dramatically higher, at 10.7 and 14.6 respectively. Mean job tenure in Spain among young men is half of that in the UK, but among older men is 23% higher. The same argument is true for women.

Turning to panel B, we see that short jobs are very common among young workers. We also see a huge range of experience between countries from 25% among young men in Japan to 76% among young men in Spain. The US and the UK also have a lot of short jobs but they do not stand out particularly among young and middle-aged men. They do however appear rather different among older men: with around 10% of men 46-60 in short jobs in UK, US and Spain, compared to 3-5 % among the other countries.

The importance of lifetime jobs is shown in panel D (note that this is not available for Germany). Again, notice the data on Spain: while having the highest incidence of short jobs, Spain also has one of the highest rates of lifetime tenure. This reveals an extreme dichotomy of workers essentially either being in a temporary contract short job, or a lifetime job. Among the older group of male workers, the countries split into two groups with the US, UK and the Netherlands with about 35% in lifetime jobs, and France, Italy, Japan, and Spain with 50 or 60% in such jobs.

The main feature we want to highlight from Table 6 is the difference in the age profile. Some of the tight EPL countries have a similar age profile to the looser EPL countries — Italy and Japan for example. But others, particularly France and Spain, appear to have much more dichotomised labour markets with a far greater share of labour reallocation falling on the young. It seems likely that this is related to the incidence of temporary contracts noted above.

There is a potential problem interpreting these differences by age. Separation rates that were common across ages but slightly different between countries would necessarily lead to bigger differences in mean job tenure over time/age. This implies that the differences in job tenure should be greater at older ages, even though the separation rates are constant over age. The focus on young versus old would therefore be wrong. But note that we observe the same pattern for the proportion of workers in short jobs and that variable does not suffer from this cumulation problem.

A further problem is that young people may finish their schooling at different ages in different countries; this could be driving the patterns observed in Table 6. In fact, repeating the analysis for those who have only completed compulsory education (on the assumption that ages when this is completed may be more common across countries) the same broad pattern is repeated. That is, among the young, mean job tenure is lower in France, Germany and Spain than it is in the Netherlands, US and UK, but that this reverses dramatically among the older group.

To summarise the argument so far, we have shown that the impact of country-specific factors varies considerably by age. There appears to be little effect of such factors on the young, and where there is an effect, it is sometimes perverse. The expected pattern begins to emerge in the middle age-group and is well-established by the older age group. This view is confirmed by regression analysis in Tables 7 and 8. The former isolates country effects for mean job tenure. Overall, in the first column, the country effects suggest that mean job tenure relative to the UK is a lot higher in Italy and Japan, somewhat higher in France, Germany and Spain and Sweden and lower in the US. However, once we disaggregate, we find that this pattern differs considerably across age bands. Among the young, job tenure is *lower* in France, Germany, Poland, Spain and Sweden than it is in the UK. It is really only among the older group that large differences arise in the expected direction. Table 11 repeats the exercise for the proportion in short jobs. The same point emerges: among the young, there are *more* people in short jobs in France, Holland, Poland, Spain (dramatically so) and Sweden than in the UK. Only in Italy and Japan are there significantly fewer people under the age of 45 in such jobs.

It seems then that the force of these country-specific effects is not only to affect the *amount* of labour reallocation, but also to affect its *structure* in terms of who bears the brunt of the reallocation. Indeed, it may be that the latter effect is at least as important for some.

(iii) country effects on labour reallocation, and industry

We are also interested in differences in the impact of country-specific factors by industry. If we repeat the analysis of Table 6 for the manufacturing and retail industries, the main comparative point to make is that, as a generalisation, the differences between countries are

more marked in retail than they are in manufacturing. For example, the range⁸ across countries of mean job tenure among young men is 2 to 3.3 years in manufacturing and 1.4 to 3.5 in retail; among older men the range is 15 to 23 years in manufacturing and 10 to 22 in retail. Looking at the proportion of older men in short jobs, the range is 1.6 to 8.4 in manufacturing and 2 to 18 in retail. Finally, looking at lifetime jobs, among older men the range is 34 to 59 in manufacturing and 21 to 66 in retail.

Table 9 compares the proportion in short jobs in each country to the US (as the quintessential high turnover country), for the three disaggregate industries we have. We find that these differences are on average far lower in manufacturing than in the other two industries. Both the mean difference and the standard deviation of the data are lower in manufacturing than retail trade. Japan and Italy continue to stand out (as does Spain in terms of short run contracts), but note that the difference between these countries and the US is twice as great in retail than it is in manufacturing.

Regression analysis in Tables 10 and 11 generally confirms this (note that these tables are relative to the UK as the omitted country for comparison to Tables 7 and 8, rather than relative to the US in Table 9). Note particularly Table 11, showing that the conditional variation between countries is greater in retail than in manufacturing.

Why should this be? The following arguments seem plausible; no doubt there are others. It may be that manufacturing shares a much more common technology set across countries than does retail trade. Technology of course is not given exogenously, but there may be a narrower range of frontier technology choices available. This would mean that the fundamentals of optimal labour reallocation would be more similar and hence so would the outcome. Secondly, more intense (international) product market competition might enforce a similarity of optimal contract structures across the countries. This would not apply to retail trade.

(iv) employment protection legislation and education quality

Finally, we see how much of the cross-country differences can be explained by the variables suggested earlier: the EPL ranking and the measure of schooling quality. It may be worthwhile briefly reviewing the intuition for these factors: tight EPL is expected to produce longer jobs because of the high costs of redundancies imposed by the regulations. A highly trainable workforce will sway the balance in favour of longer jobs as they make long term contracts more worthwhile.

Recall that the EPL rank is *decreasing* in tightness of the legislation.⁹ As we noted above, Spain is an outlier in many of the series, not least in having both many short jobs and many long jobs. Therefore, we present all the results both with and without the Spanish data: see Tables 12 and 13. Looking first at mean tenure in Table 12, we find that both factors significantly affect job tenure: a higher quality workforce raising mean tenure and looser regulation reducing it. The remarks on the differential impact of EPL by age and industry largely remain valid; it is also true that ‘trainability’ matters less for the young and less in manufacturing. Turning to the proportion of short jobs in Table 13, again both factors are important, though ‘trainability’ now appears to be better determined than EPL. The quality of education matters for all age groups and all industry disaggregations given here.¹⁰

⁸ Ignoring some obvious outliers.

⁹ Note that Spain is not included in the Emerson/Bertola ranking. I have assigned it the same score as France.

¹⁰ It is clear that these regressions overstate the precision of the estimates of EPL and educational quality, because although there are nominally hundreds of observations, there are only 9 observations on the country-specific factors. This is a well-known problem. If we collapse the data to produce country means for each cell

5. Conclusion

This paper has set out the issues arising in thinking about the optimal amount of job reallocation for a country. The key factors are the trainability of the workforce, the volatility of demand and the cost of contract termination. The second part of the paper uses an international dataset to characterise the nature of labour reallocation and to isolate the effect of country-specific factors. We then investigate the extent to which these country differences can be explained by the factors of the trainability of the workforce and the tightness of employment protection legislation. We find that both of these have a significant role to play in affecting the reallocation of labour. There are two other empirical findings regarding the structure of the effect of these factors. First, the impact of the country-specific factors varies dramatically by age, affecting older workers much more than younger ones. Indeed, in terms of the proportion of people in short jobs, there are no significant country effects for people under the age of 45 other than Japan and Italy. Second, there are also significant differences by industry. The impact of EPL is much lower in manufacturing than in retail trade. Possibly because of a common technology set or intense product market competition, the fundamental factors appear to win out over differences in EPL.

Further development and testing of the issues underlying optimal labour reallocation await data on some of the other determinants, but this paper has suggested that there are interesting and important questions to answer here.

little is left that is significant at conventional levels. Given that there are now only 9 observations, this is not surprising.

Table 1
Tenure Distribution by Industry

	Women	Men
Manufacturing		
Mean	8.50	9.93
Short Jobs (%)	21.54	20.22
Lifetime Jobs (%)	14.41	19.85
Retail		
Mean	6.71	8.00
Short Jobs (%)	26.67	23.94
Lifetime Jobs (%)	9.9	13.32
Finance		
Mean	7.42	9.11
Short Jobs (%)	23.03	23.05
Lifetime Jobs (%)	10.53	17.73
Education		
Mean	8.21	9.26
Short Jobs (%)	25.13	25.9
Lifetime Jobs (%)	14.68	18.89

Table 2
Tenure Distribution by Gender and Age

	Women	Men
<=25		
Mean	2.19	2.08
Short Jobs (%)	45.18	46.35
Lifetime Jobs (%)	0	0
26-45		
Mean	7.61	8.34
Short Jobs (%)	17.64	15.31
Lifetime Jobs (%)	7.54	8.55
46-60		
Mean	13.76	17.43
Short Jobs (%)	8.07	6.42
Lifetime Jobs (%)	31.2	45.89

Table 3
Tenure Distribution by Education Category

Mean Job Tenure:

	Women			Men		
	<=25	26-45	46-60	<=25	26-45	46-60
Compulsory	2.26	7.49	12.93	2.28	8.54	17.55
Post-Compulsory	2.07	7.04	14.37	2.05	7.95	17.65

Table 4
Mean Job Tenure

Dependent variable = mean tenure; observations = 108; sample = total industry

	(1)		(2)		(3)	
Male	1.640	(4.3)	-0.007	(0.0)	-	
26-45	5.594	(11.9)	4.111	(3.0)	5.594	(13.0)
46-60	13.462	(28.6)	7.532	(5.5)	7.54	(7.5)
Post-Compulsory Education	0.012	(0.0)	0.012	(0.0)	0.012	(0.0)
Male*(26-45)	-		0.988	(1.2)	-	
Male*(46-60)	-		3.953	(4.6)	3.946	(6.5)
Constant	-0.314	(0.4)	2.157	(1.97)	2.147	(3.5)
Adj R ²	0.89		0.91		0.91	

t-statistics in parenthesis

Table 5: Some Factors Influencing Aggregate Job Tenure

Country	Employment Protection Legislation					Female Part'n Rate
	EB Rank	WG Rank	Severance Pay	Notice Period	Temporary Contracts	
Italy	1	1	15.9	-	38.8	42.8
Belgium	2	5	1.2	1.0	28.7	50.6
France	3	4	5.2	1.9	54.9	59.3
Spain	-	-	-	-	90.2	44.5
Sweden	4	-	0.0	0.8	-	78.0
Germany	5	2	1.0	1.7	37.9	61.5
Japan	6	-	0.0	-	-	61.9
UK	7	7	-	0.9	22.4	67.9
Netherlands	8	3	-	2.0	38.1	56.2
Denmark	9	6	0.5	6.0	45.2	78.4
USA	10	-	0.0	0.0	-	70.3

Notes:

1. EB Rank is the Emerson/Bertola ranking of countries Employment Protection Legislation schemes; WG is the Wells/Grubb ranking. Rankings are in order of increasingly loose regulation. Source: (Bertola, 1990), Wells and Grubb (1993).
2. Severance pay upon dismissal after ten years of service; number of months notice required before termination to workers with ten years service. Source: Lazear (1990)
3. People who were unemployed one year ago and are currently employed, by contract type 1994, %. Source (OECD Employment Outlook 1996, Table 1.9)
4. Female participation rate data for 1993. Source: OECD Employment Outlook 1997, Statistical Appendix, Table B).

Table 6: All Industries**A: Mean Job Tenure (years)**

Country	Women			Men		
	<=25	26-45	46-60	<= 25	26-45	46-60
France	1.67	8.39	17.92	1.84	9.00	19.64
Germany	2.38	7.04	11.60	2.37	7.42	17.31
Holland	2.29	6.21	10.55	2.18	7.59	16.37
Italy	3.06	9.09	17.93	3.26	9.62	19.91
Japan	2.62	7.72	13.04	2.57	10.18	21.10
Poland						
Spain	1.42	7.44	14.28	1.22	8.17	17.83
Sweden	1.88	8.02	14.38	2.14	7.68	17.33
UK	2.39	5.89	10.27	2.56	8.25	14.48
USA	1.97	5.77	10.54	2.02	6.87	14.17

All industries; weighted (within but not between countries)

B: % in Jobs <= 1 Year

Country	Women			Men		
	<=25	26-45	46-60	<=25	26-45	46-60
France	48.89	15.42	4.54	44.87	11.39	4.68
Germany	35.98	15.23	7.54	36.49	16.34	6.85
Holland	42.97	20.69	11.32	47.16	20.44	8.64
Italy	29.06	9.64	3.41	29.55	8.19	3.56
Japan	23.46	7.61	4.51	25.36	4.32	2.97
Poland						
Spain	75.73	29.38	14.7	76.5	28.76	13.09
Sweden	53.46	16.47	7.01	44.94	18.19	5.33
UK	40.8	20.14	9.9	39.65	14.83	9.77
USA	51.62	23.81	11.82	52.23	20	12.22

All industries; weighted (within but not between countries)

C: % in Jobs >= 10 Years

Country	Women		Men	
	26-45	46-60	26-45	46-60
France	38.81	71.57	42.85	76.77
Germany	23.64	45.23	29.29	59.54
Holland	22.15	46.28	30.68	66.85
Italy	36.71	70.82	39.89	28.05
Japan	26.55	54.75	44.43	76.65
Poland				
Spain	33.70	62.58	37.67	72.66
Sweden	36.75	64.33	33.45	69.03
UK	21.40	44.32	36.03	58.11
USA	19.47	43.95	25.80	56.04

All industries; weighted (within but not between countries)

D: % in Jobs >= 20 Years

Country	Women		Men	
	26-45	46-60	26-45	46-60
France	10.02	47.18	9.68	56.29
Germany				
Holland	3.77	15.79	7.41	39.67
Italy	8.30	43.39	8.62	52.40
Japan	5.17	23.26	10.78	60.55
Poland				
Spain	8.83	33.53	10.67	50.24
Sweden	7.37	29.28	7.16	45.56
UK	3.26	15.93	8.97	34.76
USA	2.74	16.01	4.01	33.53

All industries; weighted (within but not between countries)

Table 7: Mean Job Tenure: By Age

Model:	All	<=25	26-45	46-60
# obs:	337	111	113	113
Constant	0.517 (0.9)	2.883 (14.3)	8.229 (16.9)	7.864 (7.0)
male	1.308 (6.3)	-0.052 (0.7)	0.53 (2.9)	4.036 (9.0)
26-45	5.543 (20.9)			
46-60	13.62 (45.8)			
Post-c. ed'n.	-0.5 (2.3)	-0.024 (0.3)	-0.863 (4.5)	-0.348 (0.7)
Retail	-1.969 (8.6)	-0.341 (4.2)	-1.942 (9.6)	-3.273 (6.8)
Finance	-1.012 (3.6)	-0.405 (3.4)	-0.816 (3.4)	-1.791 (3.1)
France	1.188 (2.7)	-0.806 (4.4)	0.489 (1.3)	3.743 (4.3)
Germany	1.322 (2.9)	-0.103 (0.7)	0.951 (2.2)	3.26 (3.6)
Holland	0.676 (1.5)	-0.259 (1.7)	0.192 (0.5)	1.976 (2.0)
Italy	3.002 (6.9)	0.648 (3.9)	2.355 (6.1)	6.062 (6.8)
Japan	3.789 (8.6)	0.116 (0.7)	3.024 (7.5)	7.176 (8.6)
Poland	0.749 (1.6)	-0.863 (4.8)	0.679 (1.7)	2.239 (2.3)
Spain	1.671 (3.8)	-1.405 (9.1)	1.409 (3.6)	4.201 (4.5)
Sweden	1.131 (2.6)	-0.403 (2.5)	0.739 (1.9)	3.151 (3.6)
USA	-0.214 (0.5)	-0.478 (2.9)	-0.568 (1.5)	0.678 (0.7)
Mean tenure	9.21	2.23	7.99	16.38
R-sq	0.898	0.725	0.749	0.757

Omitted country = UK; omitted industry = manufacturing; omitted age = <=25; Weighted within country but not between countries; (t-statistics in parentheses)

Table 8: Short Job Tenure: By Age

Model :	All	<=25	26-45	46-60
# obs:	337	111	113	113
Constant	42.4841 (21.5)	30.2198 (7.5)	18.6525 (8.2)	12.6444 (7.8)
male	-1.6679 (2.3)	1.2157 (0.8)	-1.9041 (2.2)	-2.5208 (3.9)
26-45	-26.4552 (28.9)			
46-60	-33.6619 (32.8)			
Post-c. ed'n.	0.089 (0.1)	1.4687 (0.9)	-0.6321 (0.7)	-0.2697 (0.38)
Retail	5.1224 (6.5)	6.0696 (3.7)	5.2777 (5.6)	3.3565 (4.8)
Finance	2.1848 (2.3)	5.361 (2.3)	1.4525 (1.3)	2.5054 (3.0)
France	-0.1786 (0.1)	10.4634 (2.9)	-1.7384 (1.0)	-3.2225 (2.6)
Germany	-3.0551 (2.0)	-2.9248 (1.0)	-2.0897 (1.1)	-3.0402 (2.3)
Holland	3.5827 (2.4)	8.0917 (2.7)	3.2562 (1.8)	0.3653 (0.3)
Italy	-7.9597 (5.3)	-8.1338 (2.5)	-9.0066 (5.0)	-6.0116 (4.6)
Japan	-10.4177 (6.9)	-15.171 (4.5)	-12.2356 (6.5)	-6.7665 (5.5)
Poland	1.3659 (0.9)	5.8972 (1.7)	0.3367 (0.2)	0.6575 (0.5)
Spain	14.3032 (9.5)	36.8781 (12.0)	11.1951 (6.2)	1.9091 (1.4)
Sweden	-1.382 (0.9)	3.9554 (1.2)	-2.6979 (1.5)	-3.0793 (2.4)
USA	6.1494 (4.1)	13.0028 (4.0)	5.2512 (2.9)	2.8906 (2.2)
Mean short	18.44	42.87	15.82	7.42
R-sq	0.846	0.801	0.750	0.637

Omitted country = UK; omitted industry = manufacturing; omitted age = <=25; Weighted within country but not between countries; (t-statistics in parentheses)

Table 9**Short Jobs: By Industry**

Differences in % of short jobs between the named country and the USA
averaged by industry

	Manufac'g	Retail	Finance
France	-2.89	-14.57	-1.74
Germany	-3.38	-3.90	-8.93
Holland	0.50	-10.85	5.35
Italy	-8.13	-23.46	-12.01
Japan	-11.70	-26.47	-11.33
Poland	1.11	-10.51	-6.31
Spain	9.62	3.75	8.51
Sweden	-1.61	-10.21	-8.63
UK	-0.25	-14.12	-2.02
Mean	-1.42	-11.73	-3.36
SD	6.38	10.39	8.13
# obs	39	37	37

Age group 26-45

Table 10: Mean Job Tenure: By Industry

Model :	All	MFG	RET	FIN
# obs:	337	117	111	109
Constant	0.517 (0.9)	-1.335 (1.7)	0.513 (0.6)	0.239 (0.2)
Male	1.308 (6.3)	1.521 (4.9)	1.127 (3.4)	1.116 (2.7)
26-45	5.543 (20.9)	6.308 (16.3)	4.545 (11.5)	5.478 (8.9)
46-60	13.62 (45.8)	15.178 (35.7)	11.391 (24.5)	12.971 (18.7)
Post-c. ed'n	-0.5 (2.3)	-0.3 (0.9)	-0.433 (1.2)	-0.754 (1.6)
Retail	-1.969 (8.6)			
Finance	-1.012 (3.6)			
France	1.188 (2.7)	1.776 (2.9)	0.301 (0.4)	1.057 (1.2)
Germany	1.322 (2.9)	1.58 (2.5)	0.312 (0.4)	2.833 (3.1)
Holland	0.676 (1.6)	1.117 (1.8)	0.065 (0.1)	0.052 (0.1)
Italy	3.002 (6.9)	2.864 (4.7)	3.275 (4.6)	3.044 (3.4)
Japan	3.789 (8.6)	3.706 (6.1)	3.781 (5.3)	4.523 (5.0)
Poland	0.749 (1.6)	1.699 (2.6)	-1.018 (1.3)	1.023 (1.1)
Spain	1.671 (3.8)	2.332 (3.8)	0.387 (0.5)	1.921 (2.1)
Sweden	1.131 (2.6)	1.128 (1.8)	0.528 (0.7)	1.531 (1.7)
USA	-0.214 (0.5)	0.366 (0.6)	-1.301 (1.8)	-0.19 (0.2)
Mean short	9.21	10.37	7.39	8.91
R-sq	0.898	0.939	0.893	0.844

Omitted country = UK; omitted industry = manufacturing; omitted age = <=25; Weighted within country but not between countries; (t-statistics in parentheses)

Table 11: Short Job Tenure: By Industry

Model :	All	MFG	RET	FIN
# obs:	337	117	111	109
Constant	42.4841 (21.5)	41.5834 (14.1)	45.4514 (12.7)	45.3961 (12.8)
Male	-1.6679 (2.3)	-1.1273 (1.0)	-2.0848 (1.6)	-0.7706 (0.6)
26-45	-26.4552 (28.9)	-25.0546 (17.8)	-26.434 (16.6)	-27.6225 (14.7)
46-60	-33.6619 (32.8)	-32.4741 (21.0)	-34.6697 (18.5)	-33.9452 (16.0)
Post-c. ed'n	0.089 (0.1)	-0.0464 (0.0)	0.0307 (0.0)	0.129 (0.1)
Retail	5.1224 (6.5)			
Finance	2.1848 (2.3)			
France	-0.1786 (0.1)	-1.0699 (0.5)	1.6767 (0.6)	-0.4221 (0.2)
Germany	-3.0551 (2.0)	-3.1887 (1.4)	-0.4764 (0.2)	-8.5451 (3.1)
Holland	3.5827 (2.4)	2.084 (0.9)	4.5484 (1.6)	8.2478 (3.0)
Italy	-7.9597 (5.3)	-6.5789 (3.0)	-8.165 (2.9)	-8.8638 (3.2)
Japan	-10.4177 (6.9)	-9.8702 (4.4)	-10.5565 (3.7)	-10.8142 (3.9)
Poland	1.3659 (0.9)	0.5186 (0.2)	5.2698 (1.7)	-2.2495 (0.8)
Spain	14.3032 (9.5)	10.3333 (4.6)	22.7714 (8.0)	10.3604 (3.8)
Sweden	-1.382 (0.9)	-1.6578 (0.8)	3.0448 (1.1)	-3.8214 (1.4)
USA	6.1494 (4.1)	2.1496 (1.0)	13.6737 (4.8)	3.0053 (1.1)
Mean short	18.44	15.79	23.31	17.66
R-sq	.846	0.85	0.872	0.819

Omitted country = UK; omitted industry = manufacturing; omitted age = <=25; Weighted within country but not between countries; (t-statistics in parentheses)

Table 12
Mean Job Tenure: EPL Rank and Education Quality

Model	all	<= 25	26-45	46-60	MFG	RET	FIN
# obs	315	105	105	105	105	105	105
ED Quality	0.066 (3.5)	0.015 (1.3)	0.059 (3.0)	0.111 (2.7)	0.065 (2.3)	0.108 (3.4)	-0.011 (0.3)
EPL Rank	-0.275 (6.6)	0.003 (0.1)	-0.247 (6.1)	-0.531 (5.4)	-0.235 (3.7)	-0.328 (4.8)	-0.334 (4.3)
26-45	5.544 (18.5)				6.252 (13.4)	4.724 (9.7)	5.237 (8.9)
46-60	13.782 (41.1)				15.372 (30.1)	11.933 (21.1)	12.346 (18.5)
Post-c. ed'n	-0.366 (1.5)	0.03 (0.2)	-0.7 (3.0)	-0.184 (0.3)	-0.207 (0.6)	-0.193 (0.5)	-1.105 (2.6)
Male	1.678 (7.1)	-0.061 (0.5)	0.899 (3.8)	4.645 (8.3)	1.964 (5.2)	1.712 (4.3)	1.101 (2.7)
Retail	-1.742 (6.7)	-0.423 (2.9)	-1.649 (6.2)	-2.964 (4.9)			
Finance	-1.415 (4.7)	-0.475 (2.4)	-1.117 (3.8)	-2.601 (3.8)			
Constant	-1.454 (1.3)	1.769 (2.6)	5.669 (5.0)	6.634 (2.7)	-2.991 (1.7)	-4.442 (2.4)	3.57 (1.6)
R-sq	0.877	0.105	0.566	0.622	0.919	0.849	0.822
Excluding Spain:							
# obs	279	93	93	93	93	93	93
ED Quality	0.066 (3.3)	0.003 (0.4)	0.061 (3.0)	0.108 (2.4)	0.068 (2.3)	0.098 (2.9)	-0.011 (0.3)
EPL Rank	-0.286 (6.4)	-0.060 (2.8)	-0.245 (5.5)	-0.538 (5.0)	-0.226 (3.2)	-0.377 (5.1)	-0.340 (4.1)
R-sq	0.870	0.210	0.534	0.606	0.912	0.846	0.819

Omitted industry = manufacturing; omitted age = <=25; Weighted within country but not between countries; (t-statistics in parentheses)

Table 13
Short Jobs: EPL Rank and Education Quality

Model	all	<=25	26-45	46-60	MFG	RET	FIN
# obs	315	105	105	105	105	105	105
ED Quality	-0.500 (5.8)	-0.859 (3.1)	-0.517 (4.2)	-0.25 (3.9)	-0.402 (3.2)	-0.809 (4.4)	-0.213 (1.4)
EPL Rank	0.637 (3.4)	-0.137 (0.23)	0.804 (3.1)	0.718 (4.8)	0.329 (1.2)	0.883 (2.3)	0.874 (2.7)
26-45	-26.484 (19.5)				-24.819 (12.1)	-27.138 (9.9)	-28.889 (12.3)
46-60	-34.538 (22.6)				-32.653 (14.6)	-36.763 (11.5)	-35.624 (13.4)
Post-c. ed'n	-1.384 (1.3)	-0.744 (0.2)	-1.757 (1.2)	-1.066 (1.2)	-1.372 (0.9)	-2.28 (1.0)	0.19 (0.1)
Male	-1.161 (1.1)	1.997 (0.6)	-1.713 (1.1)	-2.268 (2.7)	-0.223 (0.1)	-2.168 (1.0)	-1.284 (0.8)
Retail	5.606 (4.7)	9.082 (2.6)	5.581 (3.3)	3.454 (3.8)			
Finance	4.019 (2.9)	8.979 (1.9)	3.214 (1.7)	3.485 (3.4)			
Constant	66.202 (12.8)	82.59 (5.2)	41.034 (5.7)	19.848 (5.2)	59.407 (7.8)	90.078 (8.5)	54.019 (5.9)
R-sq	0.683	0.151	0.293	0.407	0.709	0.651	0.687
Excluding Spain:							
# obs	279	93	93	93	93	93	93
ED Quality	-0.359 (5.9)	-0.557 (3.1)	-0.379 (4.0)	-0.195 (3.7)	-0.307 (3.5)	-0.599 (5.4)	-0.046 (0.4)
EPL Rank	1.269 (9.3)	1.600 (3.8)	1.322 (6.5)	0.882 (7.0)	0.808 (4.0)	1.871 (7.6)	1.290 (4.8)
R-sq	0.787	0.291	0.463	0.528	0.810	0.814	0.757

Omitted industry = manufacturing; omitted age = <=25; Weighted within country but not between countries; (t-statistics in parentheses)

Data Appendix

Germany

The 1%-sample from the files of German social security data has been made available for scientific use in 1995, so there exist only few studies to date using that source. The sample is based on the complete historical social security file starting in 1973. In 1973 an integrated report procedure for unemployment insurance, health insurance and retirement insurance was introduced in Germany: firms have to report on all dependent employees paying social security contributions, including information on income, education, exact number of days worked, occupation, industry, worker status, nationality and marital status. Employers report on commencements and termination of jobs as well as on all ongoing job relationships at least once a year on December 31. Not included are civil servants, self-employed and all dependent employees below the threshold which makes social security contributions compulsory.

Sweden

The data for the study come from the Level of Living Surveys (Levnadsnivå-undersökningarna, LNU). The data are available for four years, 1968, 1974, 1981 and 1991 respectively. These data sets provide retrospective information on job tenure. The question that the workers answer is how long they have been employed with the same employer (no difference is made if the worker has changed his place within the same firm). Thus, we have information on the tenure spells that are in progress — the elapsed tenure. Though the age of workers in LNU is 15 to 75 years, we consider 64 as the upper age limit and the age of 20 as the lower limit.

The 1991 data set consists of three groups of individuals. The first group contains 5531 persons. Out of them, 3881 are the 'pure' panel part. This means that out of 6522 individuals interviewed in 1968, 3881 still exist in the sample by 1991, while the rest has dropped out. The other 1650 persons are individuals that have been included in the sample in 1974 and/or 1981 (supplements). In the second group are included new young individuals, randomly selected from the Register of Total Population (RTB). There are 990 persons in this group aged 18-25 years. The third group consists of 252 foreign citizens that have moved to Sweden between 1981 and 1991. They are 25-75 years-old.

The Netherlands

The firm employment data (FE) of the Department of Social Affairs and Employment covers the period 1992-96. The data are collected from administrative records of firms by means of a stratified 2 steps sample procedure. In the first step a sample of firms is drawn from the Ministry's own firm register (which is roughly similar to the firm-register of the Central Bureau of Statistics). In the second step a sample of workers is drawn within each of these firms. The strata over which the population of firms was allocated are based on industry and firm size. The number of strata which were used changed however over time. The data set contains detailed information on gross wages (and also on extra time payments and profit shares), hours worked, days worked, education, job complexity level, occupation, age, tenure, gender, type of wage contract and a number of other variables. As indicated before, most variables are only measured once, which means that we do not have information on for example promotions within a firm.

Spain

The Labour Force Survey (Encuesta de Población Activa) is carried out quarterly by the Spanish Statistical Institute (INE) since 1964. The second quarter survey provides the basis for the information used in the European-wide LFS. In addition, the INE publishes monthly results on the main figures (these are calculated as 3-months moving averages). The sample survey consists of around 60,000 households (more than 150,000 individuals) who are interviewed for six quarters. Each quarter, one sixth of the sample is renewed. Job tenure data is not available prior to the second quarter of 1987, when a major methodological change took place. From that date, it comes from a question included in the questionnaire. That question was firstly asked as follows: “How long have you been working in your current job?” The interviewees said either the number of months (if they were working less than one year) or the number of years (if they were working for one year or more). In the first quarter of 1992, a new methodological change took place which affected the way the question on job tenure was asked: “When did you start working in your current job?” Now, the interviewees say the month and the year.

Poland

The data are drawn from 15 waves of the Polish Labour Force Survey, (PLFS), a quarterly survey of around 30,000 households, some 0.5% of the population, begun in May 1992. The data contain information on a set of socio-economic characteristics from around 51,000 individuals aged 16 and older. The data have a panel element. Every member of the first survey was followed for the first four quarters. Thereafter there is an approximate 50% overlap between successive surveys and between surveys one year apart. Information on net earnings began in wave 3 and job tenure information began in wave 10, May 1994. Job tenure information is given in the form of the number of months and years that the worker has been continuously employed by the same employer. These responses are then banded into discrete tenure bands. The tenure data include responses from all adults, not just those of working age. The self-employed and part-time workers are excluded from earnings since the PLFS does not elicit wage information for these groups.

USA

The Census Bureau has appended mobility supplements to the January CPS instrument in a number of years. These contain information on how long individuals have worked continuously for the same employer and are asked of all eight rotation groups. The data is collected in integer form relating to the number of years continuously employed.

France

The source of information is the Enquête Emploi, a single rotation group from the French Labour Force survey.

Great Britain

The data are from the Labour Force Survey. This is since 1992 a quarterly survey of some 60000 households, with five rotation groups, each interviewed for five consecutive quarters. The tenure data comes from answers to the question “How long have you been continuously employed by your current employer/continuously self-employed?” The answers were banded until 1991, since when continuous responses have been allowed.

Japan

The data derive from the Basic Survey on Wage Structure, conducted by the Ministry of Labor and carried out annually since 1948. In this case, these data are taken directly from the published data not directly from the micro data. About 73000 establishments were surveyed in the private sector and public corporations.

References

- Arulampalam, W. and Booth, A. (1997) 'Labour Market Flexibility and Skills Acquisition: Is there a Trade Off?' Institute for Labour Research, University of Essex. Discussion Paper No. 97/13.
- Bentolila, S. and Saint-Paul, G. (1992) 'The Macroeconomic Impact of Flexible Labor Contracts, with an Application to Spain', European Economic Review, Vol.36, pp.1013-53.
- Bertola, G. (1990) 'Job Security, Employment and Wages' European Economic Review, Vol.34, pp.851-879.
- Burgess, S., Lane, J. and Stevens, D. (1997) 'Jobs, Workers and Changes in Earnings Dispersion', CEPR Discussion Paper No.1714.
- Burgess, S. and Rees, H. (1999) A Disaggregate Analysis of the Evolution of Job Tenure in Britain, 1975-1993. Forthcoming in British Journal of Industrial Relations.
- Burgess, S. and Rees, H. (1996) 'Job Tenure in Britain 1975-1992', Economic Journal, Vol.106, pp.334-344.
- Diebold, F., Neumark, D. and Polsky, D. (1994) 'Job Stability in the United States', NBER Working Paper No. 4859.
- Emerson, M. (1988) 'Regulation or Deregulation of the Labour Market: Policy Regimes for the Recruitment and Dismissal of Employees in the Industrialised Countries', European Economic Review, Vol.32, pp.775-817.
- Farber, H. (1995) 'Are Lifetime Jobs Disappearing in the United States: 1973-1993?' NBER Working Paper No. 5014.
- Gregg, P. and Wadsworth, J. (1995) 'A Short History of Labour Turnover, Job Tenure and Job Security, 1975-1993', Oxford Review of Economic Policy, Vol.11, pp.73-90.
- Gregg, P. and Wadsworth, J. (1998) 'Job Stability in Britain, 1975-1998', Working Paper No.967, Centre for Economic Performance, London School of Economics.
- Hall, R. (1979) 'A Theory of the Natural Unemployment Rate and the Duration of Employment', Journal of Monetary Economics, Vol.5, pp.153-169.
- Hall, R.E. (1982) 'The Importance of Lifetime Jobs in the US Economy', American Economic Review, Vol.72, pp.716-724.
- Hanushek, E. and Kim, D. (1995) 'Schooling, Labour Force Quality and Economic Growth', NBER Working Paper No.5399.
- Lazear, E. (1990) 'Job Security Provisions and Employment' Quarterly Journal of Economics Vol.105, pp.699-726.

- Lazear, E. (1996) *Personnel Economics*, MIT Press: Cambridge, Massachusetts and London.
- Lilien, D. and Hall, R. (1986) 'Cyclical Fluctuations in the Labor Market' in O. Ashenfelter and R. Layard (eds) *Handbook of Labour Economics*, North Holland: Amsterdam.
- Mortensen, D. (1986) 'Job Search and Labor Market Analysis' in O. Ashenfelter and R. Layard (eds) *Handbook of Labour Economics*, North Holland: Amsterdam.
- OECD (1997) 'Job Insecurity', *Employment Outlook*, July, OECD: Paris.
- Parsons, D. (1986) 'The Employment Relationship: Job Attachment, Work Effort, and the Nature of Contracts' in O. Ashenfelter and R. Layard (eds) *Handbook of Labour Economics*, North Holland: Amsterdam.
- Wells, W. and Grubb, D. (1993) 'Employment Regulation and Atypical Work in the EC' mimeo, OECD Paris.