Discussion Paper No. 615

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THE ROLE OF GLOBAL AND
DOMESTIC FACTORS

Noel Gaston
and
Gulasekaran Rajaguru

August 2004

The Institute of Social and Economic Research
Osaka University
6-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan

THE RISE (AND FALL) OF LABOUR MARKET PROGRAMMES:
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Noel Gaston [a,b,*] and **Gulasekaran Rajaguru** [b]

[a] *Institute of Economic and Social Research, Osaka University, Osaka, Japan*
[b] *Faculty of Business, Bond University, Gold Coast, Queensland, Australia*

Abstract

We study the political economy of labour market policies. First, it is shown that tax and redistributive considerations lead inside workers to prefer spending on active labour market programmes to passive spending, e.g., on unemployment benefits. We also show that greater active spending may be a feature of globalising economies. In the empirical work, panel data for OECD countries are used to examine the relationship between active and passive labour market spending, various measures of globalisation and controls relevant for analysing the political economy of labour market policies. Overall, we find that factors other than globalisation are more important determinants of labour market expenditures.

Keywords: Active and passive labour market policies; inside workers; panel VAR estimates

JEL classification: J68; H53; C33; P16

I.   Introduction

Our focus in this paper is the way in which labour market policies have responded to political and globalising pressures. Increased economic insecurity generates strong demands for remedial government policies from affected groups of workers.   Labour market intervention takes two forms. *Passive* labour market programmes (notably, unemployment benefits) and the increasing use of *active* labour market programmes (e.g., job search or relocation assistance and job training), employment policies or 'workfare' are intended to address the needs of workers in increasingly globalised economies.   Thus, labour market programmes can act as a palliative by providing income support or by increasing the employability of unemployed workers.

The reliance upon different types of labour market policies and the generosity of different programmes is thought to be associated with increased economic openness for a number of reasons. For example, increased economic integration (via trade and investment liberalisation or via increased immigration) may increase workers' fear of job dislocation, job competition, income risk and economic insecurity (Rodrik, 1998).   At the macroeconomic level, there may be a need for adjustment and reform of the traditional microeconomic and labour market policies. In addition, budgetary considerations may become more important in a more globalised economy.   For instance, Blank and Freeman (1994) argue that some European countries, in the face of increased international competition, tried to reduce the "generosity" of their social programmes.

The demands for certain types of labour market programmes are generally resisted by the owners of capital. Passive labour market policies, such as unemployment insurance and income support, as well as regulations on layoffs and union rights have long been a source of political conflict.   The owners of capital tend to view passive labour market policies as having few productivity benefits, as imposing potentially significant labour market

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distortions and as shifting the burden of taxation onto themselves. Policy-makers tend to view passive income support as weakening work incentives and extending periods of job search for unemployed workers. In some countries this has motivated a shift in emphasis away from passive labour market policies; a public policy recommendation outlined in OECD (1995).

The policy shift towards active labour market programmes is often associated with the removal of labour market rigidities and the increasing flexibility of labour markets. The goals, of course, are durable reductions in rates of unemployment and improvements in total factor productivity. On a practical level, it has been claimed that shifting emphasis away from passive income support for unemployed workers to active labour market programmes has been successful in Scandinavia, Austria and the Netherlands.[1] However, not all countries have redirected resources from passive to active labour market programmes. In addition, the increases in active spending that have occurred have generally been quite small (OECD, 2001); while income replacement and 'benefit dependency' have been trending sharply upwards in many countries (OECD, 2003).

An interesting perspective is provided by Saint-Paul (2000), who argues that the most relevant conflict that lies at the root of modern labour market rigidities and the recent changes to labour market institutions is that between various types of labour, and not the more traditional conflict between capital and labour. For example, rather than being driven by some sense of altruism towards their less fully employed compatriots, Saint-Paul argues that certain labour market institutions are supported by a group of employed workers or insiders because it allows them to increase their own wages and welfare. In the next section we pursue this line of argument by extending Wright's (1986) median voter model of

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[1] *International Social Security Association* (2004); see http://www.issa.int/pdf/iniative/2findings1.pdf. On the other hand, Calmfors *et al*. (2001) argue that the different types of active labour market policies have had varying degrees of success in Sweden. Overall, while active labour market policies may have reduced open unemployment, some of the specific programmes may also have displaced regular employment.

unemployment insurance. To preview, we show that insiders, with little exposure to unemployment, will generally prefer a policy mix with a relatively greater emphasis on active labour market programmes, rather than the customary forms of income support provided to unemployed workers.

Naturally enough, the growth of active labour market programmes as well as the relationship between passive and active labour market policies depends on a variety of effects. Whether labour market policy outcomes are driven by insiders or outsiders, the redistributive consequences of labour market policies are extremely important. More generally, we show that expenditures on passive and active labour market policies are likely to be positively correlated. In addition, rising expenditures on active labour market programmes may well be a feature of economies undergoing globalisation. In large measure, this latter feature is driven by tax and budgetary considerations.

Section II contains the paper's empirical findings and its main contribution. To date, there has been relatively little empirical work on the determinants of spending on passive and active labour market policies. The few studies that are related show some sensitivity of different types of social expenditures to increased international trade (e.g., Burgoon, 2001; Gaston and Nelson, 2004). We add to these studies by using panel data for OECD countries to econometrically investigate the effects of various measures of openness and controls relevant for analysing the labour market policy-globalisation relationship on both passive and active labour market policies, as well as the relationship between the policies. The last section provides a broad overview and contains some concluding observations.

II. An Insider Model of Active Labour Market Policy

A. Government Spending on Active Labour Market Programmes: In this section we extend Wright (1986) to illustrate the political determination of active labour market policies. To begin with we assume a population of n workers consisting of two types, $n_i + n_o = n$.

There are n_i insiders who are always employed. There are n_o outsiders. The latter workers may be either employed, e, unemployed, u, or in active labour market programmes, a.

The transition probabilities between the various states for an outside worker are as follows. The probability of being laid off is λ. A proportion p of unemployed workers is randomly placed in an active labour market programme, i.e., $(1-p)$ remain openly unemployed. An outside worker finds employment with probability $1-\theta$. For a worker in an active labour market programme, the probability of finding employment is $1-\alpha$. We assume that $\theta \geq \alpha$, so that participation in a labour market programme may increase the probability of finding a job.[2] To summarise

$$e_{ot} = (1-\lambda)e_{ot-1} + (1-\theta)u_{ot-1} + (1-\alpha)a_{ot-1}$$
$$u_{ot} = \lambda(1-p)e_{ot-1} + \theta u_{ot-1} \tag{1}$$
$$a_{ot} = \lambda p e_{ot-1} + \alpha a_{ot-1}.$$

Using the fact that $e_{ot} + u_{ot} + a_{ot} = 1$, the steady state probabilities for an outsider can be shown to be

$$e_o^* = (1-\theta)(1-\alpha)\Delta^{-1}$$
$$u_o^* = \lambda(1-p)(1-\alpha)\Delta^{-1} \tag{2}$$
$$a_o^* = \lambda p(1-\theta)\Delta^{-1},$$

where $\Delta = \left[(1-\alpha)(1+\lambda-\theta) + \lambda p(\alpha-\theta)\right]$. With $p = 0$, the results are identical to those of Wright (1986). If $\theta > \alpha$, note that steady state employment increases in p. In this paper, p is the decision-maker's policy variable.

Following Saint-Paul (1998), we assume that the compensation for unemployed workers equals $c > 0$, whether they are in active labour market programmes or not. For

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[2] We abstract from any productivity benefits of active labour market programmes. In this section, intuition may be aided by thinking of the policy as one which facilitates worker matching or the efficiency of job search (as in Saint-Paul, 1998).

simplicity, we also assume that c is fixed, i.e., we treat it as a contractually-determined entitlement for an unemployed worker. The wage for employed workers is denoted by $w = w(E)$, where $E = n_i + n_o e_o$ and $w_E \leq 0$. The tax rate on earned incomes is denoted by $\tau \in (0,1)$.

The expected utility of an outsider, not conditioned on their current employment status, is given by

$$V_o = e_o U\big(w(1-\tau)\big) + (1-e_o)U(c), \tag{3}$$

where $U(.)$ is a concave utility function. The expected utility of an inside worker is $V_i = U\big(w(1-\tau)\big)$.

In a steady state, the policy-maker's balanced budget constraint is

$$\big(n_i + n_o e_o\big)\tau w = \big(n_o(1-e_o)\big)c + \kappa p, \tag{4}$$

where the cost of administering active labour programmes is $\kappa > 0$. Without loss of generality, we assume that the latter cost does not vary with the number of unemployed workers placed in active labour market programmes.

Now suppose that labour market institutions are determined by insiders.[3] Hence, labour market policies are chosen to maximise insiders' post-tax incomes. That is, p maximises

$$w - \left(\frac{n_o(1-e_o)}{n_i + n_o e_o}\right)c - \frac{\kappa p}{\big(n_i + n_o e_o\big)}. \tag{5}$$

The advantage of a higher p is that it reduces the total number of unemployed workers. The disadvantage is that it is a costlier policy. Differentiating equation (5) with respect to p, setting to zero, rearranging and simplifying yields[4]

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[3] A few comments on the restrictiveness of some of model's assumptions are in order. First, a simple way to endogenise c is to introduce a socially acceptable minimum payment to unemployed workers, $\bar{c}$, say. Clearly, if c is also chosen by insiders, then $c^* = \bar{c}$, since c does not affect the steady-state level of employment. Secondly, if the balanced budget condition (equation (4)) does not bind, then the p (and c) chosen by insiders would be entirely determined by the effect of the policies on wages.

$$p^* = \frac{w\pi(nr + E\omega)}{\kappa(1-\pi)},\qquad(6)$$

where $\omega = \dfrac{w_E E}{w} \le 0$, $\pi = \dfrac{pE_p}{E} = \dfrac{pn_o e_{op}}{(n_i + n_o e_o)} \ge 0$ (since $e_{op} \ge 0$) and $c = rw$, $r \in (0,1)$.[5]

B. The Determinants of Active Labour Market Spending: First, p^* falls as π approaches zero. (Note that $\theta = \alpha$ and $e_{op} = 0$ implies $p^* = 0$.) Hence, the more successful are active labour market programmes in lowering total public spending on unemployed workers, the greater the support for spending on active labour market policies. This effect arises due to a tax effect. Next, observe that p^* *rises* in both w and ω. The former effect captures the fact that higher wages increase the tax base, affording greater expenditure on labour market programmes. The latter effect represents an adverse *wage formation effect*. Active labour market programmes may raise the supply of better-trained workers. If outside and inside workers are substitutes, then this would increase job competition for currently employed workers, so that wages fall in p (see Calmfors, 1995; Calmfors and Lang, 1995). Thus, an adverse wage effect lowers the demand for active spending.

Ceteris paribus, p^* rises in λ, θ and α. Consequently, higher steady state unemployment *raises* the demand for active labour market policies. Also, the more generous are benefits paid to unemployed workers, the greater the support for active labour market policies.[6] Once again, both of these latter effects are driven by tax considerations. Next, p^*

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[4] Sufficient conditions for a maximum are that wages are concave in employment and that κ is small. Sufficient for $p^* > 0$ is $\pi \le 1$ and $\omega \ge -r$.

[5] r is the replacement ratio. We substitute $c = rw$ *after* differentiating equation (5). The economic interpretation is that private agents regard c as fixed, even though the policy-maker ultimately chooses c so that it turns out to be a given percentage, r, of w.

[6] In this model, the relationship between spending on active and passive labour market policies is affected by two conflicting pressures. On the one hand, spending on the two policies is negatively correlated due to the balanced budget constraint (i.e., as p^* increases $(1-p^*)$ falls). On the other hand, spending on the two policies is positively correlated due to the higher benefits paid to all unemployed workers, c (i.e., equation (6)).

falls in κ. This effect captures the fact that higher costs associated with active labour market programmes, lower the demand for them.

Finally, consider the effects of globalisation. From the factor price equalisation theorem, the effects of integration with an unskilled labour abundant country on domestic labour market policies can be captured by an increase in n_o, i.e., an immigration of outside labour. For sufficiently small values of ω, an increase in n_o raises $p*$. It is also straightforward to show that $\pi_{n_o} \geq 0$ and $\omega_{n_o} < 0$ (in the latter case, as long as the demand for labour is not "too" convex). The first effect serves to raise $p*$, while the second effect serves to lower it. The latter effect implies that increased labour market competition and an erosion of wages will lower the use of active labour market policies. However, note that if insider's wages, as well as their job security, are insulated from an increase in the number of outsiders then any adverse wage response, ω, will likely be small. It then follows that the possibility of higher labour market expenditures on unemployed workers results in a shift towards policies that lower steady state unemployment. Thus, globalisation, at least as it is measured here, would be associated with greater spending on active labour market policies.

C. Overview: Our results are generally unsurprising, in the sense that inside workers will oppose any labour market policy associated with a higher tax burden. This results from the binding balanced budget constraint. For example, higher unemployment benefits imply higher taxes on earned incomes. Consequently, if the employed are politically influential, this will lead to political pressure to reduce the generosity of benefits. This has been termed a *redistribution effect* or *tax effect* (Saint Paul, 1996). Additionally, if unemployment benefits are difficult to reduce, then active labour market policies which lower the steady state unemployment rate garner more political support. This effect is likely to be offset by an *exposure effect* or *insurance effect*. That is, the more exposed insiders are to unemployed (or

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in fact, if they are not the politically pivotal voters), the greater the relative preference for passive labour market spending.[7]

The other major finding of this section is that the responsiveness of wages to unemployment is also important for understanding the effects on labour market policies. When wages are characterised by some degree of insulation to labour market competition, such as in economies with strong unions, both passive and active labour market programmes will generally be more generous. Albeit, for different reasons.[8]

Likewise, an increase in the efficiency of active labour market programmes, proxied by a reduction in κ, say, will lead to an increase in both active and passive labour market programmes.[9] However, if globalisation places an effective limit on the extent to which earned incomes can be taxed, then this implies that active and passive types of labour market policies are substitutes, rather than complements for one another.

Apart from the effects of globalisation, several predominantly domestic factors influence the direction and level of both passive and active labour market programmes, as well as the relationship between them. Tax and redistribution effects bear directly on the

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[7] It is interesting to note that if were to denote the insider population n_i to be permanently unemployed, rather than always employed, then $p^* = 0$. This occurs because, for any given τ, a higher p reduces taxable wages and increases programme costs by $\kappa \mathrm{d}p$. Intuitively, if outside workers were the politically influential voters, then p^* would lie between the p chosen by the permanently employed (i.e., equation (6)) and the permanently unemployed (i.e., $p^* = 0$). More formally, outsiders maximise $U(c) + e_o\left[U(w(1-\tau)) - U(c)\right]$. The first order condition is $e_o U'(w(1-\tau))(p^o - p^*) + e_{op}\left[U(w(1-\tau)) - U(c)\right] = 0$, where p^* is given by equation (6). Since $e_{op} > 0$, then $p^o < p^*$, i.e., outsiders would choose a lower p than insiders do.

[8] Using a lobbying model, Gaston and Nelson (2004) show that unions and employers pressure policy-makers to ease tax burdens and cap increases in unemployment benefits when wage bargaining is decentralised. When the risk of unemployment is lower and collective bargaining is more centralised, the demand for publicly-provided unemployment insurance is higher because workers prefer higher employment risk-higher wage contracts.

[9] However, this effect is weighted by $(\theta - \alpha)$. In fact, if active labour market programmes do not appreciably increase steady state employment, then the tax effect is negligible. Government-funded training programmes in the United States are commonly found to have negative rates of return (e.g., LaLonde, 1995). Specifically, participants are no less poor or do not have significantly lower probabilities of unemployment after completion of the programmes. It seems somewhat paradoxical then, that generally speaking, government-sponsored training schemes are politically popular. On the other hand, Fougère *et al.* (2000) find that the training component of French active labour market programmes has small productivity and employment effects, but that the programmes do lower wage costs for employers.

generosity of unemployment benefits and spending on active labour market programmes. There are also wage formation effects that are likely to be more pronounced in more unionised economies. Finally, the labour market programmes themselves are interrelated. The connection between the policies is not only determined by the government's budget constraint, but also through the way in which the labour market policies influence steady state unemployment rates and hence, worker welfare. In the next section, we seek to uncover the empirical relationship between the types of labour market policy as well as to investigate the primary determinants of both active and passive labour market policies.

III.   The Empirical Findings

In this section, we use cross-sectional, time-series data for OECD countries to investigate various measures of openness, political variables and other controls relevant to analysing the determinants of modern labour market policies.[10] Before proceeding to the econometric analysis, we provide a brief overview of the times series behaviour of active and passive labour market policies in OECD economies. The trends are contrasted with the time series behaviour of measures of economic openness. We also provide a selective survey of related empirical studies to further motivate our empirical specification and facilitate comparison.

A. Data preview: First, figure 1 shows the data for each country for the most recent year in our dataset for public spending on active and passive labour market measures. In 1998, as a share of GDP, expenditure on passive labour market programmes varied from a low of 0.25 percent (the United States) to a high of 3.37 percent (Denmark). Expenditure on active labour market programmes varied from a low of 0.18 percent (the United States) to a high of 1.96 percent (Switzerland).

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[10] Our sample consists of the high-income OECD countries for which we could get data for both passive and active labour market expenditures and other relevant controls: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, Netherlands, Norway, Sweden, Switzerland, the United Kingdom and the United States. All the data definitions and sources are described in Appendix 1.

At risk of oversimplification, in table 1 we show the broad trends in the data by splitting our sample into two periods: 1980-89 and 1990-1999. Panel A of Table 1 shows that, for most countries, spending on labour market programmes grew in the majority of countries. Passive spending fell in 9 of the 16 countries in our sample. In addition, comparing the two decades, active labour market programmes became more important than traditional income support programmes in 11 countries. We also note that average unemployment rates were higher in 11 of the 16 countries for the 1990s. The latter fact has been identified as a reason why policy-makers may have been reluctant, or unable, to further reduce passive labour market spending (OECD, 2001).

Comparing decades again, panel B of table 1 shows that the measures of globalisation display increases for nearly all countries over the same period. This suggests that increases in trade openness, FDI, portfolio investment and migration may have been associated with increases in labour market expenditures, and with the rise of active labour market programmes, in particular.

B. Previous Studies: While there are numerous theoretical papers on the likely determinants of active and passive labour market policies, there are few empirical contributions. What empirical research has been done has tended to focus, perhaps understandably, on the determinants of unemployment benefits or unemployment insurance. To our knowledge, there are almost no studies which examine the determination of *both* passive and active labour market policies.

Saint-Paul (1996) uses panel data for OECD countries to examine the main determinants of unemployment benefits. In particular, he examines the relative importance of an exposure or insurance effect, i.e., the exposure of the employed to unemployment, and a

wage formation effect. Saint-Paul finds stronger evidence for the latter effect, i.e., the more inelastic is labour demand, the more generous are unemployment benefits. Fiscal effects, measured by the gross government debt to GDP ratio, are also statistically significant.

Extending Saint-Paul (1996), Gaston and Nelson (2004) use panel data to investigate whether trade openness and labour market institutions can also help explain within- and between-country differences in unemployment benefit entitlements. They find that both left-wing governments and the widespread coverage of workers by union bargaining raise unemployment benefits. These results are consistent with those in the large empirical literature in comparative political economy which focusses on the link between labour market institutions, political orientation and welfare state outputs (e.g., Garrett, 1998; Swank, 2002). Gaston and Nelson also find evidence of a positive relationship between trade openness and unemployment benefits, but a negative relationship between openness interacted with the budget deficit and unemployment benefits. This suggests that an increase in government indebtedness lowers the responsiveness of the benefit replacement rate to openness. That is, there is some evidence that globalisation acts as a constraint on the political economy of labour market outcomes.

The latter result is consistent with Rodrik's (1997, p.62) somewhat pessimistic perspective on globalisation. While he finds a significant positive correlation among cross-sectional measures of openness and welfare for OECD countries, panel data for the same set of countries suggest the opposite. That is, trade openness is significantly correlated with sizable reductions in social transfers, as is capital openness, albeit less so. Further, the interaction of trade and capital openness is correlated with even more significant reductions in welfare spending.

Burgoon (2001) provides an interesting analysis of various components of labour market and social expenditures. He hypothesises that the nature of politics will be more

consensual when it comes to the effects of globalisation on the components of social expenditure which enhance labour productivity. On the other hand, the conflict between capital and labour over policies which have no obvious productivity benefits, such as traditional forms of income support, implies that greater openness will have indeterminate effects. Overall, Burgoon finds that various measures of openness have a small effect on welfare outcomes and that openness is far from the most important determinant of welfare efforts in OECD countries. However, he does find evidence that training and relocation expenditures are "less constrained" by various measures of openness than are social expenditures, such as retirement benefits, health-care and family benefits.

D. Panel VAR: In this section, we econometrically investigate the determinants of government spending on active and passive labour market policies using panel data for 16 OECD countries and 20 years, 1980 to 1999.

Unit root tests, described in Appendix 2, suggest that our data are stationary. Hence, we estimate a panel vector autoregressive (VAR) model to analyse the determinants of spending on labour market policies.[11] The multivariate VAR(q) model with fixed effects takes the form

$$\begin{pmatrix} Active_{i,t} \\ Passive_{i,t} \end{pmatrix} = \sum_{j=1}^{q} \begin{pmatrix} \beta_{AA}^{(j)} & \beta_{AP}^{(j)} \\ \beta_{PA}^{(j)} & \beta_{PP}^{(j)} \end{pmatrix} \begin{pmatrix} Active_{i,t-j} \\ Passive_{i,t-j} \end{pmatrix} + \sum_{j=1}^{q} B^{(j)} X_{i,t-j} + \begin{pmatrix} \eta_{A,i} \\ \eta_{P,i} \end{pmatrix} + \begin{pmatrix} \phi_{A,t} \\ \phi_{P,t} \end{pmatrix} + \begin{pmatrix} \varepsilon_{A,i,t} \\ \varepsilon_{P,i,t} \end{pmatrix}, \quad (7)$$

where *Active* and *Passive* are, respectively, measures of government spending on active and passive labour market programmes for country i (=1, …, N) at time t (=1, …, T). $X_{i,t-j}$ is comprised of *lagged* exogenous variables. In particular, we include variables suggested by the theory developed in the previous section, e.g., government indebtedness which captures tax effects, as well as measures of globalisation (trade openness, FDI, portfolio capital flows and migration), unionisation and an indicator of the political orientation of the government.

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[11] We estimate a panel VAR model in preference to a panel vector error correction model, which requires that variables are non-stationary and cointegrated.

(Variable construction and the data sources are described in Appendix 1.) η_i is a country-specific fixed effect, ϕ_t is a time effect and $\varepsilon_{i,t}$ is a multivariate normally distributed random disturbance. A fixed effects model, rather than a random effects model is estimated, as the η_i's are likely to represent omitted country-specific characteristics which are correlated with other explanatory variables.[12]

The system of equations described by equation (7) assumes that the random error terms are orthogonal to the country fixed effects and the time effects, as well as the lagged values of the endogenous variables. Further, the errors are assumed to have positive variance and to be uncorrelated across cross-sectional units and time. However, due to the likely correlation between the lagged endogenous variables and the fixed effects in equation (7), the least squares dummy variable estimator produces biassed parameter estimates. Accordingly, we remove the fixed effects by differencing, i.e., equation (7) is rewritten as

$$\begin{pmatrix} \Delta Active_{i,t} \\ \Delta Passive_{i,t} \end{pmatrix} = \sum_{j=1}^{q} \begin{pmatrix} \beta_{AA}^{(j)} & \beta_{AP}^{(j)} \\ \beta_{PA}^{(j)} & \beta_{PP}^{(j)} \end{pmatrix} \begin{pmatrix} \Delta Active_{i,t-j} \\ \Delta Passive_{i,t-j} \end{pmatrix} + \sum_{j=1}^{q} B^{(j)} \Delta X_{i,t-j} + \begin{pmatrix} \Delta \phi_{A,t} \\ \Delta \phi_{P,t} \end{pmatrix} + \begin{pmatrix} \Delta \varepsilon_{A,i,t} \\ \Delta \varepsilon_{P,i,t} \end{pmatrix}, \quad (8)$$

where Δ is the first difference operator, e.g., $\Delta X_{i,t} = X_{i,t} - X_{i,t-1}$.

Since the transformed lagged endogenous variables and the transformed error terms in equation (8) may be correlated in panels with a limited time dimension (see Nickell, 1981; Kiviet, 1995), we estimate the coefficients in equation (8) by the generalised methods of moments (GMM) technique proposed by Arellano and Bond (1991). This technique uses the pre-determined lags of the system variables as instruments to exploit a potentially large set of over-identifying restrictions and provides consistent coefficient estimates (see Bond, 2002).

The errors in equation (8) satisfy the following orthogonality conditions

$$E(Active_{i,s}\Delta\varepsilon_{i,t}) = E(Passive_{i,s}\Delta\varepsilon_{i,t}) = E(X_{i,s}\Delta\varepsilon_{i,t}) = 0, \quad \forall s < t-1. \quad (9)$$

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[12] Hsiao (1986) shows that the generalised least squares estimator for the random effects model, under an assumption of independence between the fixed effects and the explanatory variables, is biassed.

Assuming serially uncorrelated errors, the orthogonality conditions imply that the vector of instruments available to identify the parameters of equation (8) has the form

$$Z_{i,t} = [Active_{i,t-2},..., Active_{i,1}; Passive_{i,t-2},..., Passive_{i,1}; X_{i,t-2},..., X_{i,1}]. \tag{10}$$

Letting Z_i^* be a block diagonal matrix whose t^{th} block is given by equation (10), for $t = 1,..., T-2$, the matrix of instruments for each equation of the VAR is $Z = (Z_1^*,..., Z_N^*)'$.

The one-step GMM estimator for the $k \times 1$ coefficient vector for each equation of the VAR in equation (8) is given by[13]

$$\hat{\beta} = \left(\widetilde{X}^{*'} Z A_N Z' \widetilde{X}^* \right)^{-1} \widetilde{X}^{*'} Z A_N Z' Y, \tag{11}$$

where Y is a $N(T-q-1) \times 1$ vector of stacked dependent variables, $A_N = \left(\dfrac{1}{N} \sum_{i=1}^{N} Z_i^{*'} H Z_i^* \right)^{-1}$, with H a $T-2$ square matrix with 2's on the main diagonal, -1's on the first sub-diagonal and 0's elsewhere, and $\widetilde{X}^*$ is an $N(T-q-1) \times k$ design matrix stacked by cross-sectional units with typical row

$$\widetilde{X}_{i,t}^* = [\Delta Active_{i,t-1},..., \Delta Active_{i,t-q}, \Delta Passive_{i,t-1},..., \Delta Passive_{i,t-q}, \Delta X_{i,t-1},..., \Delta X_{i,t-q}, \Delta\phi_t]. \tag{12}$$

Finally, the asymptotic variance-covariance matrix of the GMM coefficient vector is given by

$$a \operatorname{var}(\hat{\beta}) = N \left(\widetilde{X}^{*'} Z A_N Z' \widetilde{X}^* \right)^{-1} \widetilde{X}^{*'} Z A_N V_N A_N Z' \widetilde{X}^* \left(\widetilde{X}^{*'} Z A_N Z' \widetilde{X}^* \right)^{-1}, \tag{15}$$

where $V_N = N^{-1} \sum_{i}^{N} Z_i' \Delta\varepsilon_i \Delta\varepsilon_i' Z_i$ and the $\Delta\varepsilon_i$'s are the GMM residuals.

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[13] Bond (2002) notes that most applied work using GMM employs the one-step estimator rather than the two-step estimator. Arellano and Bond (1991) use simulations to show that only modest efficiency gains result from using the two-step procedure, even in the presence of heteroscedasticity.

C. The results

The optimal lag length q is determined by nested likelihood ratio tests.[14] In all cases, we find that $q = 1$ is optimal. The GMM estimates for the panel VAR(1) are reported in tables 2 and 3. For $T > 3$ the model is over-identified and the validity of the assumptions used to estimate equation (8) can be tested using the standard GMM test of over-identifying restrictions or a Sargan test. From the Sargan test statistics and the p-values reported in tables 2 and 3, the null hypothesis that the moment conditions are valid (i.e., equation (9)) is unable to be rejected. In this context, the key identifying assumption that there is no serial correlation in the ε_{it} disturbances can be tested by testing for no *second*-order serial correlation in the first-differenced residuals (Arellano and Bond, 1991).[15] The results generally show the absence of serial correlation and that the estimated models satisfy the standard assumptions.[16]

--- Tables 2 and 3 here ---

In table 2, we present estimates for two measures of spending on active and passive labour market policies. They represent alternative ways of normalising labour market expenditures by the size of an economy. In the second and third columns, we report the results for nominal labour market expenditures divided by nominal GDP. In the fourth and fifth columns, we report the results for real labour market expenditures divided by the size of the labour force. As can be quickly gathered from the sign patterns of the significant results,

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[14] The correct lag length is critical for the panel VAR since excessively short lags may fail to capture the system's dynamics, lead to omitted variables, bias the remaining coefficients and be likely to produce serially correlated errors. On the other hand, too many lags lead to a rapid loss of degrees of freedom and to over-parameterisation. See Holtz-Eakin *et al.* (1988) for more detail about the nested likelihood test for lag length selection.

[15] Negative first-order serial correlation is expected in the first-differenced residuals if ε_{it} is serially uncorrelated.

[16] In addition, note that the asymptotic standard errors reported in tables 3 and 4 are robust to heteroscedasticity (see Arellano and Bond, 1991). However, as a check we regress the squared residuals on the independent variables for each of the estimated models. Wald tests indicate homoscedastic errors. For the sake of brevity, these test results are not presented here. (The results are available from the authors upon request.)

both measures paint essentially the same picture. In table 3, we focus our attention on the share of active labour market spending as a proportion of all labour market spending. The results in table 3 are particularly useful for discerning the factors which have lead governments to prefer one type of labour market programme over another. (Also, the model specification used for table 3 is more directly relevant to the theory developed in section II.)

First, labour market expenditures on both active and passive measures are path dependent. This possibly reflects the persistence of spending on entitlement programmes and the quasi-contractual nature of some types of social policies. Passive expenditures and traditional forms of income support for unemployed workers spring to mind in this regard. More interesting, is the fact that higher active expenditures tend to result in lower passive expenditures. This seems consistent with the OECD's policy recommendation that active spending replace passive spending. More difficult to explain is the finding that lagged changes in passive spending are unrelated to subsequent active spending. Once again, this may point to the general difficulty of reducing passive spending prior to introducing new active labour market policies. In addition, the quid pro quo for achieving reductions in passive spending seems to be increased active spending.

Tax/Budget effects: These effects are crucial elements of political economic theories of government spending on various policies. They are central to the papers surveyed in sub-section B above, as well as the simple theory exposited in section II. Each country's budget acts as a hard constraint on labour market spending on active and passive programmes. Higher *Debt* lowers both active and passive expenditures. Table 3 reveals that higher government indebtedness is particularly constraining for passive labour market expenditures.

However, we find that the unemployment rate, *UR*, is insignificant in both tables 2 and 3. This was expected. As Wright (1986) points out, the generosity of unemployment benefits is influenced by two conflicting motives. The demand for insurance and income

support rises with any factor which increases the risk of unemployment for inside workers. In contrast, higher unemployment benefits imply higher taxes on earned incomes. Consequently, if insiders are politically influential, this will lead to political pressure to reduce the generosity of benefits. This is the *redistribution effect* or *tax effect*, as termed by Saint-Paul (1996). That is, economies with higher steady state unemployment rates cannot afford to have generous unemployment benefits.

The findings for the *Dependency ratio* are also very interesting. This variable is measured as the percentage of the population younger than fifteen years or older than sixty-four years. In the political economy literature (Burgoon, 2001, e.g.), a higher *Dependency ratio* is thought to be positively correlated with spending on policies directed at the elderly or the young (such as retirement benefits or family benefits, respectively). The results indicate that a greater *Dependency ratio* is associated with *higher* passive spending and *lower* active spending. For OECD countries, since the higher values of the *Dependency ratio* are likely to be positively correlated with older workforces, we speculate that our findings reflect the fact that active spending has lower potential returns for economies with demographically older workforces. That is, in such economies support for unemployed workers may be more optimally directed at traditional income support rather than retraining and job search assistance.

Exposure/Insider and Wage effects: Obviously central to our theory is that labour policy outcomes are largely driven by the preferences of insiders. Saint-Paul (1996, p.310) notes that one typically expects unemployment benefits to decrease with the unemployment level, but to increase with the *change* in unemployment, *DUR*. As mentioned, the former effect captures a tax effect. If the level of unemployment is controlled for, Saint-Paul argues that the latter effect captures the *exposure* of currently employed workers to the risk of unemployment. The findings in table 2 are consistent with this line of argument, in the sense

that greater insider exposure stimulates demand for greater expenditures on all programmes devoted to the unemployed, i.e., both active and passive measures. Table 3 further indicates a shift in workers' preferences towards *relatively* greater insurance and passive spending, the more exposed employed workers become to the risk of unemployment (a result consistent with both Wright, 1986 and Saint-Paul, 1996).

The effects on labour market policies of the percentage of the workforce that is unionised can be thought to capture both insider and wage effects. To the extent that *Union* is positively correlated with insulating workers from the rigours of competitive labour markets, the *Union* effect should boost both passive and active spending. As in Gaston and Nelson (2004), *Union* boosts passive spending because higher unemployment benefits increase the value of the union worker's threat point in a bargaining game with employers, increasing the negotiated wage. Additionally, the theory in section II suggests that *Union* will insulate the wages of inside workers from the greater labour market competition that results from the workers graduating from active labour market programmes. Table 3 reveals that these effects may be largely compensatory when it comes to the share of active spending in total spending.

Globalisation effects: Our results for the four variables which are used to capture the effects of globalisation are uniform in the sense that they have *no* statistically significant effect on labour market expenditures. At most, the effects of *Migration* may have resulted in a slight and marginally significant shift towards spending on passive programmes. In line, with the section II theory, the overall absence of globalisation effects may reflect the offsetting wage and employment effects of active labour market policies. However, it seems safer to conclude that the various measurable elements of globalisation have had *no* indiscernible effects on the formation of labour market policies. To the extent that we have

been able to identify factors which have driven changes in labour market policies, they are not the factors directly related to the internationalisation of economies and labour markets.[17]

Politics and partisan effects: Finally, we found that our political variable had no statistically significant effect on labour market policy formation. In some sense, this is one of our more unexpected results because *Left* is normally associated with policies which are more favourable to labour. There are also anecdotes which seem to indicate distinctly different political preferences for labour market policies of governments of varying persuasion.[18] On the other hand, the fact that the reform of labour market policies seems to have been occurring independently of partisan politics may reflect the ultimate importance of budgetary and fiscal considerations.

Sensitivity analysis: In this sub-section, we discuss the results of tests that were performed to check the robustness of our results. To see how sensitive our results are to pooling the OECD countries, we first delete each country one at a time and compare the resulting model with the results reported in tables 2 and 3. Overall, this procedure did not affect any of the signs of the coefficients reported in the tables.

Unsurprisingly, however, due to the smaller sample sizes, the regression results are somewhat sensitive to country exclusions. Depending on the country, the coefficients of some variables became statistically significant, while others became statistically insignificant. (It is important to reiterate that there were *no* sign reversals.) These results are summarised in Appendix table 2.

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[17] We chose not to tabulate the results which show that the general pattern of insignificant results for the globalisation variables pertains when the openness measure is replaced by import penetration and the export-output ratio, and the measures for direct and portfolio investment flows are disaggregated into inflow and outflow measures.

[18] For example, prior to the change of government in 1996, Australia's share of active labour market measures in total labour market expenditures was similar to that for many other OECD countries. Following a change of government in 1996, expenditures on labour market programmes were halved and the operation of labour market programmes was privatised. See http://www.reformmonitor.org/index.php3?mode=status.

To illustrate how to interpret Appendix table 2, consider deleting the Netherlands (NL) from the sample. Doing so makes the coefficient for the *Dependency ratio* statistically insignificant in the *Active* spending to GDP ratio equation. In addition, the coefficient for *UR* becomes statistically significant in the *Passive* spending to GDP ratio equation. Hence, one could conclude that the dependency ratio is a particularly important determinant of active spending for the Netherlands. Using a similar argument, the unemployment rate is an insignificant factor driving changes in passive spending for the Netherlands. Overall, what is immediately obvious from Appendix table 2 is that our most robust results are for those reported in table 3. That is, the conclusions that were drawn about the determinants of the relative importance of active spending in total labour market spending are the most defensible.

Appendix table 3 contains estimates for the EU country and non-EU country sub-samples. (For comparison, the pooled sample results from table 3 are repeated in column 2.) Not only does this allow further investigation of the effects of pooling the data, but doing so also enables us to examine whether countries in the EU behave significantly differently in political terms than their non-EU counterparts. An obvious difference in the estimates for the two samples, that require a caveat to be placed on the conclusions drawn above, is that *Openness* does appear to have played some role in the use of active labour market policies in EU countries. Also, conservative governments in non-EU countries apparently favour the use of active rather than passive labour market spending.

IV.   Discussion and concluding comments

This paper has been concerned with passive and active labour policies, their determinants and the relationship between them. In particular, we have focussed on the impact that different elements of globalisation may have had on policies to help the unemployed. There are two competing perspectives on the relationship between the welfare state and globalisation. The first is that globalisation places considerable stress on the

welfare state, so that some social and labour market policies will display tendencies of a "race to the bottom". The effect of globalisation on certain types of workers, particularly organised labour, is also generally taken to be negative. Consequently, this may have negative consequences for the welfare state. For instance, Tanzi (1995) argues that increased mobility of capital not only erodes the tax base, reducing the welfare state's ability to fund its programmes, but by shifting taxes onto labour, the capacity of the State to redistribute is reduced. In a similar fashion, Garrett (1998) has argued that, by forcing welfare states to turn increasingly to borrowing to fund programmes, the international capital market ends up imposing an increasing premium on large welfare states. In ways that are harder to quantify, but seem *prima facie* plausible, the decreasing cost of the exit option increases the relative power of business in policy-making (Huber and Stephens, 1998). Finally, it has been argued that globalisation increases the general credibility of orthodox (i.e., market-oriented) policy advice, thus reducing the plausibility of arguments supporting welfare state expansion and enhancing the credibility of arguments in favour of welfare state retrenchment (Krugman, 1999).

The opposing view is that social policies, including labour market policies, respond in ways such as to minimise any adverse consequences of globalisation for vulnerable workers. A similar argument is that the classic, large welfare states developed in the context of considerably more open economies than did the smaller, market conforming welfare states (Huber and Stephens, 1998). A plausible story advanced by some authors is that more generous unemployment benefits and changes to cash transfer and income tax systems have arisen to ensure acquiescence by the potential losers from globalisation and microeconomic reforms, such as trade liberalisation (e.g., Rodrik, 1998). That is, greater "progressive" redistribution may be "the price to pay" for political or social compliance with the labour market and microeconomic reforms necessitated by globalisation.

Interestingly, Bordo *et al*. (1999) carry this argument further, suggesting that the presence of sizable welfare states, and Keynesian macroeconomic policy, may have played an important role in providing sufficient indifference to globalisation, that policies like support for the GATT/WTO system and the Bretton Woods institutions continued even in the face of recessions that might have had system closing consequences in earlier eras. In addition, it has been widely argued that heterogeneity of domestic political, as well as labour market, institutions support heterogeneity of responses to globalisation (Calmfors and Driffill, 1988; Garrett, 1998; Swank, 2002).

In this paper, we provided a simple theoretical model that shows that the growth of active labour market programmes as well as the relationship between passive and active labour market policies depends on a variety of effects. All workers have a view to their employment status and the probability of future spells of unemployment, their earned incomes, the wage formation effects of the government's policies and the tax burdens necessary to fund new and existing labour market programmes. In particular, when labour market policy outcomes are driven by insiders, the redistributive consequences of spending on labour market policies become extremely important. Tax effects bear directly on the generosity of unemployment benefits and the extent of active labour market programmes. We also showed that, once again due to tax and budgetary considerations, the rise in active labour market programmes may well be a feature of economies undergoing globalisation.

Finally, it was shown that passive and active labour market programmes are interrelated. The relationship between the spending policies is not only determined by the government's budget constraint, but also through the way in which the labour market policies influence steady state unemployment rates and hence, worker welfare.

In the empirical section of the paper, we used data for 16 OECD countries to estimate a panel VAR model to investigate the relationship between both passive and active labour

market policies, various measures of openness and controls relevant for analysing the labour market policy-globalisation relationship. We found a number of factors to be important. For example, a determinant of the reliance upon active rather than passive spending policies, and a feature of economies that was devoted insufficient attention in this paper, seems to be the demographic structure of each country's labour force.

More importantly, for the purpose of this paper at least, our findings provide support to the view that globalisation has had at best only a very modest effect on the formation of, and relationship between, passive and active labour market policies. Other effects appear to be more important. For example, the extent of government indebtedness and the exposure of employed workers to the risk of unemployment seem particularly important. The statistical significance of these two determinants are indicative of the central role played by the burden of taxation and the redistributive consequences associated with different types of labour market policies.

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Figure 1. Expenditures on Labour Market Policies
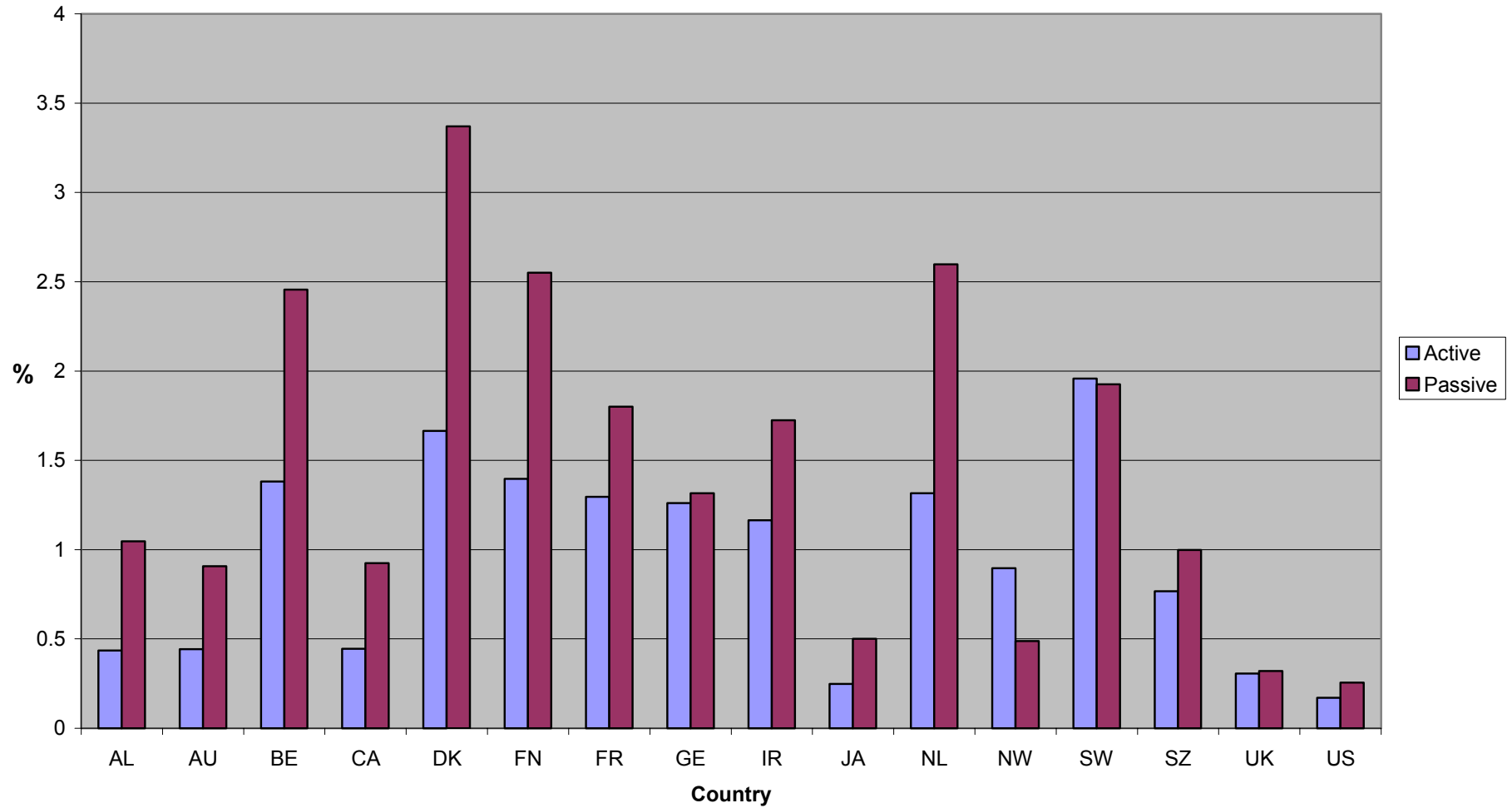
Note: Data are for active and passive labour market programmes as percentages of GDP. Data are for 1998, except for AL, CA and US where the data are for 1999.

Table 1

A. Trends in Labour Market Programmes and Unemployment Rates (averages)

	Active		Passive		Active ÷ Passive		UE rate	
	1980-89	1990-99	1980-89	1990-99	1980-89	1990-99	1980-89	1990-99
AL	0.33	0.55	1.07	1.39	0.31	0.40	7.23	8.60
AU	0.27	0.36	0.83	1.06	0.33	0.35	3.30	3.82
BE	1.33	1.29	3.17	2.73	0.43	0.47	11.12	11.35
CA	0.44	0.55	1.77	1.54	0.25	0.39	9.31	9.49
DK	0.91	1.59	4.55	4.41	0.21	0.37	8.08	7.61
FN	0.97	1.51	1.09	3.28	0.97	0.51	4.82	11.74
FR	0.75	1.17	2.14	1.88	0.35	0.63	9.05	11.17
GE	0.84	1.34	0.81	1.46	1.05	0.95	6.06	7.78
IR	1.46	1.41	3.13	2.51	0.47	0.57	14.00	12.10
JA	0.16	0.18	0.39	0.33	0.59	0.52	2.50	3.04
NL	0.88	1.16	3.05	2.85	0.30	0.41	9.79	6.11
NW	0.60	1.08	0.61	1.08	0.90	1.09	2.75	4.81
SW	1.65	2.39	0.74	2.09	2.32	1.20	2.72	7.52
SZ	0.14	0.46	0.20	0.95	0.85	0.64	0.61	3.14
UK	0.69	0.48	1.40	0.83	0.55	0.63	9.67	8.08
US	0.18	0.20	0.57	0.40	0.34	0.53	7.17	5.72

B. Trends in Globalisation (averages)

	Openness		FDI		Portfolio investment		Migration	
	1980-89	1990-99	1980-89	1990-99	1980-89	1990-99	1980-89	1990-99
AL	33.04	38.47	2.77	2.65	2.66	4.29	6.80	4.65
AU	74.16	79.11	0.58	1.98	3.12	8.48	1.33	5.72
BE	133.15	136.61	2.90	18.98	6.49	44.00	0.09	1.52
CA	52.48	67.48	2.24	3.89	3.44	4.91	4.49	6.40
DK	67.72	67.44	0.89	5.04	1.46	5.29	0.69	2.50
FN	56.70	60.79	1.25	5.48	2.25	7.22	0.69	1.10
FR	43.85	44.64	0.001	0.005	0.002	0.006	0.92	1.03
GE	54.97	51.61	0.001	0.003	0.003	0.007	3.40	5.33
IR	106.86	134.42	-	7.04	4.52	30.88	-5.67	1.93
JA	23.39	18.15	0.001	0.001	0.004	0.003	-0.06	-0.04
NL	107.02	108.16	4.78	10.48	3.34	12.23	1.77	3.16
NW	75.20	71.97	1.50	3.70	2.02	3.91	1.41	2.21
SW	64.10	68.43	2.58	9.28	0.57	5.32	1.72	2.41
SZ	71.54	70.63	3.50	7.31	9.33	9.86	3.25	3.75
UK	52.33	53.40	0.005	0.007	0.006	0.009	0.42	1.41
US	18.77	22.47	0.001	0.002	0.001	0.004	2.76	3.31

Note: Abbreviations: Australia (AL), Austria (AU), Belgium (BE), Canada (CA), Denmark (DK), Finland (FN), France (FR), Germany (GE), Ireland (IR), Japan (JA), Netherlands (NL), Norway (NW), Sweden (SW), Switzerland (SZ), the United Kingdom (UK) and the United States (US). Data sources and all variable definitions are described in the Appendix 1.

Table 2. Determinants of Active and Passive Labour Market Expenditures
(Panel VAR(1) estimates of equation (8) [a])

	Expenditures/GDP		Real Expenditures per capita	
	Active	**Passive**	**Active**	**Passive**
Constant	0.025** (0.009)	0.03*** (0.01)	0.09*** (0.03)	0.18*** (0.04)
Active (-1)	0.50*** (0.13)	-0.19** (0.09)	0.54*** (0.16)	-0.21*** (0.07)
Passive (-1)	0.06 (0.04)	0.73*** (0.05)	0.13 (0.09)	0.79*** (0.07)
Tax/Budget effects				
UR (-1)	-0.004 (0.01)	-0.04 (0.02)	-0.04 (0.06)	-0.06 (0.08)
Debt (-1)	-0.004* (0.0025)	-0.01*** (0.003)	-0.01* (0.007)	-0.04*** (0.01)
Dependency ratio (-1)	-0.06* (0.03)	0.08*** (0.03)	-0.24** (0.11)	0.19* (0.12)
Exposure/Insider & Wage effects				
DUR (-1)	0.01* (0.006)	0.12*** (0.03)	0.03* (0.016)	0.41*** (0.08)
Union (-1)	0.01*** (0.003)	0.03*** (0.01)	0.04*** (0.01)	0.14*** (0.04)
Globalisation				
Openness (-1)	-0.003 (0.002)	-0.0003 (0.003)	-0.006 (0.006)	-0.006 (0.01)
FDI (-1)	-0.063 (0.74)	-2.49 (2.98)	-2.54 (2.17)	-9.42 (8.73)
Portfolio investment (-1)	-0.05 (0.06)	-0.02 (0.33)	-0.05 (0.34)	0.26 (1.39)
Migration (-1)	0.003 (0.005)	0.01** (0.005)	-0.0008 (0.02)	0.03 (0.03)
Politics				
Left (-1)	-0.03 (0.02)	-0.006 (0.009)	-0.07 (0.09)	0.07 (0.06)
Diagnostic tests [b]				
Sargan statistic	173.1	176.1	164.6	173.1
Sargan *p*-value	1.00	1.00	1.00	1.00
AR(1)	-1.56	-1.61	-1.77*	-2.07**
AR(2)	-1.34	-1.28	-0.95	-1.18

Notes: a) Asymptotic standard errors are in parentheses. ***, ** and * denote rejection of null of zero restriction at 1%, 5% and 10% levels of significance, respectively;

b) Sargan statistic tests over-identifying restrictions (asymptotically chi-squared distributed). AR(1) and AR(2) are tests for first-order and second order serial correlation (asymptotically standard normally distributed).

Table 3. Determinants of Share of Active Spending
(Panel VAR(1) estimates of equation (8) [a])

	Active/LMP Expenditures
Constant	-0.001 (0.001)
Active/LMP (-1)	0.76*** (0.04)
Tax/Budget effects	
UR (-1)	0.00003 (0.003)
Debt (-1)	0.002*** (0.0006)
Dependency ratio (-1)	-0.02*** (0.007)
Exposure/Insider & Wage effects	
DUR (-1)	-0.01*** (0.003)
Union (-1)	-0.0003 (0.002)
Globalisation	
Openness (-1)	0.0002 (0.0006)
FDI (-1)	-0.28 (0.23)
Portfolio investment (-1)	0.09 (0.07)
Migration (-1)	-0.005* (0.003)
Politics	
Left (-1)	0.0001 (0.003)
Diagnostic tests [b]	
Sargan statistic (*p*-value)	177.9 (1.00)
AR(1)	-2.41*
AR(2)	-0.54

Notes:
 a) Asymptotic standard errors are in parentheses. ***, ** and * denote rejection of null of zero restriction at 1%, 5% and 10% levels of significance, respectively;
 b) Sargan statistic tests over-identifying restrictions (asymptotically chi-squared distributed). AR(1) and AR(2) are tests for first-order and second order serial correlation (asymptotically standard normally distributed).

Appendix 1. Variable description and data sources

Dependent variables: The data for spending on labour market programmes are from the OECD's *Social Expenditure Database*. *Active* is spending on active labour market programmes. This category includes spending on: labour market training, youth measures, subsidised employment, employment measures for disabled and employment service and administration. *Passive* is primarily unemployment compensation. We use three measures of *Active* and *Passive*. The first is expenditure on active or passive labour market programmes expressed as a percentage of GDP (SNA93). The second is real expenditure on active or passive labour market programmes (at constant 1995 prices and PPPs in U.S. dollars) divided by the labour force. The third is expenditure on active labour market programmes expressed as a percentage of total labour market expenditures. The size of the labour force is calculated by multiplying each country's population (taken from the IMF's *International Financial Statistics* (IFS)) by its labour force participation rate (obtained from the OECD's *Structure or composition of certain economic aggregates*).

Independent variables: <u>*Tax and Budget variables*</u>: *Debt* is measured as consolidated central government gross debt as a fraction of GDP. The source is Robert J. Franzese, Jr., "The Political Economy of Public Debt: An Empirical Examination of the OECD Postwar Experience" paper for the *Wallis Conference on Political Economy*, Northwestern University, November 1998. The *Dependency ratio* is measured as $(1 -$ the percentage of the population aged from 15 to 64 years of age). The latter data are from OECD's *Labour Force Statistics, 1980-2000*. *UR* is unemployment as a percentage of total labour force (from the OECD). <u>*Insider effects*</u> are proxied by the change in the unemployment rate (see Saint-Paul, 1996).

<u>*Globalisation variables*</u>: *Openness* is measured as (Total exports of goods and services + total imports of goods and services)/GDP. *FDI* is from *IFS* and is measured as (Direct Investment Abroad + Dir. Invest. in Rep. Econ.)/GDP. *Portfolio investment* is from *IFS* and is measured as (Portfolio Investment Assets + Portfolio Investment Liab.)/GDP. GDP data are from OECD's, *Annual National Accounts - Comparative tables based on exchange rates and PPPs*. *Migration* data are from OECD's *Labour Force Statistics, 1980-2000*.

<u>*Wage effects*</u> are captured by *Union* which is measured by the total union membership (less self-employed) weighted by the total dependent workforce. Data for European countries are from the CD-Rom accompanying Bernhard Ebbinghaus and Jelle Visser, eds. (2000), *Trade Unions in Western Europe since 1945*, London: Macmillan. Data for Australia, Canada,

Japan and the United States are from Miriam Golden, Michael Wallerstein and Peter Lange (1998), "Union Centralization among Advanced Industrial Societies", National Science Foundation.

Political or partisan effects are proxied by *Left*. *Left* = 1 if there is right-wing domination in both government and parliament; = 2 if right-wing or centre parties make up between 33.3% and 66.6% of government; = 3 if centre parties make up 50% or more of government; = 4 if left-wing or centre parties make up between 33.3% and 66.6% of government; and = 5 if left-wing parties dominate the government. These data are from Jaap Woldendorp, Hans Keman and Ian Budge (1998), "Party Government in 20 democracies: an update (1990-1995)", *European Journal of Political Research* 33, pp.125-64.

Appendix 2. Panel unit root tests

As with pure time series regression analysis, the asymptotic distributions of the estimators in panel regressions are likely to be affected by the presence of unit roots. This is especially likely in datasets with relatively long time series and short cross-sectional dimensions. Hence, as precursor to our econometric analysis, we examine the stationarity of our data. The variables we use for our econometric analysis are described in detail in Appendix 1.

We test for unit-roots using the test proposed by Im *et al.* (2003) (henceforth, IPS).[19] Using obvious notation, the heterogeneous panel data model is given by

$$\Delta y_{it} = \mu_i + \beta_i y_{it-1} + \sum_{j=1}^{q_i} \varphi_j \Delta y_{it-j} + \gamma_i t + \varepsilon_{it}, \quad i = 1,2,...,N; \ t = 1,2,...,T. \tag{A.1}$$

The null hypothesis to test for unit roots is given by $H_0 : \beta_i = 0$, for all i, $H_1 : \beta_i < 0$, for some i. Based on equation (A.1), each individual component of the panel is estimated separately by OLS and then the test statistics are obtained as studentised averages of the test statistics for each equation. The number of lags, q_i, in the model is determined by the Akaike Information Criteria.[20]

The $\bar{t}$-statistic proposed by IPS is defined as the average of the individual ADF τ-statistics, i.e.,

$$\bar{t} = \frac{1}{N}\sum_{i=1}^{N}\tau_i, \text{ where } \tau_i = \frac{\hat{\beta}_i}{\hat{\sigma}_{\beta_i}}. \tag{A.2}$$

The critical values for the $\bar{t}$-statistic are obtained by stochastic simulation using 100,000 replications.

The IPS panel unit root test results are reported in Appendix table 1. The statistics suggest that the data are stationary. Hence, we estimate a panel vector autoregressive (VAR) model to analyse the determinants of labour market policies in preference to a panel vector error correction model (which requires that variables are non-stationary and cointegrated).[21]

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[19] Unlike the augmented Dickey-Fuller (ADF) test, the power of the IPS panel unit root test increases with the number of panels.

[20] The general results do not change when we use other criteria, such as Schwartz Criteria.

[21] Binder *et al.* (2003) show that GMM estimation of panel vector autoregressions based on orthogonality conditions breakdown if the underlying time series contain unit roots.

Appendix table 1: IPS Panel Unit Root Test Results

Variable	$\bar{t}$-statistic
Active expenditures/GDP	-2.97*** (0.0001)
Passive expenditures/GDP	-2.79*** (0.0001)
Real active expenditures per capita	-2.78*** (0.0001)
Real passive expenditures per capita	-2.88*** (0.0001)
Active/total LMP expenditures	-2.03** (0.014)
UR	-3.79*** (0.0001)
Debt	-2.36*** (0.0003)
Dependency ratio	-2.65*** (0.0001)
Union	-2.87*** (0.0001)
Openness	-2.03** (0.014)
FDI	-2.64*** (0.0001)
Portfolio investment	-2.69*** (0.0001)
Migration	-2.34*** (0.0003)

Note:
a) ****, ** and * represent rejection of the unit root hypothesis at the 1%, 5% and 10% significance level, respectively;
b) All variables are de-trended prior to the unit root test for consistency, i.e., the IPS panel unit root test is based on the model with an intercept;
c) Values in the parentheses are *p*-values and are obtained from stochastic simulations with 100,000 replications.

Appendix table 2. Sensitivity Analysis

	Expenditures/GDP		Real Expenditures per capita		Active/LMP Expenditures
	Active	**Passive**	**Active**	**Passive**	**Active%**
Active (-1)		DK, FN, SW *			
Passive (-1)					
Active/LMP (-1)					
Tax/Budget effects					
UR (-1)		FN, FR, GE, IR, JA, NL, NW, SW, SZ [#]		DK [#]	
Debt (-1)	BE, CA, DK, FN, IR, SW *		CA, DK, SW *		
Dependency ratio (-1)	IR, NL, NW *		DK, FR *	AL, AU, BE, CA, FN, FR, GE, IR, JA, SW, SZ, US *	DK *
Exposure/Insider & Wage effects					
DUR (-1)	DK,FN, FR, IR, SW *	DK *	DK, IR, NL, NW, SW, UK *		
Union (-1)		FN *			SZ [#]
Globalisation					
Openness (-1)	FR, GE, IR [#]		FR [#]		
FDI (-1)	UK [#]	SW [#]	UK [#]	SW [#]	
Portfolio investment (-1)	FN [#]				
Migration (-1)				SW [#]	
Politics					
Left (-1)	DK [#]			BE, SW [#]	

Note: # denotes that coefficient became statistically significant when one of the countries listed was deleted from the sample; * denotes that coefficient became statistically insignificant when one of the countries listed was deleted from the sample.

**Appendix table 3. Determinants of Share of Active Spending
Stratified by EU countries and Non-EU countries**

	All countries	EU countries	Non-EU countries
Constant	-0.001	0.0002	-0.007*
	(0.001)	(0.0008)	(0.004)
Active/LMP (-1)	0.76***	0.78***	0.75***
	(0.04)	(0.08)	(0.09)
Tax/Budget effects			
UR (-1)	0.00003	0.008***	-0.0007
	(0.003)	(0.002)	(0.003)
Debt (-1)	0.002***	0.001***	0.005***
	(0.0006)	(0.002)	(0.0008)
Dependency ratio (-1)	-0.02***	-0.02***	-0.02
	(0.007)	(0.004)	(0.03)
Exposure/Insider & Wage effects			
DUR (-1)	-0.01***	-0.005*	-0.02***
	(0.003)	(0.002)	(0.008)
Union (-1)	-0.0003	-0.0005	0.01
	(0.002)	(0.0009)	(0.003)
Globalisation			
Openness (-1)	0.0002	0.0008***	-0.003
	(0.0006)	(0.0002)	(0.002)
FDI (-1)	-0.28	0.11	-0.01
	(0.23)	(0.13)	(0.25)
Portfolio investment (-1)	0.09	0.007	0.29
	(0.07)	(0.025)	(0.37)
Migration (-1)	-0.005*	-0.0007	-0.005
	(0.003)	(0.0008)	(0.005)
Politics			
Left (-1)	0.0001	0.0001	-0.009**
	(0.003)	(0.0002)	(0.004)
Diagnostic tests [b)]			
Sargan statistic (*p*-value)	177.9 (1.00)	60.24 (1.00)	69.40 (1.000)
AR(1)	-2.41*	-1.44	-2.19**
AR(2)	-0.54	-0.34	-0.37

Notes:
a) Asymptotic standard errors are in parentheses. ***, ** and * denote rejection of null of zero restriction at 1%, 5% and 10% levels of significance, respectively;
b) Sargan statistic tests over-identifying restrictions (asymptotically chi-squared distributed). AR(1) and AR(2) are tests for first-order and second order serial correlation (asymptotically standard normally distributed).