Abstract

This paper studies the dynamics of labour demand and the determinants of employment rates across the OECD. We find: (i) labour demand adjusts less rapidly when employment protection is more strict and union density is higher; (ii) there is no evidence that overall job turnover is influenced by employment protection; (iii) union density and coverage are negatively related to employment/population ratios, although this effect can be entirely offset by coordination; (iv) strict employment protection laws are strongly associated with lower employment rates for women and young people but have no impact on the rates for prime age men.

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Employment Patterns in OECD Countries

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Introduction

Much store is placed by economists and the general public alike on measures of GDP per capita, with extensive discussion of the league tables which are produced from time to time. However, few people realise that among the "advanced" countries of the OECD (all bar Greece, Portugal, Mexico, Czech Republic, Turkey, Hungary, Poland and Korea), the majority of the variation in GDP per capita is generated by variation in labour input per capita. This variation is substantial. For example, the country with the highest labour input per capita in our sample, Japan, contributes around 66 percent more than Spain, the country with the lowest. As a consequence, we feel that the patterns of employment across the OECD countries are worth serious investigation.

In what follows, we look at two distinct aspects of employment. First, we consider the ways in which the dynamics of employment demand are influenced by the institutional features of the various OECD labour markets. Here, we focus on employment protection laws and trade unions. Second, we analyse employment/population rates, both for the whole population and for prime-aged men. We finish with a list of our findings.

2. Patterns of Employment Demand

Our purpose here is to shed some light on how employment demand fluctuations are influenced by certain structural features of the labour market. We already know that employment protection probably slows down the speed of adjustment of labour demand, although the evidence is not very strong (see Hamermesh, 1988; Layard *et al*., 1991, Chapter 9, Table 9; Nickell, 1998). However, we intend to go somewhat further here by also considering other features of the labour market, in particular wage bargaining structures. Furthermore, we also look at the relationship between employment demand adjustment and job turnover.

2.1 The theoretical background

It is our intention to look at employment demand in a number of OECD countries using a very simple model, which conditions an output. Consider a static model based on a constant returns production function of the form

$$Y = F(AN,K) \qquad (1)$$

where Y = (value-added) output, A = labour augmenting technical progress, N = employment, K = capital. Then the condition for maximising profit is

$$AF_1\left(\frac{AN}{K}, 1\right) \ ' \ W/P? \qquad (2)$$

where W is the labour cost per employee, P is the value-added output price (GDP deflator in aggregate) and ? = (1-1/?) where ? is the output demand elasticity. Note that P ? is the marginal revenue and that the marginal product of labour, F_1, is homogeneous of degree zero in its two arguments. To generate a labour demand relationship conditional on output, we eliminate K between (1) and (2), obtaining after a little manipulation

$$N = \frac{Y}{A} h(W/AP?) \qquad (h') < 0) \tag{3}$$

Assuming ? is constant, we can write this approximately in log-linear form (with lower case letters for logs) as

$$n^* = y - ß_1(w - p) + ß_2 a + ß_0 \tag{4a}$$

where n^* is the static equilibrium level of employment. It is also worth noting that $ß_1 = s$ where s is the elasticity of substitution. Furthermore, it is clear from the structure of (3) that $ß_2$ can take either sign.

In the standard quadratic adjustment cost model, we know that actual (log) employment, n, satisfies

$$n_t = ?n_{t-1} + (1 - ?)(1 - d?) \sum_{i=0}^{4} E_{t-1}(d?)^i n_{t+i} \tag{4b}$$

where E is the expectations operator and the dating t-1 refers to the beginning of period, when it is supposed that employment decisions are taken. d is a discount factor but the key parameter ? determines the adjustment speed (in fact, the speed of adjustment is inversely related to ?). Furthermore, it is well known that ? is directly related to the cost of adjustment in the quadratic model (see Nickell, 1986).

If we suppose static expectations or that each element of n^* follows a random walk, then

$$E_{t-1} n_{t+i} = y_{t-1} - ß_1(w - p)_{t-1} + ß_2 a_t + ß_0 \tag{4c}$$

where a_t is the beginning of period value of the technical progress coefficient. Substituting into (4b) then yields our basic model

$$(n_t - y_{t-1}) = ?(n_{t-1} - y_{t-1}) + (1 - ?)\langle ß_0 - ß_1(w - p)_{t-1} + ß_2 a_t \rangle \tag{5}$$

2.2 Institutions and the adjustment of employment demand

As we have seen in the previous section, the key parameters of the employment demand model are ?, which is inversely related to the adjustment speed and $ß_1$, which is the wage elasticity and depends on the technology. To a first approximation, it is not unreasonable to suppose that

technology parameters vary very little across the OECD countries. However, the adjustment parameter ? will depend on the cost of employment adjustment which could easily differ quite substantially from one country to another.

So what are the institutional features of the labour market which may influence labour demand adjustment? Here we consider three possibilities, employment protection, labour standards more generally and trade unions. First, it seems obvious that strict employment protection legislation will raise the cost of employment adjustment and hence raise ?. In Table 1, column 1, we show a ranking of the strictness of employment protection laws across the OECD. Turning to labour standards, here we mean factors such as legislation on working time, fixed term contracts, minimum wages and employees representation rights. If legislation of this type restricts flexibility within the firm, it could force the firm to respond to exogenous shocks by adjusting employment rather than the hours of work or intensity of effort of the existing work force. This would then show up as a higher speed of employment adjustment and hence a lower level of ?. Alternatively, if labour standards legislation had more of an impact on employment flexibility, it would have the opposite effect. The overall outcome, therefore, remains an empirical issue. In Table 1, column 2, we present a synthetic index of the strength of labour standards legislation.

Looking next at the structure of trade unions, there are several features which may be important. Union density, which simply measures the proportion of employees who are union members. This contrasts with union coverage which reflects the proportion of employees whose wages are set by a union pay agreement. In some countries this exceeds union density by a large margin because there are so-called extension laws which ensure that non-union plants must pay the union rate. Finally, we consider the coordination of trade unions which measures the extent to which unions coordinate their wage bargaining activities across large numbers of different firms. In Table 1, columns 3, 4, 5 we present measures of density, coverage and union coordination for the OECD countries.

With regard to the effects of these factors on employment adjustment, firms which are unionised (have a high union density) we may expect to have higher than average levels of employment adjustment costs because the union will tend to resist involuntary redundancies and attempt to negotiate high levels of compensation for job loss. High levels of coverage and coordination at given levels of density basically imply that many firms will have wages imposed on them irrespective of how well or badly they are doing. Such firms will be forced, one way or another, to focus their adjustment to shocks on their employment levels (as opposed to their wage levels) and to develop mechanisms to do this by, for example, favouring short-term contracts for their employees. So it is quite possible that we may observe higher adjustment speeds (lower values of ?) in countries where there are higher levels of union coverage and coordination at given levels of density.

One other issue we propose to investigate is the impact of the interaction between employment protection and union density. There are two possibilities here. First, the union may be adversarial and thus do all in its power to resist job losses for its members. The greater the extent of legal protection provided by the state in the form of employment protection legislation, the more weapons the union will have at its disposal. Following this argument, we would expect the interaction between employment protection and union density to further reduce the speed of adjustment and hence to raise ?. On the other hand, the union may behave in a cooperative manner and help the firm organise necessary employment reductions in an orderly fashion, helping to protect it from possibly arbitrary interference by the external bureaucrats who enforce the employment protection laws. A firm with an active and powerful union may actually find it easier to deal with the relevant legislation than one which is not unionised. This would lead the interaction effect to be negatively associated with ?.

2.3 Some empirical evidence

Here, we undertake an empirical investigation of the hypotheses put forward in the previous section, basing our work on the simple model set out in (4c) and using aggregate time series data from the 20 OECD countries listed in Table 1. We then relate the results to job turnover rates in the same countries.

The basic idea is to relate the ? parameters in (4c) to labour market institutions in each country. So the estimated model takes the form:

$$(n_{it} - y_{it-1}) = \phi_i + \phi_{it}(n_{it-1} - y_{it-1}) + (1 - \phi_{it})\left(\beta_0 - \beta_1(w - p)_{it-1} + \beta_2 a_{it}\right) \qquad (6)$$

$$\phi_{it} = \phi_0 + \sum_j \phi_j z_{jit} \qquad (7)$$

where i = country, t = time, ϕ_i = country dummy and z_{jit} are the labour market institution measures set out in Table 1. To be more specific z_{1it} = employment protection index (time invariant), z_{2it} = labour standards index (time invariant), z_{3it} = union density (time varying), z_{4it} = union coverage (time varying), z_{5it} = union coordination (time invariant), $z_{6it} = z_{2it} \times z_{3it}$, employment protection, union density interaction.

Concerning the data, we use twenty countries each with information from 1961 to 1992, generating 640 observations. Furthermore, the time dimension, at 32 years, is large enough to have some hope of estimating dynamic responses. The data are drawn from the LSE Centre for Economic Performance OECD dataset and the variables, in logs, are defined as follows. n = total employment, w_1 = total wages, salaries and social security contributions per employee, w_2 = hourly wages in manufacturing uprated by the payroll tax rate, y = real GDP, p = GDP deflator. The index of total factor productivity is defined as follows. For each country define the average share of labour over the sample period f , say. Then define a series $\{b_t\}$, starting with $b_1 = 0$ using the standard equation

$$\Delta b_t = \frac{1}{f}\left[\Delta y_t - f\,\Delta n_t - (1 - f)\,\Delta k_t\right] \qquad (8)$$

This, of course, generates a Solow residual adjusted for the fact that we have defined our TFP measure to be labour augmenting. Next we use an H-P filter to smooth the $\{b_t\}$ series, generating a series $\bar{a}_t$ for each country. Finally we define our series for each country as

$$a_{it} = \bar{a}_{it} + \phi_t \qquad (9)$$

where ϕ_t is a common time dummy to capture all unobserved common effects on productivity. So our estimated model has the form

$$n_{it} - y_{it-1} = \phi_i + \phi_t + \phi_{it}(n_{it-1} - y_{it-1}) + (1 - \phi_{it})\left(\beta_0 - \beta_1(w - p)_{it-1} + \beta_2 \bar{a}_{it}\right) + \nu_{it} \qquad (10)$$

where we suppose ν_{it} to be iid random variables. We realise that imposing equal long-run elasticities across all countries is a somewhat crude simplification although there is no reason to expect large differences in technology across this rather homogeneous group. The model (10) + (7) is estimated by non-linear least squares and the results are presented in Table 2.

The two equations presented use different measures of real labour cost per worker. The second is probably more satisfactory because it uses a measure of the gross wage per hour which is preferable to annual labour cost per worker. The latter tends to generate spurious procyclicality as it varies with hours worked per year by full-time employees. Overall, the equations have a reasonable structure with a negative wage effect and a sensible adjustment speed at average values of the labour market institution variables.[1] Turning to the individual impact of these variables, we find that ?, which is inversely related to the speed of adjustment, is increasing with the strictness of employment protection laws and union density, and decreasing with their interaction as well as with labour standards, union coverage and coordination. In the light of our discussion in the previous section, these results provide some further evidence for the view that employment protection legislation slows down the adjustment of employment demand as does higher union density. The negative interaction is strong, but the overall impact of employment protection is to reduce adjustment speeds at all feasible values of union density. Increases in the strictness of labour standards legislation tends, by contrast, to raise adjustment speeds (reduce ?), suggesting perhaps that such legislation tends to reduce operational flexibility within firms throwing more of the burden of adjustment onto employment. Finally, the finding that higher union coverage and greater union coordination lead to faster adjustment of employment demand, *ceteris paribus*, is consistent with the view that when firms have wages imposed on them from outside, they must focus their adjustment to shocks on the employment margin and this will generate more rapid adjustment.

In the light of these results, an interesting issue to pursue is the extent to which these factors, and in particular employment protection, will influence the overall speed of job creation and destruction once wages are allowed to adjust as well. This is the subject of the next section.

2.4 Job turnover

In Table 3, we present a picture of job turnover across the OECD. Job turnover itself is defined as the sum of job creation and job destruction, these being respectively the sum of all employment increases in expanding firms or establishments and the sum of all employment decreases in contracting firms or establishments, normalised on total employment. It is obvious that job turnover will be larger if it is based on establishments rather than firms because in the former case it will include some intra-firm movements. This, plus the fact that some of the data refer only to manufacturing, and the lower size limit on the included firms differs across countries, means that the data in Table 3 are not fully comparable across countries. However, it is worth recording that there seem to be no striking differences in the rates of job turnover between the high employment protection countries such as Spain and Italy, and the low employment protection countries of North America.[2] This fact has been noticed before and Bertola and Rogerson (1997) propose the following explanation. While employment protection may slow down job reallocation, so may a high level of wage flexibility at the establishment level. When a firm is doing badly (well), if its wages are flexible and respond to the adverse (favourable) circumstances, its rate of job destruction (creation) will obviously slow. So if countries with high levels of employment

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[1] For example, in the second equation, ? = 0.82 when employment protection = 10, labour standards = 4, union density = 0.4, union coverage = 0.8 and union coordination = 1.

[2] In fact if the total job turnover rates are regressed on the institutional variables included in the employment demand models, the employment protection effect is essentially zero (-0.19, t = 0.2). For job turnover rates in continuing establishments it is insignificantly positive.

protection are also countries with low levels of intra-firm wage flexibility (and vice-versa), this will be consistent with the job turnover evidence.

In Table 4, we present some data on intra-firm wage flexibility as measured by the response of firm or industry wages to firm or industry specific shocks. The correlation between this measure and the employment protection rank given in Table 1 is -0.82 which is highly significant and strongly supports the Bertola-Rogerson hypothesis. The pattern exhibited in Table 4 is obviously of independent interest particularly as in a fully competitive economy (i.e., all firms are price and wage takers and there are no mobility costs) this measure of intra-firm wage flexibility would be zero. However, we shall not pursue this issue here but merely note that Teulings and Hartog (1998) does shed some further light on the matter.

2.5 Summary

Our results indicate that employment demand (conditioned on real labour cost) adjusts less rapidly when employment protection becomes more strict and union density is higher. Although the interaction between these two leads to more rapid adjustment as does stricter labour standards legislation, higher union coverage and coordination. The latter union results we put down to the fact that firms operating in an economy with high union coverage and coordination are more likely to have a wage increase imposed on them from outside which takes no account of how well they are doing. They are then forced into focusing on employment adjustment. If we look at overall employment adjustment as measured by job turnover, we find no apparent relationship between employment protection and rates of job turnover. There is some evidence that this is due to the fact that low levels of employment protection tend to be associated with high levels of intra-firm wage flexibility. While the former encourages labour reallocation across firms, the latter discourages it by allowing wage adjustments to attenuate job creation (destruction) when the firm is doing well (badly).

3. Explaining How Many People Work

While in the previous section we were concerned with employment adjustment, here we look simply at the question of how many people work. In Table 5, we present some information on various aspects of the situation in order to give some idea of what has to be explained. Our ultimate focus will be on the employment population ratios in columns 5 and 6 although it is interesting to see how these get adjusted in column 7 when we take annual hours (col.umn 3) into account. One of the most interesting features of this table is the truly enormous variation in labour input per capita across the different countries, with the US and Japan contributing over 50 percent more labour input than Belgium, Ireland, Italy and Spain according to column 7. And, as we noted in the Introduction, this variation of labour input per capita is the most important factor in explaining variations in GDP per capita among this group of countries (so long as we omit Portugal). In particular, it is more important than the variation in productivity.

Before we go on to look more closely at these numbers, it is also important to comment on how we should interpret them. The general view among most commentators is that more means better. That is to say that a country with a higher labour input per capita has a labour market which is doing better than one with a lower labour input per capita. However, were one to ask these same commentators whether it is better to have four weeks annual holiday as opposed to one, they would look at their own personal circumstances and probably come down in favour of four. Yet, *ceteris paribus*, the country with an average of one week's holiday per year would have a 6

percent higher labour input per capita than the country with the four week's holiday. It is not difficult to think of similar examples. Of course, this does not mean that less is better. If people would like to work more but can't because of various barriers, this is obviously bad. If people would work more if it were not for the tax/benefit disincentives, this could well be bad. Overall, therefore, higher levels of labour input per capita generally reflect some good aspects and some bad aspects. On balance, there is probably more good than bad but this is a matter of judgement. In what follows, we shall take a fairly neutral stance.

3.1 The theoretical background

Here, we present a very simple model of the determinants of the employment/population ratio, e. Suppose we start from a labour demand function, conditional on capital, obtained by inverting equation (2). If we assume that the production function (1) is Cobb-Douglas, with labour exponent α, then we obtain

$$n = k - \frac{1}{(1-\alpha)}(w-p) + \frac{\alpha}{(1-\alpha)}a + a_0. \qquad (11)$$

Next suppose that (real) wages depend on trend productivity, x, factors influencing wage pressure, z_w, and on the search intensity and attractiveness to employers of the non-employed. This is a long-run model, so we ignore nominal rigidities. Next suppose there are m groups of non-employed (e.g., unemployed, early retired, sick and disabled, etc.) and let U_i be the number in each group. Suppose $u_i = U_i/Pop$ where Pop is the population of working age. Let us now define a set of parameters β_i which measure the search intensity or attractiveness (to employers) of the i^{th} group of the non-employed relative to the unemployed. Then if i = 1 refers to the unemployed, we suppose that wage bargaining, either individual or collective, yields a long-run real wage equation of the form

$$w - p = \beta_0 + x - \gamma\left(u_1 + \sum_{i=2}^{m}\beta_i u_i\right) + z_w \qquad (12)$$

Suppose next that in the long run, trend productivity x is given by $\theta\ln((AN^*)^{\alpha}K^{1-\alpha}/N^*)$ where N^* is long-run employment as given in (11). Thus (12) becomes

$$w - p = \beta_0 + \alpha a + (1-\alpha)(k - n) - \gamma\left(u_1 + \sum_{i=2}^{m}\beta_i u_i\right) + z_w \qquad (13)$$

Then if we eliminate (w-p) from (11), (13) we obtain the long-run equilibrium non-employment condition

$$\gamma\left(u_1 + \sum_{i=2}^{m}\beta_i u_i\right) = \left(\beta_0 - (1-\alpha)a_0 + z_w\right). \qquad (14)$$

Note that this has the standard neutrality property that the equilibrium non-employment rate does not
depend directly on the level of productivity. If we now suppose that β_i is the proportion of non-employees in category i, so $\sum_{i=1}^{m}\beta_i = 1$, then the non-employment rate, u, which is 1-e, where e

is the employment population ratio, must satisfy

$$?\left(?_1 \% \sum_{i=2}^{m} ?_i ?_i \right) u \; ' \; \left(?_0 \& (1 \& ?) a_0 \% z_w\right).$$

So e is given by

$$e \; ' \; 1 \& \frac{\left(?_0 \& (1 \& ?) a_0 \% z_w\right)}{?\left(1 \% \sum_{i=2}^{m} (?_i \& 1) ?_i \right)} \qquad (15)$$

where $\sum_{1}^{m} ?_i \; ' \; 1.$

So the employment population ratio, e, will depend on four specific parameters or parameter groups. First, it is negatively related to z_w, which is any factor which raises, autonomously, the pressure on wages in any given state of the labour market. Second, it is positively related to ?, where this reflects the search intensity/attractiveness of the average unemployed person. Third, it is positively related to the search intensity/attractiveness of the individuals in any of the other non-employed categories, $?_i$. Finally, assuming that the unemployed have the highest search intensity/attractiveness of all the non-employed (i.e. $?_i < 1$, i \$ 2), then e is negatively related to $?_i$, i \$ 2, that is to the proportion of non-employed in any group aside from the unemployed.

3.2 Towards an empirical analysis

In order to use (15) as the basis of an empirical investigation of patterns of employment, the first requirement is to specify the non-employment categories. These are 1. unemployed, 2. full-time education, 3. married women looking after families, 4. disability and sickness, and 5. early retirement. In what follows we shall have little to say about category 2. Otherwise, the proportion of the non-employed in category 3. depends to some extent on the tax and benefit system and on the barriers to entry into the labour market, and the proportion in categories 4. and 5. depends critically on the structure of the benefit regime broadly interpreted. All these factors will also influence the search intensity/attractiveness of the individuals in these categories in the opposite way. That is, a factor such as generous benefits which is liable to raise the numbers in a given category, will also tend to reduce their search intensity. So these factors we have mentioned will have a negative impact on e.

Turning to the parameter ? in (15), this represents the search effectiveness of the average unemployed person as well as their attractiveness to employers. Factors which influence this will include the generosity of benefits (-), the expenditure on active labour market policies (+) and barriers to regional mobility (-) (which clearly reduce search effectiveness). The attractiveness of some of the unemployed may also be reduced by employment protection rules because firms would find it difficult or expensive to lay them off if times turned bad. Finally, the most important factors which directly influence wage pressure (z_w) are those concerning wage bargaining structure. The power of the unions as represented by union density or coverage would tend to raise wage pressure whereas the more unions and employers can coordinate their wage bargaining,

the more this impact of unions on wage pressure would be offset. Our first step is now to investigate these conjectures using simple cross-country regressions.

3.3 Results on employment-population ratios

Our aim here is to see if we can identify those features of the labour market which impact on employment-population ratios. Our strategy is to divide the period between 1983 and 1994 into two sub-periods (1983-88, 1989-94) and to take the averages of the employment-population ratios over each of these sub-periods as the dependent variable. The idea of this averaging procedure is to reduce the impact of cyclical fluctuations. The features of the labour market which we include as independent variables include first those which describe the wage bargaining structure, notably union density, union coverage and union-employer coordination in wage bargaining. Examples of the first two of these variables may be found in Table 1 and an example of the coordination variable is in Table 6 (column 1). The second feature of the labour market is the extent of employment protection where we use the index reported in Table 1. This is invariant over both sub-periods.

The third group of variables concerns the tax and benefit systems. Our tax variable is the employment tax wedge, that is the tax wedge between the real labour cost per employee facing the firms and the real consumption wage received by employees. This is the sum of the payroll tax rate, the personal income tax rate and the consumption tax rate. We would expect a higher tax wedge to be associated with a lower employment/population ratio. On the benefit front, we use the unemployment benefit replacement ratio and a measure of the duration of benefit eligibility. All the tax and benefit variables corresponding to the second sub-period may be found in Table 6 (columns 2, 3, 4). Finally, in this group we make use of a variable to capture the role of active labour market policies which is reported in Table 6 (column 5).

The last variable we use is a proxy for mobility barriers, namely the percentage of households who are owner-occupiers which has been found by Andrew Oswald to have a strong impact on unemployment. The value corresponding to the second sub-period may be found in Table 6 (column 6).

The effects of these features of the labour market on the employment/population ratios are summarised in Table 7 and, for interest, we also look at their impact on our measure of total labour input which includes hours as well (see Table 5, column 7). Starting with wage bargaining structures, the impact of unions on employment/population ratios is limited when looking at the whole working age population but both union density and union coverage have a significant negative effect for prime aged men. If both density and coverage rise from 25 percent to 75 percent, then the employment/population ratio for this group falls by around 6 percentage points. However, a fall of this size is fully offset by an increase in coordination from a low level of 3 to the top level of 6. There is also a strong negative impact of union coverage on our index of total labour input which is again fully offset by a significant rise in coordination. The effect of employment protection is particularly interesting because it has a very strong negative impact on the employment/population ratio of the whole working age population but no effect at all on prime aged males or on total labour input. So employment protection only affects those with a looser attachment to the labour force namely women, the young and the old. Thus, the burden of employment protection laws falls mainly on the new entrants and those who are more likely to be re-entrants, having a significant effect on their employment rates. A shift from low levels of employment protection (5) to high levels (15) is associated with a reduction in overall employment

rates of 9 percentage points.[3] The fact that this does not carry over to the measure of total labour input suggests that employment protection militates against low-hours employment.

There is some evidence that high tax rates and generous benefit systems tend to lower employment rates although the effects are not very large. Thus a 10 percentage point rise in the tax wedge would reduce employment rates by less than 2 percent as would a 20 percent rise in benefit replacement ratios and a one year increase in benefit durations. Active labour market policies help raise employment rates for those outside the prime age male group but again the effect is small. Finally the mobility barriers generated by owner occupation seem to have some impact, particularly on prime aged men, where a rise in the rate from 30 to 60 percent would reduce the employment rate by 4 percentage points. Overall, therefore, the negative union effects are particularly strong for prime aged men and the negative employment protection effect is very big but only for the non-prime aged male group. Taxes and benefits have small negative effects all round on employment rates.

One of the problems with looking at employment rates is that the non-employed consist of a number of disparate groups. While a great deal is known about the relationship between institutional features of the labour market and the unemployed, less is known about some of the other groups so here we shall finish by briefly discussing three of these in particular, married women, the sick and disabled, and the early retired.

3.4 Some aspects of non-employment

(i) Married women Of course a huge amount has been written on married women's labour supply (see Killingsworth and Heckman, 1986, and Blundell and MaCurdy, 1998, for surveys), but not a great deal of it is relevant for explaining the large cross-country variations in participation rates observed in Table 5. Our previous results certainly indicate that strict employment protection laws militate against married women's employment but what of other effects? Evidence presented in OECD (1990), Table 6.3 indicates that certain aspects of the tax system are important. In particular participation is decreasing (increasing) in the marginal disposable income following an earnings increase by the husband (wife). Furthermore, it seems likely that married women's participation would be affected by the availability of subsidised child care and the absence of barriers to part-time work. However, we have not been able to find much evidence on these issues.

(ii) Early retirement among men There are enormous variations in the participation rates of older men (55-64) (see Table 5) and this is something about which a considerable body of evidence is available. The analysis has been much helped by the fact that these large cross-country variations were not apparent as recently as 1971, when nearly all countries had participation rates for this group in excess of 80 percent, the major exception being Italy with a rate of only 59 percent (see Blöndal and Scarpetta, 1998, Table V.1, p.72). The major factor explaining the current variations and the consequent large changes since 1971 has been the structure of the social security system. Incentives to remain in the labour force vary widely, often as a result of misguided attempts to reduce labour supply as a response to increasing unemployment. One consequence of this is that participation rates for older men tend to be strongly negatively correlated with prime-age male unemployment rates. Another consequence, reported in Blöndal and Scarpetta (1998), is that if pension/social security systems were changed to be actuarially neutral, much of the observed decline in the participation rates among older men would be

[3] This is not just a Southern Europe effect. Indeed, if we drop Italy, Spain and Portugal, the coefficient on employment protection remains completely unchanged.

reversed.

(iii) Disability and sickness One of the most extraordinary features of some OECD economies has been the enormous increase in the extent of the rise in the number of individuals who are inactive because of disability and sickness. And this is not simply among older workers for whom the disability benefit system is linked to other aspects of early retirement schemes. We do not have data for many countries but the information reported in Table 8 is fairly representative. Even for those under the age of 44, there have been big increases since 1970 in the Netherlands, the UK and the US, so that by the late 1990s in the Netherlands and the UK, the sickness/disability rate for this group is higher than the unemployment rate. So in some countries, even in the younger age groups, the sick and disabled make up a substantial proportion of the non-participants.

So what is going on here? First, it is important to recognise that the large increases recorded in Table 8 do not imply that the populations of the various countries are becoming more susceptible to disease. On the contrary, all these countries are becoming healthier. In fact the key to the increases in sickness and disability lies in the fact that eligibility for disability status typically depends not only on health but on the labour market situation. For example, prior to the 1987 reform of the system, up to 50 percent of the disability enrolment in the Netherlands was related to redundancy of workers. This allied to the fact that disability benefits tend to be higher and more secure than other non-employment benefits has led to large increases in recipients in those countries where entry into disability is not well controlled.

4. Conclusions

In this study, we have looked at the dynamics of employment demand and the determinants of employment rates across the OECD. Our results are as follows:

(i) Employment demand, given real labour costs, adjusts less rapidly when employment protection becomes more strict and union density is higher. However these factors act as substitutes in the sense that their interaction leads to faster adjustment.

(ii) Stricter labour standards legislation and increased union coverage and coordination lead to faster adjustment of employment.

(iii) There is no evidence that overall job turnover (i.e. not conditional on wage costs) is influenced by employment protection. There is some evidence that this is due to the fact that low levels of employment protection tend to be associated with high levels of intra-firm wage flexibility (which leads to lower levels of job turnover).

(iv) Union density and coverage are negatively related to employment/population ratios but these effects are entirely offset by union and employer coordination in wage bargaining.

(v) Strict employment protection laws have a very strong negative impact on overall employment rates but no effect whatever on the employment rate of prime aged men. Thus the burden of these laws falls mainly on new entrants and re-entrants to the labour market (i.e. young men, old men and women).

(vi) High tax rates and generous benefits tend to be associated with lower employment rates, although the effects are not large.

Table 1

Labour Market Institutions Influencing Adjustment Speeds

	1 Employment Protection	**2** Labour Standards	**3** Union Density	**4** Union Coverage	**5** Union Coordination
Austria	16	5	46.2	98	2
Belgium	17	4	41.2	90	1
Denmark	5	2	71.4	69	2
Finland	10	5	72.0	95	1
France	14	6	9.8	92	1
Germany (W)	15	6	32.9	90	1
Ireland	12	4	49.7	85	0
Italy	20	7	38.8	83	1
Netherlands	9	5	25.5	71	1
Norway	11	5	56.0	75	2
Portugal	18	4	31.8	79	1
Spain	19	7	13.0	76	1
Sweden	13	7	82.5	86	2
Switzerland	6	3	26.6	53	0
UK	7	0	39.1	47	0
Japan	8	1	25.4	23	1
Australia	4	3	40.4	80	1
New Zealand	2	3	44.8	67	0
Canada	3	2	35.8	38	0
USA	1	0	15.6	18	0

(1) OECD *Jobs Study* (1994), Part II, Table 6.7, Col.5. Country ranking with 20 as the most strictly regulated. Refers to 1990.

(2) OECD *Employment Outlook* (1994), Table 4.8, Col.6 extend by authors. This is a synthetic index whose maximum value is 10 and refers to labour market standards enforced by legislation on, successively, working time, fixed term contracts, employment protection, minimum wages and employees representation rights. Each of these is scored from 0 (lax or no legislation) to 2 (strict legislation) and the scores are then added up.

(3) OECD *Employment Outlook* (1994), Chapter 5, Table 5.7. Trade union members as a percentage of all wage/salary earners. Refers to 1990.

(4) OECD *Employment Outlook* (1994), Chapter 5, Chart 5.1. Number of workers covered by collective agreements as a percentage of wage/salary earners. Refers to 1990.

(5) Layard *et al*. (1991), Annex 1.4. Union coordination in wage bargaining is an index with 2 = high, 1 = middle, 0 = low.

Table 2

Estimates of OECD Employment Demand Models, 1961-92

Independent Variables	Dependent Variable	
	1 $(n_{it} - y_{it-1})$	2 $(n_{it} - y_{it-1})$
?		
Constant	0.826	0.863
Employment protection (1-20)	0.027 (3.2)	0.024 (3.4)
Labour Standards (0-10)	-0.040 (2.8)	0.059 (4.5)
Union density (proportion)	0.73 (4.5)	0.31 (3.3)
Union coverage (proportion)	-0.23 (3.6)	-0.070 (1.6)
Union coordination (1-3)	-0.069 (2.5)	-0.036 (2.2)
EP × Union density	-0.048 (4.8)	-0.020 (3.5)
$(w_1-p)_{it-1}$	-0.51 (8.5)	
$(w_2-p)_{it-1}$		-0.26 (5.0)
$\bar{a}_{it}$	-0.88 (4.7)	-1.63 (9.8)
Country dummies	%	%
Time dummies	%	%
N	20	20
T	32	32

Notes:

(i) t ratios in brackets. Estimates generated by non-linear least squares. Both columns are based on equations (10) and (7), w_1 is Rn (total wages, salaries and social security contributions per employee), w_2 is Rn (hourly wages in manufacturing uprated by the payroll tax rate).

Table 3

Job Turnover (% p.a.)

	Total[a]				Continuing establishment[a]		
	years	creation	destruction	turnover	creation	destruction	turnover
Austria[c]	(91-93)				5.7	6.2	11.9
Belgium[c]	(83-85)	7.7	7.5	15.2			
Denmark	(83-89)	16.0	13.8	29.8	9.9	8.8	18.7
Finland	(86-91)	10.4	12.0	22.4	6.5	8.7	15.2
France[c]	(84-91)	12.7	11.8	24.4	6.6	6.3	12.9
Germany (W)	(83-90)	9.0	7.5	16.5	6.5	5.6	12.1
Ireland (manu.)	(84-85)	8.8	12.7	21.4	6.1	8.1	14.1
Italy[c]	(87-92)	11.0	10.0	21.0	7.3	6.2	13.5
Netherland (manu.)[c]	(84-91)	8.2	7.2	15.4			7.0
Norway (manu.)	(85-92)	8.1	10.6	18.7	6.0	7.5	13.5
Spain[b]	(93-94)				5.2	7.6	12.8
Sweden	(85-92)	14.5	14.6	29.1	8.0	9.6	17.6
UK[c]	(85-91)	8.7	6.6	15.3	6.0	2.7	8.7
Japan	(85-92)				8.6	5.3	13.9
Australia (manu.)	(84-85)	16.1	13.2	29.3	7.1	4.6	11.7
New Zealand	(87-92)	15.7	19.8	35.5	8.3	11.3	19.7
Canada[c]	(83-91)	14.5	11.9	26.4	11.2	8.8	20.0
US[c]	(84-91)	13.0	10.4	23.4	4.6	3.1	7.7
US (manu.)	(84-88)	8.2	10.4	18.6	6.7	7.7	14.4

Notes:

(i) Job turnover (percent of total employment, yearly average) = job creation + job destruction.
(ii) Source: (a) OECD *Employment Outlook* (1996), Table 5.1. (b) Garcia-Serrano (1998). (c) Data refer to firms. Otherwise, data refer to establishments.

Table 4

Elasticity of Firm (Industry) Wages With Respect to Expected Firm (Industry) Specific Average Revenue Product of Labour

Finland	0	Holmlund and Zetterberg (1991)
Germany	0.10	Holmlund and Zetterberg (1991)
Netherlands	0.08	Teulings and Hartog (1998)
Norway	0.03	Holmlund and Zetterberg (1991)
Sweden	0.04	Holmlund and Zetterberg (1991)
UK	0.08-0.15	Nickell and Wadhwani (1990)
Japan	0.19	Teulings and Hartog (1998)
Japan (large firms)	0.33	Brunello and Wadhwani (1989)
Australia	0.22	Teulings and Hartog (1998)
Canada	0.31	Teulings and Hartog (1998)
US	0.30	Holmlund and Zetterberg (1991)

These numbers are taken from Table 4, Chapter 4 in Layard *et al*. (1991) and Table 3 in Hartog and Teulings (1998).