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Employment and Taxes

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Abstract
This paper considers the impact of taxation policy on market work. On the basis of the evidence, we find that a 10 percentage point rise in the tax wedge will reduce overall labour input provided via the market by around 2 per cent of the population of working age. The tax wedge is the sum of the payroll, income and consumption tax rates.

This only explains a minority of the market work differentials across countries. Much of the remainder is probably down to the differences in the social security systems supporting the unemployed, the sick and disabled and the early retired.

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1. Introduction

One of the most interesting features of the developed world is the fact that people in some countries work much harder than in others. By work, we mean work in the market, not work overall, which is an important distinction. For example, US and German households spend around the same proportion of their income on "food and beverages". However, in the US, around a half of this goes to restaurants, compared with only one quarter in Germany. Far more time in the latter country is spent on food preparation at home (see Freeman and Schettkat, 2001)[1]. Despite this, in what follows we focus on market work, where the differences across countries are startling. For example, the average person of working age (16-64) works around 46 per cent more in the United States than in Belgium (see Table 1). A little over half of his difference is because more people in the US are in employment with the remaining difference arising from the fact that those in employment in the US tend to work more hours per year. These substantial differences explain the majority of the variation in GDP per capita among the advanced countries of the OECD, with differences in productivity making a significantly smaller contribution.

When confronted with these differences, it is natural to look at the incentives to engage in market work relative to other activities in the different countries. The particular feature of these incentives on which we shall focus are those embedded in the tax system. To be more precise, we shall concentrate on taxes on employment paid by firms (payroll taxes), taxes on income paid by individuals and taxes on consumption paid by individuals. Important features of the overall incentive structure which we shall not discuss in detail include the unemployment benefit system, the sickness and disability benefit system and the early retirement benefit system. These are obviously an important part of the overall picture given that those in the population of working age who do not work fall into five major categories, namely full-time students, the unemployed, the sick and disabled, the early retired and those looking after their family.

In what follows, we look briefly at the theoretical background in the next section. Then in Section 3 we present an array of results on taxes, wages and employment and in Section 4 we consider non-employment among different sub-groups of the population of working age. We finish with a summary and some general conclusions.

[1] Who gets the better dinners is, as yet, an unresolved question.

2. Theoretical Background

A great deal has been written on taxation and employment and useful summaries are provided by Pissarides (1998) or Koskela (2002). The basic model looks something like the following. Using a representative agent model, with the population of working age normalised to unity, we may define *h* as (market) work and then *(*1-*h)* is non-work. Let output *y* be generated by the production function:

$$y = Bk^{1-a} h^{a} \tag{1}$$

where *k* is capital. Representative utility is given by

$$u = \ln c + q \ln(1-h) \tag{2}$$

where *c* is consumption. Suppose W is nominal labour cost per employee and P is the price of the firm's output. So $w = W/P$ is the real labour cost per employee facing the firm. Then suppose we have proportional tax rates as follows. The payroll tax rate is t_1, the income tax rate is t_2, the consumption tax rate is t_3. Then the real post-tax consumption wage is given by

$$\frac{W(1-t_1)(1-t_2)}{P(1+t_3)} = w(1-t) \text{ say.} \tag{3}$$

So t is the "tax wedge" between the real labour cost per employee facing the firm and the real post-tax consumption wage. Note that t is given by

$$t = 1 - \frac{(1-t_1)(1-t_2)}{1+t_3} \quad ? \ (t_1 + t_2 + t_3) \tag{4}$$

In equilibrium, the marginal product of labour is equal to real labour cost per employee and the marginal rate of substitution between consumption and leisure is equal to the real post-tax consumption wage. Thus we have

$$a\, y/h = w \tag{5}$$

$$\frac{q}{(1-h)} \Big/ \frac{1}{c} = w(1-t) \tag{6}$$

Eliminating *w* yields

$$h = \frac{(1-t)}{(q_c / ay) + (1-t)} \tag{7}$$

which is diminishing in t.[2] The size of the impact of t depends crucially on q. Prescott (2002) calibrates this equation and uses it to generate predicted labour supply for seven OECD countries and finds that it matches actual labour supply quite closely. How his results square with others in this area is discussed in the next section.

It might, however, be argued that in Europe, some sort of bargaining model of wage determination would be more realistic. Suppose we have identical firms, labelled *i*, and that wages are determined by a Nash bargain which maximises

$$\left[h_i(w_i)^g\left(w_i(1-t)+y_n-A\right)\right]^b \Pi_i \qquad (8)$$

where y_n is real, post-tax, per capita non-labour income, *A* is expected alternative income if not employed in firm i and Π is the firm's profit. The parameter g measures the extent to which the worker takes account of the employment effects of the wage bargain. Purely individualistic bargaining would be associated with low levels of g, collective bargaining with high levels. The b parameter captures the relative strength of the worker in the bargain.

Expected alternative income *A* consists of two elements, that generated by employment in another firm with income $w(1-t)+y_n$, probability h, and that generated by non-employment with income $bw(1-t)+y_n+z$, probability $(1-h)$. b represents non-employment benefit relative to post-tax employment income, *z* captures the real value of the leisure when not employed. So *A* is given by

$$A=h\left(w(1-t)+y_n\right)+(1-h)\left(bw(1-t)+y_n+z\right) \qquad (9)$$

If (8) is maximised with respect to w_i and noting that the production function (1) ensures that $\partial \ell n\ h_i / \partial \ell n\ w_i = -(1-\alpha)^{-1}$, $w_i h_i / \Pi_i = \alpha/(1-\alpha)$, the first order condition implies that

$$\frac{w_i(1-t)}{\left(w_i(1-t)+y_n-A\right)} = \frac{b\,l+a}{b(1-a)} \qquad (10)$$

Noting that identical firms implies that $w_i = w$, and using (9), (10) becomes

$$(1-h)\left(1-b-\bar{z}\right)=\beta(1-\alpha)\Big/(\beta\gamma+\alpha) \qquad (11)$$

[2] Of course (7) is not the end of the story, because *c/y* is endogenous. Typically, however, this ratio is determined by factors other than the tax wedge. For example, if there is no capital and all government expenditure is provided to the population in the form of consumption, then *c/y=1* whatever the level of taxes and government expenditure.

where $\bar{z} = z/w(1-t)$. So, in this context, the only reason why taxes impact on employment is because the value of leisure enters "income" while not working and is unaffected by a change in the tax wedge. Non-labour income plays no role essentially because in this model, only the <u>difference</u> between income when employed and when not employed is relevant and non-labour income is eliminated.

Suppose we define potential output, $\bar{y}$, by

$$\bar{y} = Ak^{1-\alpha}, \tag{12}$$

that is the output if the whole population works. Then

$\bar{z} = z / w(1-z) = zh^{1-a} / a\,\bar{y}(1-t)$ and (11) becomes

$$\left(1 - h\left(1 - b - \left(z / \alpha\bar{y}\right)h^{1-\alpha} / (1-\tau)\right)\right) = \frac{\beta(1-\alpha)}{\beta\gamma + \alpha} \tag{13}$$

which implies $\partial h / \partial t < 0$ so long as benefits and the value of leisure are less than the post-tax wage. Of course, if this were not the case, no one would work.

In these models, market work depends only on the total tax wedge, t. There are a number of reasons why the impact of the different tax elements of t on market work may differ. First, in the above model, suppose the utility of income is not linear. Then non-labour income is not eliminated. Since non-labour income is typically not subject to payroll taxes, then the impact of the payroll tax rate on work may differ form that of the income tax or consumption tax rate (see Hoon and Phelps, 1995 for example). Second, suppose there is a wage floor, because of minimum wage laws, for example. Then, for those at or near the wage floor, a switch from income taxes to payroll taxes will reduce employment. Third, the fact that, in practice, the tax base for the three different taxes generally differs ensures that switches between them will not be neutral.

Another feature of these models is that the taxes are all proportional. Income taxes are often progressive and the degree of progressivity may, itself, have an independent impact. For example, in a bargaining model, increased progressivity leads to lower wage demands because wage increases are less valuable and this generates more work. The standard labour supply effect, however, typically goes in the other direction.

To summarise, therefore, there are good theoretical reasons why the total tax wedge may have a negative impact on work and why the individual tax rates which make up the total wedge may have differing effects. The size of these potential effects is obviously an empirical matter, so this is the topic of the next section.

3. Tax Effects on Work and Pay

We start by looking at the general size of the tax wedge in the OECD countries over the years (see Table 2). All countries exhibit a substantial increase over the period from the 1960s to the 1990s although there are wide variations across countries. These mainly reflect the extent to which health, higher education and pensions are publicly provided along with the all-round generosity of the social security system. Some countries have made significant attempts to reduce labour taxes in recent years, notably the Netherlands and the UK. Underlying these numbers are some significant variations in the individual tax rate[5] notably Denmark and Australia have tiny payroll tax rates whereas as those in Italy and France are very substantial, being around 40 per cent.

Turning to the evidence, this comes typically in two forms. The first is the impact of taxes on labour costs per employee facing firms, the second focuses directly on the effect of taxes on aspects of labour input. The former is relevant because in order for taxes to reduce work, they must raise labour costs per employee so that firms reduce their demand for labour. If tax increases leave labour costs per employee unchanged, then they are all shifted onto labour and employment is unaffected. In the remainder of this section, we first consider whether different taxes have different effects. Then we look at the impact of the tax wedge on real labour costs per employee and finally the impact of the tax wedge on aggregate labour input.

Different tax effects

The key issue here is whether different taxes exhibit differential rates of shifting onto labour. There are a large number of time series wage equations for various countries which show different degrees of shifting onto labour for different taxes. There is no pattern to these numbers[3], many of which are summarised in Layard et al (1991) p.210, OECD (1994), p.247, Disney (2000), and Koskela (2002). Some intensive cross-country investigations may be found in the work of Tyrväinen reported in OECD (1994), Table 9.5 and in that of Robertson and Symons in OECD (1990), Annex 6A. In both these wide-ranging studies, there is no significant evidence that payroll, income or consumption taxes have a differential impact on labour costs and hence on unemployment. As the OECD Jobs Study (1994) remarks,

"Changes in the mix of taxes by which governments raise revenues can be expected, at most, to have a limited effect on unemployment" (p. 275).

Tax wedge effects on real labour cost per employee

In OECD (1990), Annex 6, a simple test of the impact of tax rates on labour costs is carried out as follows. We have labour demand and labour supply equations of the form

$$N^D = f^1(w)K, \quad N^S = f^2(w-T,z)L$$

where N = employment, w = ln (real labour cost), K = capital stock, $T = (t_1+t_2+t_3)$, the total tax rate, L = the labour force, z = exogenous factors. Then the reduced form wage equation is

$$w = g(T,K/L,z).$$

If w is independent of T in the long run, the labour market behaves as if labour supply is inelastic and taxes are all shifted onto labour. Employment, and hence unemployment is then unaffected by T in the long run. The following equation represents the average coefficients and t statistics for individual time series regressions on 16 OECD countries (1955-86).

$$w = \underset{(8.7)}{0.79}w_{-1} + \underset{(2.0)}{0.18}1n(K/L) - \underset{(0.6)}{0.08}T + \underset{(2.6)}{0.52}\Delta T.$$

Thus total taxes, T, have no long-run effects on labour costs although they have a substantial and long-lasting short-run effect via ΔT (and the high level of persistence in wages). Consistent with this result is the work discussed in Gruber (1997) on the incidence of payroll taxation. Gruber studies the impact on wages and employment at the micro level of the sharp exogenous reduction in payroll tax rates (of around 25 percentage points!) which took place in Chile over the period 1979-86. His analysis of a large number of individual firms indicates that wages adjust completely to this payroll tax shift and there is no employment effect whatever.

In contrast to this result, two multi-country studies find significant tax wedge effects on labour costs. Daveri and Tabellini (2000) find that a 10 percentage point increase in the tax wedge raises real labour costs by 5 per cent in the long run for a select group of

[3] The problem in single country time series investigations is discriminating between permanent effects and temporary effects which persist for a long time.

countries[4], although there are few controls for other labour market institutions (see Table 11, col. 1). Nickell et al (2003) report an equivalent figure of 3.7 per cent controlling for a complete set of labour market institutions (see Table 12. col.1). Many others have found significant tax wedge effects on labour costs, and some have argued that the size of these tax wedge effects depends significantly on those labour market institutions connected with flexibility (see Liebfritz et al, 1997 and Daveri and Tabellini, 1997). In order to pursue this, we set out some results on the impact of the tax wedge on labour costs in Table 3. The first point to note is how wildly the numbers and the rankings fluctuate across the columns. This is basically due to variations in the other variables included in the labour cost equations and emphasises the fragility of most of the results in this area. Second, in order to see if there is any relationship between tax wedge effects and labour market flexibility we regressed the average tax wedge effect on some institutional variables to obtain:

Tax wedge effect = Constant + 0.030 employment protection
(0.9)
- 0.005 labour standards
(0.1)
- 0.16 co-ordination (union + employer)
(1.7)
+ 0.004 union density (average)
(0.6)
N = 20, R^2 = 0.23.

While most of the signs are consistent with the hypothesis, the negative impact of wage bargaining co-ordination is the only one which is significant (at the 10 per cent level). So the evidence in favour of the hypothesis that flexibility reduces tax wedge effects is not strong. Overall, however, the balance of the evidence suggests that there is probably some overall adverse tax effect on real labour costs per employee. The possible consequences for the impact on employment we report in the next section.

Tax wedge effects on employment

An array of results in this area is presented in Table 4. While there is some variability, overall they tell a reasonably consistent story. If we omit the outliers on the high side (Prescott, 2002; Daveri and Tabellini, 2000; Planas et al, 2003) on the grounds that they exclude important control variables, we find that a 10 percentage point rise in the tax wedge reduces labour input by somewhere between 1 and 3 per cent of the population of working

[4] Namely Australia, Belgium, France, Germany, Italy, Netherlands, Spain, UK (pre-1980).

age. Taking an average point estimate as 2 per cent, this is a relatively small but by no means insignificant effect. For example, the average rise in the tax wedge in the advanced OECD countries from the early 1960s to the late 1990s is around 15 percentage points, worth a reduction in labour input of around 3 per cent of the population of working age[5]. Comparing the big three countries of continental Europe (France, Germany and Italy) with the United States, the difference in the tax wedge (around 16 percentage points) would explain around 3.2 percentage points of the difference in total labour input which is around one quarter of the overall difference in the employment rate. The remainder would be down to other factors including, in particular, the substantial differences in the social security systems, as well as other labour market institutions. In the next section we pursue these issues a little further by looking more closely at the labour input rates for different groups in the working age population.

4. Labour Inputs Across Different Groups

The overall picture for OECD countries is presented in Tables 5 and 6. We ignore inactivity rates among the young because these are strongly influenced by the extent of post-school education and whether or not post-school education takes place mainly within educational institutions, as in the US, or in firms, as in Germany.

Focusing first on prime age men (age 25-54), we see that even among this group, in most countries more are inactive than are unemployed. Furthermore, the inactivity rate in this group is higher in the US than in the European Union. Interestingly, most inactive men in this age group are classified as sick or disabled, the majority of whom are claiming some form of state benefit. Furthermore, the size of this disability group has risen substantially since the 1970s in nearly every country, and in those which have been analysed, this increase has been driven by changes in the entry rules and the available benefits (see Bound and Burkhauser, 1999, for some detailed evidence).

Among older men, unemployment rates are generally much the same as for prime age men, but inactivity rates are enormously larger and vary dramatically from one country to another. In some European countries, more than half the older men are inactive, whereas in

[5] In fact the average employment/population ratio in these same countries has risen over the same period, so there are obviously other forces at work aside from taxes. This overall change is because the rise in the employment/population ratio among women has more than offset the fall among men.

Norway and Sweden, the inactivity rate is closer to one quarter. As Blondal and Scarpetta (1998) note, these large cross-country variations were not apparent as recently as 1971, when nearly all the countries had inactivity rates for this group below 20 per cent, the major exception being Italy with a rate of 41 per cent, (see Blondal and Scarpetta, 1998, Table V.1, p.72). The main factor explaining the current variations and the consequent large changes since 1971 has been the structure of the social security system. Incentives for men to stay in the labour force vary widely, with generous incentives to retire early being introduced in many countries. This was often done in order to reduce labour supply in the mistaken view that this would help to resolve the problem of unemployment. As a consequence, Belgium, France, Germany and Italy, for example, all have exceptionally high inactivity rates among older men on top of their exceptionally high unemployment rates.

Inactivity rates among women aged 25 to 54 also vary widely, with the Scandinavian countries having the lowest rates in the OECD, and Italy and Spain having the highest. While the majority of inactive women in this age group report themselves as looking after their family, Italy and Spain in fact have the lowest fertility rates in the OECD. What is important here is the structure of the tax system, particularly the marginal tax rate facing wives when their husbands work, the existence of barriers to part-time work, and the availability of publicly funded child care. A key tax issue which is relevant here is whether husbands and wives are taxed jointly or separately (see OECD, 1990, Table 6.3.)

Finally, it is worth noting how unemployment in Italy, Spain and to a lesser extent France is heavily concentrated among young people and women. This is partly due to the role of employment protection laws in generating barriers to employment for new entrants and partly due to the social mores surrounding entry into work. For example, in Italy many young people, particularly if they are well qualified, will live at home for many years without working but effectively queuing for a particularly desirable job and contributing to measured unemployment (although perhaps not to true unemployment).

To summarise, looking at different sub-groups of the working age population, the numbers suggest that many factors other than standard tax rates are important in determining the extent of non-employment. This is consistent with the overall conclusion of the previous section that tax rates explain only a fraction, albeit a significant one, of the cross-country differences in employment rates (see also Bertola et al, 2002 where the results have similar implications).

5. Summary and Conclusions

Our basic conclusion is that tax rates are a significant factor in explaining differences in the amount of market work undertaken by the working age population in different countries. However, the evidence suggests that tax rate differentials only explain a minority of the market work differentials, the majority being explained by other relevant labour market institutions. Particularly important are the differences in social security systems which provide income support to various non-working groups including the unemployed, the sick and disabled, and the early retired.

Table 1

A Picture of Employment and Unemployment in the OECD in 2001

	Unemployment (%)		Inactivity Rate (%)	Employment Rate (%)	Hours per year	Ave hours per week
	2001	2002 (latest data)**				
Europe						
Austria	3.6	4.1	29.3	67.8	-	-
Belgium	6.6	6.9	36.4	59.7	1528	17.5
Denmark	4.3	4.2	21.8	75.9	1482	21.6
Finland	9.1	8.9	25.4	67.7	1694	22.0
France	8.6	9.2	32.0	62.0	1532	18.3
Germany	7.9	8.3	28.4	65.9	1467	18.6
Ireland	3.8	4.4	32.5	65.0	1674	20.9
Italy	9.5	9.2	39.3	54.9	1606	17.0
Netherlands	2.4	2.8	24.3	74.1	1346	19.2
Norway	3.6	3.9	19.7	77.5	1364	20.3
Portugal	4.1	4.4	28.2	68.7	2009***	26.5
Spain	10.7	11.2	34.2	58.8	1816	20.5
Sweden	5.1	5.0	20.7	75.3	1603	23.2
Switzerland	2.6	2.6	18.8	79.1	1568*	23.8
UK	5.0	5.2	25.1	71.3	1711	23.5
EU	7.6	-	30.8	64.1	-	-
Non-Europe						
Australia	6.7	6.5	26.2	68.9	1837	24.4
Canada	7.2	7.5	23.5	70.9	1801*	24.6
Japan	5.0	5.4	27.4	68.8	1821*	24.1
New Zealand	5.3	5.3	24.1	71.8	1817	25.1
US	4.8	5.6	23.2	73.1	1821	25.6

*refers to 2000. **refers to the period between Feb and Aug 2002. *** refers to 1994.

OECD Employment Outlook 2002, Tables A, B, F.

Unemployment is based on OECD standardised rates. These approximate the ILO definition. Hours per year is an average over all workers, part-time and full time. Average hours per week refers to the entire population of working age and is equal to the proportional employment rate x hours per year ÷ 52.

Table 2

Total Taxes on Labour

Payroll Tax Rate plus Income Tax Rate plus Consumption Tax Rate

Total Tax Rate (%)

	1960-64	1965-72	1973-79	1980-87	1988-95	1996-2000
Australia	28	31	36	39	-	-
Austria	47	52	55	58	59	66
Belgium	38	43	44	46	49	51
Canada	31	39	41	42	50	53
Denmark	32	46	53	59	60	61
Finland	38	46	55	58	64	62
France	55	57	60	65	67	68
Germany (W)	43	44	48	50	52	50
Ireland	23	30	30	37	41	33
Italy	57	56	54	56	67	64
Japan	25	25	26	33	33	37
Netherlands	45	54	57	55	47	43
Norway	-	52	61	65	61	60
New Zealand	-	-	29	30	-	-
Portugal	20	25	26	33	41	39
Spain	19	23	29	40	46	45
Sweden	41	54	68	77	78	77
Switzerland	30	31	35	36	36	36
UK	34	43	45	51	47	44
USA	34	37	42	44	45	45

Note:
These data are based on the London School of Economics, Centre for Economic Performance OECD dataset (see the data attached to DP502 at http://cep.lse.ac.uk/papers/). They are mainly based on OECD National Accounts as follows:

(i) Payroll tax rate = $EC/(IE-EC)$, $EC=EPP+ESS.EPP$ = employers' private pensions and welfare plans contributions, *ESS* = employers' social security contributions, *IE* = compensations of employees.

(ii) Income tax rate = $(WC+IT)/HCR$. *WC* = employees' social security contributions, *IT* = income taxes, *HCR* = households' current receipts.

(iii) Consumption tax rate = $(TX-SB)/CC$. *TX* = indirect taxes, *SB* = subsidies, *CC* = private final consumption expenditure. The inclusion of *EPP* in the payroll tax rate may be subject to debate. Excluding this term has little impact on the broad overall pattern of the numbers.

Table 3

Percentage Increase in Real Labour Cost in Response
To a One Percentage Point Rise in the Tax Wedge

	1 BLN	2 T	3 AP	4 P-SK	5 Kvd W	6 Average
Austria	0			0		0
Belgium	3.4		.37	.95		1.57
Denmark	0		.28	0		0.09
Finland	0.2	0.5	0.28			0.33
France	0.5	0.4	0.37	0	0.56	0.37
Germany (W)	0	1.0	0.37	0	0.72	0.42
Ireland	1.4					1.4
Italy	0.3	0.4	0	0	1.03	0.35
Netherlands	0.4		0.37	0	1.15	0.48
Norway	0.2		0.28			0.24
Spain	1.0					1.0
Sweden	0.5	0.6	0.28	0.73	0.70	0.56
Switzerland	1.4					1.4
UK	1.3	0.25	0	0	0.58	0.43
Japan	0	0.5	0		1.19	0.42
Australia	-	0.5	0.37		1.64	0.84
New Zealand	0					0
Canada	1.5	0.8	0		0.59	0.72
US	0.1		0		0.43	0.18

BLN = Bean *et al* (1986), Table 3 and 5 (except the number for Spain which is taken from Dolado *et al* (1986).

T = Tryväinen (1995) as reported in OECD *Jobs Study* (1994), Table 9.5 (except Sweden's number which is from Holmlund and Kolm (1995).

AP = Alesina and Perotti (1994), Table 7, Col. 4.

P-SK = Padoa-Schioppa Kostoris (1992).

Kvd W = Knoester and van de Windt (1987).

Some of these numbers are taken directly from Leibfritz *et al* (1997), Table A1.5.

The tax wedge definitions differ somewhat between columns: 1, 2, 4 use the sum of payroll, income and consumption tax rates; 3, 5 omit the consumption tax rate.

Table 4

Recent Results on the Impact of Taxation on Employment

Long-run impact on employment/population rate (%) of a 10 percentage point rise in the tax wedge.

Reference	Impact (percentage points)	Sample	Controls
		Cross-section or random effects panel	
Scarpetta (1996) (Table 4, col. 3))	-0.3	17 OECD countries 1983-93	Standard labour market institutions
Nickell and Layard (1999) (Table 16, col.1)	-2.4	20 OECD countries 1983-94	Ditto
		Fixed effects panel	
Nicoletti and Scarpetta (2001) (Table 5, col.1)	-1.5	20 OECD countries 1982-98	Ditto
Nickell et al (2003) (Table 15, col.1)	-2.7	20 OECD countries 1961-92	Ditto
Long-run impact on average hours per week worked by the population of working age (see Table 1, final column) of a 10 percentage point rise in the tax wedge.			
		Cross-section or random effects panel	
Nickell and Layard (1999) Table 16, col.3)	-1.0 hours (-2.5 pps)[a]	20 OECD countries 1983-94	Standard labour market institutions
Prescott (2002)[b] (Table 3)	-3.0 hours (-7.5 pps)[a]	7 OECD countries 1993-96	No controls
Long-run impact on the unemployment rate (%) of a 10 percentage point rise in the tax wedge.			
		Euro area aggregate time series	
Planas (Table 2,3) et al (2003)	3.2	Euro area aggregate 1970-2002	No controls
		Cross-section or random effects panel	
Scarpetta (1996) (Table 3, col.3)	1.1	17 OECD countries 1983-93	Standard labour market institutions
Elmeskov et al (1998) (Table 4, col.4)	1.2	18 OECD countries 1983-95	Ditto Impact at average levels of co-ordination
Nickell and Layard (1999) (Table 15, col.1)	2.0	20 OECD countries 1983-94	Ditto
		Fixed effects panel	
Daveri and Tabellini (2000) (Table 9, col.1)	5.5	14 OECD countries 1965-91	Restricted set of labour market institutions. Impact at average levels of co-ordination.
Nickell et al (2003) (Table 13, col.1)	1.1	20 OECD countries 1961-92	Standard labour market institutions. Impact at average levels of co-ordination.

Notes:

a) An impact of *x* hours on average weekly working hours is equivalent to 2.5*x* percentage points (pps) taking a full work week as 40 hours.

b) Prescott computes the tax wedge and predicted hours for seven countries. For each country we compute $(\text{predicted hours} - \overline{\text{predicted hours}}) \div (\text{taxwedge} - \overline{\text{taxwedge}})$ where the means are across the countries. The computed impact is the average of this ratio across the seven countries. It is also worth noting that Prescott approximates a measure of the marginal tax wedge by multiplying the income tax rate by 1.6 in all countries. In practice this makes little difference to the overall cross-country pattern of the tax wedge.

Table 5

Unemployment, Inactivity and Employment by Age and Gender in 2001

	Unemployment (%)				Inactivity Rate (%)				Employment Rate (%)			
	Men		Women		Men		Women		Men		Women	
	25-54	55-64	25-54	55-64	25-54	55-64	25-54	55-64	25-54	55-64	25-54	55-64
Europe												
Austria	3.4	5.7	3.8	5.2	6.5	59.8	23.1	81.7	90.3	37.9	74.0	17.4
Belgium	4.8	3.9	6.1	0.9	9.1	63.4	29.3	84.2	86.5	35.1	66.4	15.6
Denmark	2.9	4.0	4.1	4.0	8.6	34.3	16.5	48.1	88.7	63.1	80.1	49.8
Finland	6.9	8.9	8.0	8.8	9.0	48.8	15.0	50.5	84.7	46.7	78.2	45.1
France	6.3	5.6	10.1	6.6	5.9	56.2	21.3	65.9	88.1	41.4	70.8	31.8
Germany	7.3	10.3	7.7	12.5	5.7	49.4	21.7	67.6	87.5	45.4	72.2	28.4
Ireland	3.4	2.6	3.0	2.7	8.2	33.6	33.9	70.8	88.7	64.6	64.1	28.4
Italy[a]	6.4	4.6	12.5	4.9	9.6	57.8	42.1	84.1	84.6	40.3	50.7	15.2
Netherlands	1.4	1.7	2.1	1.1	6.0	48.6	25.8	71.7	92.7	50.5	72.6	28.0
Norway	2.7	1.7	2.5	1.4	8.6	26.4	16.7	36.8	88.9	72.3	81.2	62.3
Portugal	2.6	3.2	4.4	3.1	7.2	36.4	21.9	58.1	90.4	61.6	74.7	40.6
Spain	6.3	5.6	13.7	8.0	8.4	38.6	38.8	76.4	85.9	57.9	52.8	21.8
Sweden	4.4	5.3	3.7	4.5	9.4	26.5	14.4	32.7	86.6	69.6	82.5	64.3
Switzerland	1.0	1.8	3.4	1.6	3.7	17.5	20.7	43.8	95.3	81.0	76.6	55.3
UK	4.1	4.4	3.6	1.8	8.7	35.6	23.6	56.0	87.6	61.6	73.6	43.2
EU	5.5	6.3	7.9	6.6	8.2	47.8	28.4	68.1	86.8	48.9	66.0	29.8
Non-Europe												
Australia	5.5	5.6	5.0	3.3	10.1	40.0	28.6	63.1	85.0	43.3	67.8	35.7
Canada	6.3	6.0	6.0	5.6	8.9	38.8	20.9	58.2	85.4	57.6	74.3	39.4
Japan	4.2	7.0	4.7	3.7	3.1	16.6	32.7	50.8	92.8	77.5	64.1	47.3
New Zealand	4.0	4.0	4.1	2.8	8.7	25.7	25.5	48.2	87.6	71.3	71.5	50.3
US	3.7	3.4	3.8	2.7	8.7	31.9	23.6	47.0	87.9	65.8	73.5	51.6

a) 2000

OECD Employment Outlook 2002, Table C.

Note: These data do not include those in prison. This makes little odds except in the US where counting those in prison would raise the inactivity rate among prime age men by around 2 percentage points.

Table 6

Youth Unemployment Rate (%), 2001

Age 15-24

	Total	Men	Women
Europe			
Austria	6.0	6.2	5.8
Belgium	15.3	14.3	16.6
Denmark	8.3	7.3	9.3
Finland	19.9	19.6	20.2
France	18.7	16.2	21.8
Germany	8.4	9.1	7.5
Ireland	6.2	6.4	5.8
Italy	27.0	23.2	32.2
Netherlands	4.4	4.2	4.5
Norway	10.5	10.6	10.3
Portugal	9.2	7.2	11.9
Spain	20.8	16.1	27.0
Sweden	11.8	12.7	10.8
Switzerland	5.6	5.8	5.5
UK	10.5	12.0	8.7
EU	13.9	13.1	15.0
Non-Europe			
Australia	12.7	13.3	12.0
Canada	12.8	14.5	11.0
Japan	9.7	10.7	8.7
New Zealand	11.8	12.1	11.5
US	10.6	11.4	9.7

OECD Employment Outlook 2002, Table C.

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