

PATTERNS OF WORK ACROSS THE OECD*

Giulia Faggio and Stephen Nickell

Market work per person of working age differs widely across the OECD countries and there have been some significant changes in the last forty years. How to explain this pattern? Taxes are part of the story but much remains to be explained. The story favoured by Alesina *et al.* (2005) is that the nexus of strong unions, generous welfare and social democracy implies both high taxes and pressure in favour of work-sharing in response to adverse shocks. This is not borne out in Scandinavian countries. Scandinavian trade unions have understood that wage restraint rather than work-sharing is the way to sustain employment.

In the early 1970s in France, Germany, the UK and the US, more or less the same proportion of the population of working age were actually working (65–70%). And, on average, they were working roughly the same number of hours per year (1850–1950). By contrast, in Sweden, more people were working (74%) but much shorter hours per year on average (around 1650 in 1973). In Italy, many fewer people were working (55%) but about the same average hours (1868 in 1970).

Three decades later some things have changed a lot, others very little. In France and Germany, average employment rates have fallen a little and average hours per year have fallen dramatically to just over 1400 hours. In the UK employment rates are much the same but average annual hours have fallen slowly but steadily to below 1700 hours. In the US, the employment rate has risen a little and average annual hours have fallen a little. Interestingly, US employees now work more hours per year, on average, than employees in any of the rich countries of the OECD.¹ Little has also changed in Sweden over the last thirty years, with the employment rate remaining high and annual hours falling only slightly. Italy also still has an exceptionally low employment rate but annual hours here have fallen a fair bit (to around 1600) but not to the levels reached in France and Germany.

Overall, as we shall see, the picture with regard to market work is quite complicated. Generally, the Scandinavians, along with the Dutch and Swiss have the highest employment rates. The Americans, Australians and Japanese work more hours per year than the rest. The Southern Europeans (and the Belgians) generally have the lowest employment rates but not the lowest annual hours which may be found in Denmark, France, Germany, the Netherlands and Norway. Adding employment and hours together, we find that Americans, Australians and New Zealanders are the hardest

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¹ Thus, they work more hours per year, on average, than workers in any other OECD country aside from the Czech Republic, Greece, Mexico, Poland, the Slovak Republic (OECD, 2004, Table F). However US annual hours are of the same order of magnitude as those in Australia and New Zealand.

workers, on average, and the French, Italians and Belgians work least hard.² The hardest working countries work about 40% more than the least hard working.

The fact that this number is so large has instigated a significant body of research which has often focused on why, in particular, Americans work so much harder than the average European. An empirical overview may be found in Nickell (1997, Table 2 and Table 7, col. 3) and this suggests that employment protection, taxes and unco-ordinated unions tend to be associated with lower labour input. On top of this, there is a great deal of empirical evidence on the determinants of overall employment rates including Nicoletti and Scarpetta (2002) and Nickell *et al.* (2003). By and large, they come to similar conclusions, namely that unions, taxes and employment protection are associated with lower employment rates but if union activity is co-ordinated, the impact of unions and taxes is moderated. Furthermore, there is some evidence that low levels of competition in product markets is also associated with low employment rates.

More recently, Prescott (2004) argued that taxes are the key, explaining more or less all the variations in labour input across countries. Davis and Henrekson (2004) also emphasise the importance of taxes. Both these papers echo the results of Daveri and Tabellini (2000) who find that labour taxes can explain most of the fluctuations in unemployment in those countries which do not have co-ordinated pay bargaining. This strong emphasis on the role of labour taxes has been criticised on the grounds that it is inconsistent with the bulk of the cross-country evidence, basically because of omitted variable bias (Nickell, 2003*b*), or on the grounds that it is inconsistent with the evidence on labour supply elasticities (Alesina *et al.*, 2005).

Alesina *et al.* (2005) then go on to note that labour inputs have fallen especially in countries characterised by strong unions, extensive welfare, high taxation and social democratic governments. As they remark 'The bottom line is that hours worked fell in countries that can be characterised by the Continental European model and did not fall in the countries with the American model (with Britain and Ireland in between)' (p.23). The basic argument is that trade unions respond to adverse shocks by trying to protect employees, pressing for work sharing as well as employment protection more generally, which tends ultimately to reduce overall labour input. This is reasonably plausible although the fact that Sweden, the home of social democracy, strong unions and the welfare state, has seen only very modest reductions in labour input over the last thirty years gives pause for thought. Furthermore, Australia, where over 80% of individuals still have their pay determined by union bargaining, has seen little or no reduction in labour input. By contrast, in the UK, where both union membership and

² This, of course, refers only to market work. It is sometimes argued that a great deal of market activity in some countries is replicated by non-market activities in others, partly for tax reasons. For example, far more time in Germany is spent on food preparation in the home than in the US, where a higher proportion of food expenditure is in restaurants (see Freeman and Schettkat, 2001). However, the data reported in Alesina *et al.* (2005, Table 17), indicates that the Germans spend much less time in the home on child care and housework than Americans and that they spend more or less equal amounts of time on leisure activities. More rigorously, if we use the time use data reported in Tables 1.1, 1.3, 1.4 of Burda *et al.* (2006), we find that the correlation between average weekly hours worked per working age person (Table 1, col. 1) and average weekly hours of market work from time use studies is 0.66. This is not very high because time use studies capture vacation time and sickness very badly. However, if we replace market work from time use studies by total work (market plus non-market), this correlation drops by very little, to 0.55. It is plain from this that non-market work is not fully compensating for market work and that market work and total work are strongly positively correlated.

coverage have collapsed since 1980, annual working hours have fallen by 254 hours since 1973, whereas hours in Sweden fell by a mere 57 over the same period.

In the light of this, it is perhaps worth pursuing the forces underlying fluctuations in the volume of market work per capita a little further. In the next Section, we look at the current overall picture and how it divides into annual hours and employment rates. We then look at the history of both these, emphasising the huge variations across the different countries. In Section 2, we focus on changes in the participation rates of different sub-groups of the population, notably, prime-age men and women as well as older men. We also consider overall unemployment rates. In Section 3, we analyse annual working hours, trying to explain the large differences in the changes since the early 1970s. Finally, in Section 4, we summarise our findings and provide a synthesis of the various explanations of changes in labour input over the last thirty years.

2. The Overall Picture

In Table 1, we present a picture of labour input in 2002 in the richer OECD countries, showing the division between employment rates and hours. The big three countries of Continental Europe (France, Germany, Italy) plus Belgium have the lowest input levels and many of the 'Anglo-Saxon' economies plus Japan have the highest input levels.

Table 1
Hours per Working Age Person Per Week and its Components (2002)

	1	2	3
	Weekly hours worked per person of working age (col. 2 × col. 3 ÷ 5200)	Employment/ Population of working age (%)	Annual hours* worked per worker
Austria	20.5	68.2	1567
Belgium	17.8	59.7	1547
Denmark	21.5	76.4	1462
Finland	22.5	67.7	1727
France	17.5	62.2	1459
Germany	18.2	65.3	1443
Ireland	20.8	65.0	1666
Italy	17.1	55.6	1599
Netherlands	19.1	74.5	1338
Norway	19.9	77.1	1342
Portugal	22.2	68.1	1697
Spain	20.8	59.5	1813
Sweden	22.8	74.9	1581
Switzerland	22.9	78.9	1510
UK	23.6	72.7	1692
Australia	24.3	69.2	1824
Canada	23.8	71.5	1731
Japan	23.6	68.2	1798
NZ	25.3	72.4	1816
US	24.9	71.9	1800

Sources. Employment/Population: *OECD Employment Outlook, 2004*, Table B.

Annual Hours: *OECD Employment Outlook, 2004*, Table F.

Some alternatives to these data are presented in the Appendix.

*The hours data refer to all workers, full-time and part-time, and to full year equivalents (i.e. working a full year).

Denmark, Switzerland, Sweden, Portugal and Finland tend towards the high input end of the spectrum. Turning to the division between employment rates and annual hours, significantly more people work in Denmark, Norway, Sweden and Switzerland than elsewhere. The big countries of Southern Europe, Spain and Italy have many fewer people in work than the remainder. Looking at annual hours, we see from column 3, annual hours tend to be high in the Anglo-Saxon economies and particularly low in the Netherlands and Norway with France and Germany on the low side.

In Table 2, we divide annual hours into hours per week and weeks per year. An alternative picture, based on different data, may be found in the Appendix. Broadly speaking, the outcome is much the same although there are large differences for one or two countries. Hours per week vary relatively little across countries except for the Netherlands which has by far the highest number of part-timers. More interesting is weeks worked per year, where there is much variation. Weeks not worked generally consist of either of holidays and vacations or of absences due to sickness or maternity leave. In practice, absences due to labour disputes, training and so on are of minor significance. Looking first at vacations and holidays, what stands out is that these are between two and four weeks lower in the US than in any of the other countries. This is

Table 2
*Annual Hours actually Worked and its Components**

	1	2	3	4	5
	Annual hours worked per worker	Average weekly hours by those in work	Weeks worked per year by those in work (1 ÷ 2)	Components of weeks worked	
				Vacations and holidays	Other [†] absences (52–3.–4.)
Austria	1567	38.4	40.8	7.2	4.0
Belgium	1547	36.3	42.6	7.1	2.3
Denmark	1462	36.3	40.3	7.4	4.3
Finland	1726	38.8	44.5	7.0	0.5
France	1459	36.2	40.3	7.0	4.7
Germany	1443	36.5	39.5	7.8	4.7
Ireland	1666	36.3	45.9	5.7	0.4
Italy	1599	37.4	42.8	7.9	1.3
Netherlands	1338	31.8	42.1	7.5	2.4
Norway	1342	37.3	36.0	6.5	9.5
Portugal	1697	40.4	42.0	7.3	2.7
Spain	1813	38.8	46.7	7.0	(1.7)
Sweden	1581	38.1	41.5	6.8	3.7
Switzerland	1510	37.5	40.3	6.0	5.7
UK	1692	38.2	44.3	6.5	1.2
US	1800	39.4	45.7	3.9	2.4

*The data refer to *all workers*, both full-time and part-time, and to full year equivalents. So, hours per year refers to those working a full year. Numbers in parenthesis are *negative*.

[†]Includes absences due to illness, maternity, labour disputes, training and other reasons.

Sources.

Column 1. *OECD Employment Outlook, 2004*, Table F.

Column 2. *OECD Employment Outlook, 2004*, Table 1.5.

For US, Alesina *et al.* (2005), Table 1.

Column 4. *OECD Employment Outlook, 2004*, Table 1.5.

For US, Alesina *et al.* (2005), Table 3.

possibly due to the differences in data sources, but it is also consistent with the fact that many workers in the US only have one or two weeks paid vacation per year, which would be illegal in nearly all OECD countries (See Table 13, below).

Other absences are a residual and consist mainly of sickness or maternity leave. There is a good deal of variation here which may, in part, be due to measurement error. The data in Appendix Tables 1 and 2 present some alternative numbers which again show significant variations in sickness and maternity leave. These we investigate further below. Overall, we see that annual holidays and vacations are much the same in most countries with the notable exception of the US. On top of this there are wide variations in weeks of other absence, mainly sickness and maternity leave.

1.1. Some History

Having seen how labour inputs vary across countries, it is worth looking at how they have changed over the last three decades. Starting with overall labour inputs, a striking feature of the numbers reported in Table 3 is that labour input in the early 1970s, is

Table 3
*The History of Labour Inputs**

	Weekly hours worked per working age person			Employment rate (%) (Women in parenthesis)			Annual hours worked per worker				
	1973	1990	2004	1973	1990	2004	1970	1973	1990	2004	
Austria			19.8	64.4 (47.7)		66.5 (60.1)				1550 [§]	
Belgium		17.7		60.7 (39.9)	54.4 (40.8)		60.5 (53.0)		1601	1522	
Denmark		21.1	21.3	75.2 (61.2)	75.4 (70.6)		76.0 (72.0)		1452	1454	
Finland	25.8	25.2	22.4	70.0 (62.3)	74.1 (71.5)		67.2 (65.5)	1982	1915	1771	1736
France	23.4	18.8	17.4	65.9 (47.9)	60.8 (50.9)		62.8 (56.9)	1902	1846	1610	1441
Germany**	24.7	19.3	18.0	68.7 (49.7)	64.1 (52.2)		65.5 (59.9)	1956	1869	1566	1426
Ireland		19.1	20.7	59.9 (32.8)	52.1 (36.6)		65.5 (55.8)			1911	1642
Italy	18.9	16.8	17.5	55.1 (29.9)	52.6 (36.2)		57.4 (45.2)	1868	1788	1656	1585
Netherlands	18.7	16.8	18.4	56.3 (28.6)	61.1 (46.7)		73.1 (65.7)	1830	1724	1433	1312
Norway	22.3	20.1	19.8	57.7 (49.3)	73.0 (67.2)		75.6 (72.7)	1784	1712	1432	1363
Portugal		24.0	22.1	62.4 (30.5)	67.4 (55.4)		67.8 (61.7)			1858	1694
Spain	24.0 [†]	18.2	21.4	61.0 (32.5)	51.8 (31.8)		62.0 (49.0)		2107 [†]	1824	1799
Sweden	23.2	24.9	22.4	73.6 (60.8)	83.1 (81.10)		73.5 (71.8)	1730	1642	1561	1585
Switzerland		23.7 [‡]	23.2	77.7 (54.1)	78.2 (66.4)		77.4 (70.3)			1648 [‡]	1556
UK	26.4	24.6	23.3	71.4 (52.7)	72.5 (62.8)		72.7 (66.6)	1939	1923	1767	1669
Australia		24.4	24.3	68.5 (46.4)	67.9 (57.1)		69.5 (62.6)			1866	1816
Canada	22.6	23.8	24.4	63.1 (44.1)	70.3 (62.7)		72.6 (68.4)	1892	1860	1757	1751
Japan	30.0	26.8	23.6	70.8 (53.4)	68.6 (55.8)		68.7 (57.4)		2201	2031	1789
NZ		23.5	25.8	64.4 (39.1)	67.5 (58.6)		73.5 (66.5)			1810	1826
US	24.1	25.8	25.0	65.1 (48.0)	72.2 (64.0)		71.2 (65.4)	1936	1922	1861	1824

Note. Weekly hours per working age person is the employment rate (%) times annual hours worked per worker divided by 5200.

Sources. Employment rate: *OECD Employment Outlook, 1995, Table A; 2005, Table B.* Vertical lines reflect series breaks.

Hours: *OECD Labour Market Statistics.*

[†]The data refer to both full-time and part-time workers and to full year equivalents (i.e. working a full year).

[‡]1977, [§]1991, [§]2003

^{||}Dependent employment

**West Germany

very similar in all the countries where data are available except for Italy and the Netherlands, where it is low, and Japan, where it is very high. Thirty years later, the Anglo-Saxon countries have seen little change in their labour input which remains high and the Scandinavian countries, excluding Norway, have seen only small falls in labour input to a little below the Anglo-Saxon levels. By contrast, France and Germany have seen massive declines in labour input joining Italy and the Netherlands at low levels, the latter having declined but little since the early 1970s.

Splitting these changes into shifts in employment rates and annual hours worked, the first point to note is that in the early 1970s, the pattern of employment rates across countries was much the same as it is today. The Scandinavian countries plus Switzerland have always had the highest employment rates and still do. Spain, Italy and Belgium have always had the lowest employment rates and still do. Some countries have seen significant increases, most notably the Netherlands, with smaller increases in Norway, Canada, New Zealand and the US. In every country, the employment rate of women has risen, by anything from 10 to 35 percentage points. Finland is the exception here, partly because it had high rates of female participation even in the 1960s. Typically, therefore, the employment rates of men have declined over the same period. Finally, of course, these employment rates have been affected by the dramatic fluctuations in unemployment from the 1970s to the early 1990s.

Underlying this relatively stable pattern are some significant changes in the employment rates of a variety of different sub-groups which we shall pursue below. Turning to the history of annual hours, the changes over the last three or four decades are much larger than the changes in the employment rates. In 1970, in nearly all countries for which data are available, annual hours were between 1850 and 1950. However, in Sweden and Norway, annual hours were already well below this level despite a very buoyant demand for labour, with unemployment rates in the two countries being 1.2 and 1.6%, respectively. By 2004, some countries had seen dramatic changes. In France, Germany and the Netherlands, annual hours fell by around 500 from 1970 to 2004, in Norway and Japan, the fall was around 400 and in Ireland and the UK the fall was close to 300. By contrast, in Sweden Australia, Canada and the US, the fall over this same period was between 50 and 150. These differences are striking and we shall pursue them further below.

In the next two Sections, we shall analyse the historical patterns of the total labour input by considering, first, various components of the employment rate and second, the changes in annual hours.

3. Changes in the Employment Rate

To analyse the history of the employment rate, it is helpful to look at a number of separate sub-groups of the working-age population. In Table 4 we present the picture in 2004, concentrating on the over 25s because we do not wish to pursue questions about participation in education.

To understand the employment rate, it is convenient to divide the non-employed into the unemployed (looking for work) and the inactive (not looking for work). Starting with the latter, it is plain that there are very large differences in inactivity patterns between prime age men and women and between prime age and older

Table 4
Unemployment, Inactivity and Employment by Age and Gender in 2004

	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	4.3	4.7	4.4	4.1	8.6	61.4	20.6	80.7	87.4	36.8	75.8	18.5
Belgium	6.0	4.1	7.4	2.8	8.9	59.0	25.7	78.2	85.7	39.3	68.8	21.2
Denmark	4.4	5.5	5.1	5.8	8.7	26.7	15.1	42.4	87.3	69.3	80.6	54.2
Finland	7.0	7.6	7.6	7.0	10.0	44.3	15.4	45.7	83.7	51.5	78.1	50.4
France	7.4	5.5	9.8	7.1	6.4	55.7	20.2	65.0	86.7	41.9	72.0	32.5
Germany	9.8	10.9	9.0	12.0	6.7	45.2	18.0	66.2	84.2	51.2	74.6	29.8
Ireland	4.5	2.9	3.1	1.5	8.3	33.4	32.1	65.5	87.6	64.7	65.8	34.0
Italy	5.2	4.1	9.2	4.0	8.7	56.0	36.4	79.6	86.5	42.2	57.8	19.6
Netherlands	3.7	3.9	4.4	3.1	6.3	41.3	22.0	66.4	90.2	56.4	74.5	32.5
Norway	4.3	1.5	3.3	0.6	9.9	25.7	17.2	36.9	86.2	73.2	80.0	62.7
Portugal	5.1	6.0	7.1	5.1	7.8	37.2	19.4	55.2	87.4	59.1	74.9	42.5
Spain	6.9	6.0	13.8	9.4	7.5	37.3	31.7	72.8	86.1	58.9	58.9	24.6
Sweden	5.7	5.8	5.2	4.0	9.9	24.0	14.7	29.8	85.0	71.6	80.8	67.4
Switzerland	3.5	3.1	4.6	3.4	4.3	20.9	19.2	44.3	92.3	76.7	77.1	53.8
UK	3.8	3.9	3.4	2.1	9.0	32.0	23.2	51.7	91.0	68.0	74.2	47.3
EU	6.5	6.2	8.3	6.4	7.6	44.8	24.5	65.5	86.4	51.8	69.2	32.3
Non-Europe												
Australia	3.9	4.2	4.3	3.3	10.9	35.6	28.0	56.9	85.7	61.7	68.9	41.7
Canada	6.1	6.1	5.9	5.7	8.4	34.0	18.4	51.0	86.0	62.0	76.8	46.2
Japan	4.3	5.3	4.5	3.0	3.8	17.5	31.9	49.9	92.1	78.1	65.0	48.6
NZ	2.5	2.4	3.3	2.6	8.4	21.8	24.8	40.4	89.4	76.4	72.7	58.1
US	4.6	3.9	4.6	3.7	9.5	31.3	24.7	43.7	86.3	66.0	71.8	54.3

OECD *Employment Outlook 2005*, Table C.

Notes. The inactivity rate equals 100 minus the participation rate.

These data do not include those in prison. This makes little odds except in the US where counting those who are incarcerated would raise the inactivity rate among prime age men by close to 2 percentage points.

workers. So our intention here is to consider, in turn, the historical patterns of inactivity among prime age men, older men and prime age women. We shall not look specifically at older women, mainly because their inactivity patterns across countries are very similar to those of older men. Turning to unemployment, because the cross-country patterns are much the same in all the groups, we shall simply consider the history of overall unemployment rates.

2.1. *Inactivity Among Prime Age Men*

The history of this aspect of labour input is set out in Table 5. Back in the 1960s and early 1970s, prime age male inactivity rates rarely exceeded 5% by any significant amount. By 2004, only two countries have rates below 5% and almost everywhere these rates exceed unemployment rates. Countries where prime age men have inactivity rates exceeding 9% today include Finland, Norway, Sweden, UK, Australia and the US. This is an odd group of countries because, by and large, they are noted for their relatively high levels of labour input. Thus, by contrast, France and Germany have particularly low levels of prime age male inactivity and the EU average is only 7.6%. The evidence which we have on this issue suggests that a significant

Table 5
Inactivity Rates Among Prime Age and Older Men

	Men aged 25–54 (%)			Men aged 55–64 (%)				
	1971	1990	2004	1971	1990	1995	1999	2004
Austria			8.6			57.4	56.1	29.4
Belgium		7.8	8.9		64.6	64.1	63.2 (51.0)	59.0
Denmark		5.5	8.7		30.9	32.1	38.1	26.7
Finland	7.2	7.1	10.0	26.8	52.9	58.4 (44.8)	55.0 (42.2)	44.3
France	3.2	4.6	6.4	25.4	60.7	58.8 (50.1)	57.3 (46.8)	55.7
Germany	3.7	6.1	6.7	21.5	44.1	47.3 (35.4)	46.2 (34.1)	45.2
Ireland	2.8	8.2	8.3	9.0	35.0	36.1 (30.8)	35.6 (25.0)	33.4
Italy	5.9	5.9	8.7	40.7	47.0	55.9 (35.8)	56.7 (55.0)	56.0
Netherlands	5.1	6.6	6.3	19.4	54.2	58.6 (49.6)	51.6 (31.1)	41.3
Norway		7.7	9.9	16.7	27.2	27.7 (24.4)	25.5 (19.0)	25.7
Portugal		5.7	7.8	18.3	33.5	39.3 (30.2)	36.0 (20.3)	37.2
Spain		5.6	7.5	15.4	37.5	45.1 (39.9)	42.2 (27.8)	37.3
Sweden	5.3	5.3	9.9	15.3	24.5	29.6 (25.0)	27.7 (22.7)	24.0
Switzerland		2.2	4.3		13.6	17.7	19.1	20.9
UK	1.6	5.2	9.0	11.6	31.9	37.6 (34.6)	36.5 (30.8)	32.0
Australia	3.1	6.9	10.9		36.8	39.2	38.3	35.1
Canada		6.7	8.4	16.7	36.0	41.1 (39.7)	39.3 (36.7)	34.0
Japan	2.3	2.5	3.8		16.7	15.2	14.8	17.4
NZ		6.6	8.4		43.2	34.7	28.4	21.8
US	4.5	6.6	9.5	17.9	32.2	34.0 (31.1)	32.1 (30.0)	31.3

Notes. Individuals in institutions are not included. The numbers are generally small except that close to 2% of the prime age male population in the US are incarcerated.

The figures in parentheses in the 1995 and 1999 columns for older men refer to the estimated inactivity rates where pension systems/early retirement schemes are made actuarially neutral up to age 64. Blöndal and Scarpetta (1998, Table V.6) and Duval (2003, Table 3), average of low case and high case.

Sources. Prime age men, *OECD Labour Market Statistics* except for the UK in 1971 where we use the *UK General Household Survey* for 1972.

Older men, *OECD Employment Outlook*, Table C, various issues, Blöndal and Scarpetta (1998, Tables V.I and V.6) and Duval (2003, Table 3.)

proportion of these inactive men are categorised as long-term sick or disabled (European Labour Force Survey). Furthermore, we know that the rules governing entry into the disability benefit system are crucial, because exit rates are generally very low. In some countries, these rules were significantly weakened in the last thirty five years, in others not. Thus in Bound and Burkhauser (1999, Table 17) we find the following:

Disability Transfer Recipients per 100 Workers

Age	15–44		45–59	
	1970	1995	1970	1995
US	1.1	3.9	3.3	10.3
Sweden	1.8	3.2	6.6	15.1
Germany (W)	0.7	0.6	7.5	8.7

So in the US and Sweden, the numbers more than double from 1970 to 1995 whereas in Germany they barely change. In the UK, they rise even faster (Faggio and Nickell, 2003). In summary, therefore, we may conclude that the history of inactivity rates

among prime age men is dominated by the rules governing the disability benefit systems of the various countries.

2.2. *Inactivity Among Older Men*

The history of inactivity among older men is also presented in Table 5. Back in the early 1970s, these inactivity rates rarely exceeded 25% with the notable exception of Italy. The situation here was exceptional because at that time Italian men were entitled to a generous public pension at age 60. In other countries, the retirement age was typically 65 or later. By the early 1990s, inactivity rates among older men exceeded 25% in all countries except Japan and were above 45% in many Continental European countries outside Scandinavia. Why did this happen? Basically, much of this change can be explained by the increase in financial incentives to retire early. And, by and large, these incentives were introduced to remove older workers from the labour force under the mistaken belief that this reduction in effective labour supply would help reduce high levels of unemployment. For example, in 1979, Italy introduced 'unemployment pensions' at age 57+, if unemployment was due to severe economic conditions or industrial reorganisation. In France, unemployment benefits were paid to those over 56 with no requirements to seek work or retrain.

Blondal and Scarpetta (1998) present a detailed analysis of the incentive issue and their panel data regressions reveal the importance of financial incentives in determining early retirement. In the 1995 column in Table 5, we present, in parentheses, the estimated inactivity rates were pension systems to be made actuarially neutral up to age 64. In many European countries, this makes a substantial difference. Duval (2003) extends this work and in Table 6, we report the implicit tax rates on those working between 55 and 64 generated by the early retirement and pension systems. Then, in Table 7, we show some of Duval's regressions simply to illustrate the importance of implicit tax rates in determining early retirement. For example, an implicit tax rate at age 60 of 50% will generate a fall in participation of 8.5%. In the parentheses after the 1999 column in Table 5, we show Duval's estimates of the inactivity rate were early retirement schemes to be removed and actuarial neutrality introduced up to 64. Again, they show big effects for many countries taking their inactivity rates back to 1970s levels. Interestingly, by 2004, we can see that inactivity among older men has started to fall in a significant number of countries, particularly those where early retirement incentives have been reduced, notably Finland, Denmark and the Netherlands.

2.3. *Inactivity Among Prime Age Women*

The overall picture is provided in Table 8 and this shows that there has been a continuing fall in inactivity among prime age women in nearly every country. But inactivity rates are still high in Ireland, Italy, Japan and Spain. Indeed, far higher than in much of Scandinavia in the 1970s. Furthermore, whereas in the 1970s, fertility was positively correlated with inactivity across OECD countries, it is now negatively correlated. So in the low inactivity countries, women not only work more, they also have more children.

Much micro-econometric work and the cross-country analysis in OECD (1990, Chapter 6) and Jaumotte (2003) suggest that marginal tax rates may be important here.

Table 6
Implicit Tax Rates on Working for Five More Years (1999)
 (%)

	At age 55		At age 60	
	Normal old age pension	Early retirement	Normal old age pension	Early retirement
Australia	1	1	1	1
Belgium	9	57	47	72
Canada	5	5	13	13
Finland	12	70	22	75
France	-38	56	83	83
Germany	10	48	24	51
Ireland	16	37	16	37
Italy	46	46	115	115
Japan	6	6	39	39
Netherlands	13	77	93	93
Norway	15	15	15	28
Portugal	4	52	14	76
Spain	22	58	22	69
Sweden	18	21	1	19
UK	8	22	14	22
US	5	5	5	5

Source. Duval (2003, Figures 4, 7, 8).

Notes. To compute implicit tax rates.

Define expected pension wealth/earnings at age R .

$$= PWY_R = \sum_{i=R}^{105} (s_i R_i) / (1+r)^{i-R}$$

where r = real interest rate, s_i = probability of being alive at age i conditional on being alive at R . R_i = expected pension at i over earnings at R .

Define net change in expected pension wealth over a 5-year period of working

$$= DPWY_R = \frac{s_{R+5} PWY_{R+5}}{(1+r)^5} - PWY_R - \sum_{i=R}^{R+4} (s_i C_i / Y) / (1+r)^{i-R}$$

C_i / Y = total contributions to pension system over earnings at R .

Average implicit tax rate = $DPWY_R / 5$.

So in Table 9, we present the marginal rates facing married women at zero hours and when they are earning 67% of average earnings given their spouses are earning 100% of average earnings. Here, we see some significant cross-country variations, particularly at zero hours. If, by some mechanism or other, married women have their own tax allowance, their marginal rate at zero hours will be zero. At the other extreme, their earnings may simply be added to their husband's for tax purposes, so their marginal rate will be the same as their husband's. It is plain that high marginal rates at zero hours generate a strong disincentive to working a low number of hours per week. Even at more normal hours, however, there are large variations in marginal rates across countries.

The implications of these and other variables may be found in the panel regression explaining inactivity in Table 10. Marginal tax rates have important effects, as might be expected, with 10 percentage point falls in both the rates included in the regression

Table 7
The Impact of Implicit Taxes on the Participation of Older Men 1967–99

Dependent Variable	<i>Part. 55–59 – Part. 50–54</i>	<i>Part. 60–64 – Part. 55–59</i>
	<i>Part. 50–54</i>	<i>Part. 55–59</i>
Implicit	–0.11	–0.17
Tax Rate	(7.2)	(4.9)
Unemployment	–0.12	–0.90
Rate (age 25–54)	(1.9)	(6.0)
Standard		1.63
Retirement Age		(3.3)
Country effects	√	√
Time effects	√	√
Countries	22	22
Observations	484	471
R ²	0.92	0.89

Source. Duval (2003, Table 2).

Notes. $Part.x - Part.y / Part.y$ = change in participation rate from age y to age x as a proportion of the participation rate at age y .

Table 8
Inactivity Rates Among Prime Age Women (%)

	1971	1990	2004
Austria	–	–	20.4
Belgium	–	39.2	25.7
Denmark	–	12.2	15.1
Finland	28.2	13.6	15.4
France	49.1	27.8	20.2
Germany	51.8	36.6	18.0
Ireland	77.1	54.6	32.1
Italy	71.3	46.1	36.4
Netherlands	77.2	42.1	22.0
Norway	–	20.8	17.2
Portugal	–	30.6	19.4
Spain	–	53.1	31.7
Sweden	33.5	9.3	14.7
Switzerland	–	26.3	19.2
UK	–	27.0	23.2
Australia	55.4	33.4	28.0
Canada	–	24.6	18.4
Japan	46.2	35.8	31.9
NZ	–	30.7	24.8
US	49.7	26.0	24.7

|refers to a significant break in the series.

Source. *OECD Employment Outlook*, Table C, various issues.
OECD Labour Market Statistics.

reducing the inactivity rate by around 3 percentage points. The strictness of employment protection laws on regular employment has a significant positive effect as does union density. If a number of further variables, notably labour productivity, male unemployment, public expenditures on children and parental leave, are added to this regression, this has little impact on the coefficients associated with the key variables noted above. This experiment is worth performing since these variables, while they are

Table 9
Percentage Marginal Tax Rates Facing Married Women

	Husband 100% AW Wife 0% AW Two children		Husband 100% AW Wife 67% AW Two children	
	1981-6	1996-9	1981-6	1996-9
Austria	-	0	-	43.0
Belgium	44.5	48.2	52.3	55.9
Denmark	41.5	48.0	30.9	51.3
Finland	0	0	32.3	45.1
France	17.9	24.4	24.1	27.3
Germany	39.0	49.5	40.2	53.1
Ireland	7.1	0	70.1	30.0
Italy	8.6	9.5	28.0	34.0
Netherlands	34.4	5.1	34.1	45.5
Norway	20.5	13.5	32.5	35.8
Portugal	11.2	15.7	16.6	25.8
Spain	0	0	21.3	29.8
Sweden	0	0	29.8	38.8
Switzerland	26.6	22.3	33.3	30.7
UK	0	0	38.4	33.3
Japan	21.9	18.4	18.1	16.3
US	30.8	31.6	30.8	29.9

These include household income and social security taxes less cash transfers. AW = Average Wage. Computed using the tax rules of each country by looking at the tax paid on an annual income for the wife of X and of X + 1 where X is 0% or 67% of the average annual earnings of production workers, given the husband earns 100% of the average annual earnings of production workers. Author's calculations based on an OECD template.

Table 10
The Inactivity Rate of Women (25-54) in the OECD (1981-2001) Panel Regression

Marginal tax rate, Spouse (100,0)	0.18 (4.2)	20pp fall in rate induces a 3.6pp fall in inactivity
Marginal tax rate, Spouse (100,67)	0.15 (5.1)	20pp fall in rate induces a 3pp fall in inactivity
Average tax wedge	-0.013 (0.3)	
Employment protection (index, 0-5)	0.050 (4.8)	1.3 fall in index induces a 7pp fall in inactivity (This was the fall in Spain from late 1980s to late 1990s)
Union density	0.23 (4.7)	20pp fall in rate induces a 4.6pp fall in inactivity
Countries	17	
Observations	315	
Year dummies	✓	
Country dummies	✓	
R ²	0.94	

Notes. Marginal tax rates as in Table 9. Average tax wedge is the average labour tax rate, the sum of the average payroll, income and consumption tax rates. Computed by taking the average tax rates from *OECD Taxing Wages Statistics* including employers' SS contributions and adding the average consumption tax rate ((indirect taxes-subsidies) ÷ consumption) from *OECD National Accounts*. Employment protection, an index referring to regular employment (*OECD Employment Outlook, 2004*, Chapter 2, first three columns of Table 2A, 2.4). Union density, ratio of employed union members to employees (Nickell *et al.* 2005, p. 23).

potentially endogenous,³ have been included in other work, e.g., OECD (1990) Table 6.3) or Jaumotte (2003) Table 5).

To summarise, marginal tax rates and employment protection seem to have relatively robust positive effects on inactivity. However, the time dummies in the regression reveal a background fall in female inactivity by 14 percentage points and this is even bigger after we add in further the further variables discussed above. The implication of this is that there are further factors driving female participation which we are not able to capture. Furthermore, looking at the trends in inactivity in Table 8, it is plain that there are large differences across countries. For example, there are very significant differences in apparent preferences about part-time work. This is important, because a willingness to work part-time clearly helps in obtaining a job. In Table 11, we show the percentage of these who work part-time and the percentage of these who do so voluntarily. Thus in Finland and Spain, few women work part-time despite married women facing zero marginal tax rates at zero hours. Furthermore, around half of these do so 'involuntarily'. By contrast, in the Netherlands, more than half the working women are part-timers and the vast majority of them wish to be so.

In summary, we can identify certain variables such as marginal tax rates and employment protection, which impact on the participation rates of prime age women. But explaining why the vast majority of prime age women in Scandinavia were active in the labour market by the early 1970s when only a small minority were economically active in Italy and the Netherlands, and why the changes in subsequent decades differ so much, is not easy on the basis of standard economic variables. In all the countries, there are a number of causally interacting trends among women going at different speeds in different countries – rising education, falling fertility, rising participation, rising expenditures on child care, rising productivity, rising wages. Sorting out these interactions remains to be done.

2.4. Overall Unemployment Rates

Since a great deal is known about the subject (Nickell, 2003*a*; Nickell *et al.*, 2005), we comment only briefly on overall unemployment rates. In Table 12, we show the overall trends. The basic picture is one where unemployment rose across the OECD from the 1960s to the early 1980s, peaking then or in the early 1990s before falling back to 1970s levels in most countries or remaining stubbornly high in some, notably the big four of continental Europe (France, Germany, Italy, Spain). In 2004, around half of the European countries in our list had lower unemployment than the US, thereby emphasising that only a part of Europe suffers from the somewhat mythical 'European unemployment problem'.

To avoid high levels of unemployment, the following policies seem to work. First, a social security system which concentrates on placing individuals in jobs. It is important that specific people in the employment service are responsible for specific workless individuals. Further, employees of the employment service must be well trained and have the correct incentives. They can employ a mixture of carrots and sticks. The actual

³ For example, labour productivity may be affected by changes in female participation, and unemployment rates may easily be influenced by omitted factors which also affect participation.

Table 11
Women's Part-Time Work: Voluntary or Involuntary, 1996

	(1)	(2)	
	Percentage of working women who are part-time	Percentage of working women who are voluntarily part-time	$(2) \div (1) \times 100$
Austria	21.7	21	97
Belgium	32.1	21	65
Denmark	24.2	18	74
Finland	11.3	6	53
France	24.1	15	62
Germany	29.9	27	90
Ireland	26.4	17	64
Italy	20.9	11	53
Netherlands	55.5	45	81
Portugal	15.1	5	33
Spain	16.2	8	49
Sweden	23.5	20	85
UK	41.4	30	72
Australia	40.0	26	65
Canada	28.9	17	59
Japan	36.7	37	100
US	20.2	10	50

Note. In Europe voluntary includes women who say they did not want to work FT and did not say they worked PT because of education, sickness/disability or because they were unable to find a FT job. Outside Europe, the definition is broader.

Source. OECD *Employment Outlook*, 2001, Table 4.8.

level of benefits is not particularly important. Most of the Scandinavian countries, the Netherlands and Switzerland have these sorts of work-friendly benefit systems. Second, having the right sort of wage determination system. If there is a high level of collective bargaining coverage, some degree of co-ordination of bargaining is required. High coverage alongside low union membership as well as decentralised and adversarial bargaining typically results in high unemployment. Also helpful are relatively low labour taxes and the absence of very strict employment protection legislation. Finally, a deregulated service sector helps to sustain a buoyant labour market when, inevitably, manufacturing employment is on a downward trend.

This completes our discussion of the important factors determining employment rates. We next turn to hours worked per year by the employed.

3. Annual Hours Worked by the Employed

Despite the huge variations in annual hours worked by the employed⁴ across the OECD, less is known about this than about employment rates. As we have already seen in Table 3, except for Sweden and Norway where female participation was very high, annual hours in 1970 were between 1850 and 1950 in most countries for which data are available. Since that time, annual hours have fallen by anything from 50 to 150 in

⁴ Annual hours refers to the hours worked in a year by workers who work for the whole year (or full year equivalent workers). They may work part-time, however. Also, it refers to hours actually worked, not hours paid for.

Table 12
Unemployment (Standardised Rate) %

	1965–72	1973–79	1988–95	1996–99	2004
Austria	1.4	1.4	3.6	4.3	4.5
Belgium	2.3	5.8	8.4	9.2	7.8
Denmark	1.7	4.1	8.1	5.3	5.4
Finland	2.4	4.1	9.9	12.2	8.9
France	2.3	4.3	10.5	11.5	9.7
Germany (W)	0.8	2.9	5.6	7.4	7.7
Ireland	5.3	7.3	14.7	8.7	4.5
Italy	4.2	4.5	8.1	9.9	6.9
Netherlands	1.7	4.7	7.2	4.5	4.6
Norway	1.7	1.8	5.2	3.8	4.4
Portugal	2.5	5.5	5.4	6.0	6.7
Spain	2.7	4.9	19.6	19.4	
Spain*				15.8	10.8
Sweden	1.6	1.6	5.1	8.6	6.4
Switzerland	0.0	0.8	2.8	3.5	4.4
UK	3.1	4.8	8.8	6.8	4.6
Australia	1.9	4.6	8.7	7.9	5.5
Canada	4.7	6.9	9.5	8.7	7.2
Japan	1.3	1.8	2.5	3.9	4.7
New Zealand	0.3	0.7	8.1	6.8	3.9
US	4.3	6.4	6.1	4.8	5.5

Notes. As far as possible, these numbers correspond to the OECD standardised rates and confirm to the ILO definition. The exception here is Italy where we use the US Bureau of Labour Statistics ‘unemployment rates on US concepts’. In particular we use the correction to the OECD standardised rates made by the Bureau prior to 1993. This generates a rate which is 1.6 percentage points below the OECD standardised rate after 1993. The rates referred to in Spain* refer to recently revised ILO rates. For earlier years we use the data reported in Layard *et al.* (1991). For later years we use the *OECD Employment Outlook* (2005, Table A).

Sweden, Australia, Canada and the US to around 500 in France, Germany and the Netherlands.

We have already noted that variations in annual hours are driven, in the main, by holidays and paid vacations and by sickness and parental leave. Looking over time, we see from Table 13 that in many countries there has been a significant increase in the minimum annual paid leave governed by legislation. In both Italy and the UK, there was no legislation until the late 1990s when the European Working Time Directive (November 1993) was incorporated into national legislation. By and large this made little difference in practice because annual paid holiday typically exceeded four weeks in Italy and even as far back as 1981, average annual weeks of holiday for manual workers in the UK was 4.2 (OECD, 1990, Table 6.1). Perhaps the most noteworthy point is that the US is unique among the developed OECD countries in having no legal minimum to annual paid leave.

Another contributory factor to changes in annual hours is the incidence of part-time work. This is not, of course, an explanation of changes in annual hours since it is merely one of the mechanisms by which the hours which people choose to work are expressed. In Table 13, we see the history of part-time employment. In many countries, there has been an increase in part-time employment but it remains below 20% in most

Table 13
Part-Time Employment and Annual Leave Legislation

	Part-time employment as a proportion of total employment (%)			Minimal annual leave legislation‡ (weeks)				Public holidays, 1991 (days)
	1973	1990	2004	1964	1984	1992	2003	
Austria	6.4		15.5	2	4	5	5 (5)	13
Belgium	3.8	13.5	18.3	2	4	4	4	10 – 13.5
Denmark	22.7*	19.2	17.5	3	5	5	5 (6)	10
Finland	6.7*	7.6	11.3	3	4	5	4 (5)	5 – 9
France	5.9	12.2	13.3	3	5	5	5 (5)	11
Germany	10.1	13.4	20.1	2.5	3	3	4 (5.8)	11 + 4 regional
Ireland	5.1*	10.0	18.7	2	3	3	4 (4)	8
Italy	6.4	8.9	14.9	0 [†]	0 [†]	0 [†]	4 (5.6)	11
Netherlands	16.6*	28.2	35.0	2.5	3	4	4 (6.2)	9
Norway	20.8	21.8	21.1	3	4.2	4.2	4.2 (5)	10
Portugal	7.8	7.6	9.6	1	3–4.4	3–4.4	4.4 (4.9)	13
Spain		4.6	8.5	1	5	5	4.2	13
Sweden	23.6*	14.5	14.4	4	5	5.4	5 (6.6)	9
Switzerland		22.1	24.9	1	2	4	4	8
UK	16.0	20.1	24.1	0	0	0	4 (4.9)	8 + 3 regional
Australia	11.9	22.6	27.1	3	4	4	4	9
Canada	9.7	17.0	18.5	1	2	2	2	10
Japan	13.9	19.2	25.5	1	1	2	2	12
NZ	11.2	19.7	22.0	2	3	3	3	11
US	15.2	14.1	13.2	0	0	0	0	10

Notes. Numbers in parentheses refer to the average collectively agreed annual paid leave.

*1979; [†]right to paid annual leave established in legislation but length determined by collective bargaining; [‡]if legislation is in days, divide by 5.

Sources. Part time, *OECD Employment Outlook*, Table E, various issues. Annual leave, OECD (1994) Jobs Study II, Table 6.12. European Industrial Relations Observatory. ILO.

countries. The UK, Switzerland, the Netherlands, Japan and Australia have a significant proportion of part-time employment, mainly among women. Southern Europe generally has the lowest level of part-time work.

Turning to sickness and maternity leave, in Table 14 we present information on the percentage of employees in receipt of publicly provided sickness and maternity benefit. Interestingly, in many countries we see that this percentage has fallen from 1980 to 1999. Then in Table 15, column 1, we convert this into average weeks of leave which we then compare with some other measures. These are reasonably closely correlated although the fact that the average weeks in receipt of benefits exceeds the absence measure provided by Alesina *et al.* (2005) for the US suggests the latter is understated. Nevertheless, there are significant differences across countries in the amount of sickness/maternity absence. A significant proportion of those differentials is due to the variations in the behaviour of medical practitioners and in the rules governing benefit payments.

So legislation on paid vacation leave and sickness/maternity benefits obviously has some impact on working hours, but what about the underlying forces at work?

In Table 16, we present some panel regressions. Looking first at the tax variables, there is a positive impact on hours from the marginal rate facing women on zero hours where their husband is working. This is consistent with the fact that high marginal tax

Table 14
*Sickness and Maternity/Paternity Benefit Recipients as a
 Percentage of Employees*

	Sickness benefit		Maternity/ Paternity benefit		Total	
	1980	1999	1980	1999	1980	1999
Austria	3.8	2.9	1.8	2.9	5.6	5.8
Belgium	2.4	1.8	0.2	0.4	2.6	2.2
Denmark	5.8	6.0	0.6	2.1	6.4	8.1
France	3.7	3.0	0.8	3.2	4.5	6.2
Germany	4.1	3.8	0.3	0.3	4.4	4.1
Ireland	5.8	3.0	0.4	0.4	6.2	3.4
Netherlands	6.2	4.8	0	0	6.2	4.8
Spain	0.5	0.7	0	0	0.5	0.7
Sweden	6.1	7.9	2.0	2.8	8.1	10.7
UK	1.8	1.3	0.5	0.4	2.3	1.7
Australia	1.6	2.1	0	0	1.6	2.1
Canada	0.2	0.3	0.3	0.6	0.5	0.9
Japan	3.1	1.8	0.1	0.2	3.2	2.0
NZ	0.7	2.1	0	0	0.7	2.1
US	2.8	2.9	0	0	2.8	2.9

Sources. Benefit recipients/Population of working age, *OECD Employment Outlook*, 2003, Table 4.A1.1. Employment/Population, *OECD Labour Market Statistics*.

Divide the former by the latter.

Table 15
*Estimates of Weeks per Year for Employees Accounted for by Sickness and
 Maternity/Paternity Leave*

	Proportion of* employees who are sickness or maternity benefit recipients \times 52	Other absences [†] (table 2)	Absences due to [‡] sickness and maternity
	1999	2002	2002
Austria	3.0	4.0	5.2
Belgium	1.1	2.3	4.2
Denmark	4.2	4.3	3.6
France	3.2	4.7	3.8
Germany	2.1	4.7	2.8
Ireland	1.8	0.4	2.0
Netherlands	2.5	2.4	4.4
Spain	0.4	(1.7)	2.4
Sweden	5.6	3.7	7.6
UK	0.9	1.2	3.2
Australia	1.1	–	–
Canada	0.5	–	–
Japan	1.0	–	–
NZ	1.1	–	–
US	1.5	2.4	0.9

Sources. *Table 17, final column \times 52/100

[†]Table 2, column 5

[‡]*OECD Employment Outlook*, 2004, Table 1.5. Weeks of absence due to sickness and maternity are derived by doubling the last column of Table 1.5. This adjustment reflects the OECD best guess of the correction for under-reporting. For the US, we take the number from Alesina *et al.* (2005), Table 3.

Table 16
Annual Hours Worked by the Employed in the OECD (1981–99)

	Dependent Variable, log (hours)		The size of the effects in Col. 2
	1.	2.	
Marginal tax rate, spouse (100, 0)	0.086 (2.1)	0.17 (4.1)	20pp fall in rate reduces hours by 3.4%
Marginal tax rate, spouse (100, 67)	-0.072 (2.7)	-0.16 (3.8)	20pp fall in rate raises hours by 3.2%
Average tax wedge	-0.16 (3.4)	-0.033 (0.6)	
Employment-protection (index, 0–5)	-0.012 (1.2)	-0.12 (3.5)	1.3 fall in index raises hours by 15.6%
Marginal tax rate, single (100)	0.055 (1.9)	0.062 (1.9)	
Union density	0.11 (2.3)	0.21 (2.5)	20pp fall reduces hours by 4.2%
$\text{Ln} \left(\frac{50^{\text{th}} \text{ percentile}}{10^{\text{th}} \text{ percentile}} \right)$		0.70 (7.4)	15% increase raises hours by 10.5%
$\text{Ln} \left(\frac{90^{\text{th}} \text{ percentile}}{50^{\text{th}} \text{ percentile}} \right)$		0.22 (2.2)	15% increase raises hours by 3.3%
Countries	17	15	
Observations	276	177	
Year dummies	✓	✓	
Country dummies	✓	✓	
R ²	0.94	0.94	

Notes. Marginal tax rate, single. Computed using tax rules by looking at taxes paid by a single person on an annual income of x and of $x + 1$ where x is the annual average earnings of production workers. 50/10, 90/50 percentile ratios in the earnings distribution. *OECD Labour Market Statistics*. Other variables are defined in Tables 9 and 10.

rates at zero hours discourage low hours jobs. By contrast, the marginal rate facing married women with working husbands earning two-thirds of the average wage has a negative impact on hours as might be expected. The same applies to the average tax wedge. However, the marginal tax rate facing a single earner appears to have a small positive effect.

Employment protection has, if anything, a negative impact on hours, perhaps reflecting the fact that impressing managers with long hours is less of a requirement if jobs are secure.⁵ Despite this, union density appears to have a *positive* impact on hours, consistent with the results reported in Bowles and Park (2005, Table 1, Column I).

The strong positive role of earnings dispersion also confirms the results of Bowles and Park (2005). In their view, this is strong evidence in favour of the ‘Veblen hypothesis’. The idea here, espoused in *The Theory of the Leisure Class* by Thorsten Veblen (1934), is that households consume goods not only for their own sake but to impress their neighbours. This, of itself, will tend to raise working hours and if earnings are more dispersed, additional work effort is required to make the appropriate impression.⁶ An alternative hypothesis, put forward by Bell and Freeman (2001), is that increased earnings dispersion induces longer hours because it raises the incentives to work harder in order to get promoted and move up the earnings rankings. Whatever the driving force, there does appear to be a strong effect of earnings dispersion on working hours.

⁵ Perhaps because, if jobs are secure, unauthorised absence is less likely to be punished by job loss.

⁶ Bowles and Park (2005) provide a formal model of this effect.

Earnings dispersion itself is, of course, influenced by labour market institutions, even when the dispersion of skills is taken into account. For example, Nickell (2004) reports a simple cross-country regression which finds that the 90/10 earnings ratio is significantly negatively influenced by union coverage even when controlling for skill dispersion captured by the dispersion of test scores reported in the International Adult Literacy Survey (OECD, 2000). Koeniger *et al.* (2004), in a more extensive analysis, find that both trade union density and employment protection tend to reduce earnings dispersion and hence hours. This indirect effect of union density via earnings dispersion is -0.16^7 and more or less offsets the positive union density effect.

Overall, therefore, we find that various aspects of the tax system, employment protection and union density impact on working hours. Perhaps the only surprising result is that union density is positively related to hours, although this is more or less eliminated if its negative impact on earnings dispersion is taken into account.

4. Summary and Conclusions

The data we have been analysing are summarised in Table 3, where we show the history of labour input in the OECD countries. In Figure 1, we show time series for some representative countries. One fact stands out, namely that the change in labour input over the last thirty five years is, in most countries, dominated by the change in annual hours worked by workers, not by the change in the employment rate.⁸ Before discussing various stories, it is worth remarking at the outset that simply comparing the US with 'Europe' is a hopeless strategy because European labour markets are highly diverse. A second point to bear in mind is that large macroeconomic shocks have distorted the labour input series for some countries in some periods. Thus, in France, Germany, the Netherlands, Spain and the UK, there were particularly adverse macroeconomic shocks between 1973 and 1983. The same applies to Finland and Sweden in the early 1990s. By contrast, Ireland, the Netherlands and Spain were subject to strong favourable shocks in the 1990s.

The first story which is frequently used to explain cross-country variations in labour input is based on labour taxes, a recent example being Prescott (2004). The evidence we possess indicates that taxes cannot be the whole story. The tax story is inconsistent with the tax effects on labour inputs generated by microeconomic studies (Alesina *et al.* 2005) and those generated by cross-country studies (Nickell, 2003*b*). For example, if we apply the tax data to the annual hours regressions in Table 16, we find that the contribution of tax changes to the changes in annual hours from the early 1980s to the late 1990s is very small, probably less than 10%.

A second story would be in the same spirit as the tax story but adding in all the other elements of the social security system including early retirement benefits, sickness and disability benefits, unemployment benefits and so on. As we have seen, these are certainly good at explaining the changes in some aspects of the labour input, notably

⁷ In Koeniger (2004), Table 3, columns (5), (6), we find the coefficient on union density is -0.32 in the 90/50 equation and -0.13 in the 50/10 equation. So the total effect of union density Table 19, column 2 is $0.21 - (0.32 \times 0.22 + 0.13 \times 0.70) = 0.21 - 0.16 = 0.05$.

⁸ Thus, of the 12 countries for which data are available, eight saw hours reduction of more than 10% whereas only three had changes in their employment rate exceeding 10%.

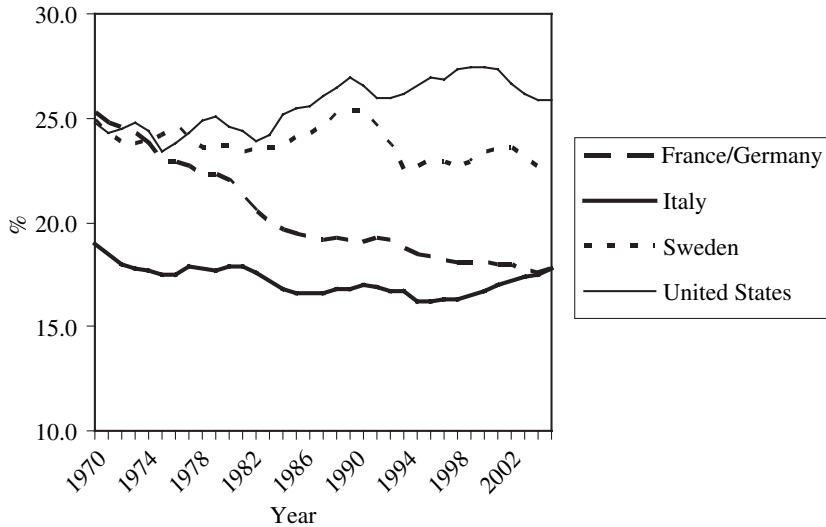


Fig. 1. *Weekly Hours per Person of Working Age*

Source. *OECD Labour Market Statistics*.

inactivity among men, both prime age and old, as well as a part of the changes in unemployment and female participation. But shifts in annual working hours are a major part of the story and here, while labour taxes have a significant impact, they explain only little of the overall picture.

A third story is that favoured by Alesina *et al.* (2005) who argue that the nexus of strong unions, generous welfare benefits and social democratic governments imply both high taxes and direct pressure towards less work. This latter is partly driven by work-sharing in response to adverse shocks and partly by the reasonable belief that long holidays are a good thing for workers, hence laws governing minimum levels of paid annual leave. In practice, all developed OECD countries bar the US have such laws, even those such as New Zealand and the UK where unionisation has collapsed. However, the work-sharing story applies clearly to Germany and particularly France, where incentives to reduce labour supply have consistently been applied in response to increases in unemployment, culminating in the imposition of the 35-hour week in France in the late 1990s.

But it is hard to see how the Alesina *et al.* story applies to Sweden which has stronger unions, more generous welfare benefits, higher taxes and more social democratic governments than either France or Germany. Yet it has one of the highest employment rates in the OECD and only a small fall in labour input since the early 1970s. Thus, overall labour input in Sweden was 3% below that in France and Germany in 1970 and 26% above in 2004. So it is plain that the stories discussed so far are not wholly satisfactory. To summarise, three groups of countries emerge from the overall data (Table 3, Figure 1). These are Anglo-Saxon, Scandinavian and major Continental (France/Germany). Countries in the first group have comparatively unregulated labour markets, relatively low taxes, and benefit systems which are reasonably work friendly. So they tend to have high levels of labour input. France and Germany are

completely the opposite and now have low levels of labour input. It is the Scandinavian countries which do not fit into the simple framework espoused by Alesina *et al.* (2005). While they arguably have more work friendly benefit systems than France and Germany, they have most of the 'bad' characteristics identified by Alesina *et al.* yet have high levels of labour input.⁹ Then, of course, there are other countries, notably The Netherlands and Italy, which do not easily sit in any of these groups.

The main problem is to explain why labour inputs in France and Germany fell dramatically over the last 35 years but remained relatively high across most of Scandinavia. This despite all these countries having heavily regulated labour markets and high taxes. Looking first at the variables which explain annual working hours (see Table 16), tax rates have risen generally in all the countries, employment protection has, since the mid-1970s, strengthened in France, weakened in Germany, strengthened then weakened in Denmark, strengthened in Finland and weakened in Sweden. Union density has generally been stable or falling except in Finland where it has been rising. These patterns are not very helpful in explaining the different trends in hours between France/Germany and Scandinavia. The same is true of movements in earnings dispersion at the lower end (50/10 ratio), a variable with a very strong relationship with annual hours worked (Table 16). From the mid 1970s, lower end earnings dispersion fell significantly in France but was flat in Germany. In Finland it also fell a little, in Denmark it was flat and in Sweden there was a slight rise. Only in France is this effect of any great importance, contributing around one quarter of the overall fall in annual hours.

Perhaps a better understanding may be obtained by looking more closely at the behaviour of trade unions in France and Germany relative to those in Sweden as a representative Scandinavian country. The discussion in Kramarz *et al.* (2006) provides some useful information. First in France, both unions and the state have a very strong belief in work sharing as a response to adverse shocks in order to hold down unemployment, a belief which is shared by the trade unions in Germany, at least until recently. By contrast, in Sweden trade unions have never pushed for working time reductions as a means of reducing unemployment. Why do we have these differences in view?

In Sweden, since the 1960s, the social partners have had an agreed model based on equal pay for equal work and the central importance of international competitiveness. They all correctly understood that 'exogenous' wage increases or hours reductions reduced international competitiveness and hence employment. There is no question that the 'small open' nature of the Swedish economy was an important factor in generating this agreed view of the workings of the economy. By contrast, in the large continental economies, France and Germany, similar 'exogenous' wage increases or hours reductions were typically seen in ideological terms as a simple transfer from capital to labour with hours reductions, in particular, generating employment increases via a work-sharing effect; see Saint-Paul (2004) for further discussion of the issues. In practice, this analysis is probably incorrect (Kramarz *et al.*, 2006; Kapteyn *et al.*, 2004). This implied that following the adverse shocks in the 1970s, early 1980s and early 1990s,

⁹ These three groups broadly fit into the Esping-Andersen (1990) worlds of welfare capitalism, namely Liberal (Anglo-Saxon), Social Democratic (Scandinavia), Conservative (France/Germany). In practice, the three worlds are based on differences in the structure of the welfare systems and these are, of course, going to bear some relationship to labour inputs. However, this taxonomy is not, in itself, very helpful when it comes to understanding the relatively high levels of labour input in the Scandinavian group.

in Sweden, the response was one focusing on coordinated wage restraint with little or no attempt to reduce effective labour supply. By contrast, in France and Germany, there has been continual pressure for hours reduction in particular and reduction of effective labour supply more generally, because of the mistaken belief that this would reduce unemployment. A good example is displayed in Table 6, where the implicit tax rates facing 60-year-old men are high in France and Germany and very low in Sweden. Not surprisingly, therefore, inactivity rates among older men have risen significantly in France and Germany whereas in Sweden they remain below 25%.

Overall, therefore, it seems plausible that the model of the economy employed by the social partners in the small open Scandinavian economies ensured that they did not respond to adverse shocks by reducing effective labour supply.¹⁰ The different view of economy shared by unions and the state in the big continental economies, France and Germany, led them to take the path of labour supply reduction in response to similar adverse shocks.

Turning now to two countries which do not sit easily into these groups, Italy and the Netherlands had only small falls in labour input from 1973 to 2004, but for very different reasons. In both countries, labour input in 1973 was exceptionally low. In Italy this was because female participation was very low, with an employment rate of around 30%. Furthermore, the retirement age was 60 for men and 55 for women, at least five years younger than in any other European country. For example, it was 67 for both men and women in Denmark and Sweden. So it is no surprise that in 1973 and, indeed, even in the 1960s, Italy had the lowest employment rate in the OECD. And it still does. Add in only a modest fall in annual hours and we find only a small fall in overall labour input. There is no strong element of work-sharing here. Indeed, the Italian labour market model, with minimal welfare benefits and very strong employment protection, places a great deal of weight on the position of the male head of household, which is not to be undermined either by the presence of a high earning wife or by the loss of a job. Thus the unemployment rate of husbands at 2% was, in 1992, among the lowest in the OECD (OECD, 1994, Table 1.19).

While the labour input in the Netherlands was also exceptionally low in 1973, the subsequent history is completely different. The employment rate of women in 1973 was extraordinarily low in the Netherlands at 28.6% but by 2004 it had risen to 65.7%. As a consequence the overall employment rate had risen by 17 percentage points, by far the largest increase in the OECD. But the majority of women in employment in the Netherlands work part-time, so average annual hours fell dramatically. The overall consequence of this was that the total labour input had barely changed by 2004.

The key factor here was an extraordinary reversal of views on part-time employment. In 1981, Dutch trade unions were strongly opposed to part-time work. However, Dutch women turned out to have a strong preference for part-time work as a method of balancing the demands of child care with the economic pressures encouraging market work. As more women joined the labour market, unions started to change their views and through the 1990s the proportion of collective agreements including a right to

¹⁰ So why, in the light of this, have working hours fallen so much in Norway. One can only speculate here, but the enormous oil and gas wealth acquired in the last 30 years has ensured that, despite the decline in labour input based on a strong 'income effect', GDP per capita remains relatively very buoyant.

part-time work rose dramatically from 25% in 1990 to 70% in 1996 (Kramarz *et al.*, 2006). This culminated in a law, passed in 2000, enshrining the entitlement of all workers to part-time work which could only be opposed by firms for 'compelling business reasons'. The upshot of all this is that the Netherlands has a very high employment rate but 35% of all workers work part-time, a figure far in excess of that in any other OECD country (see Table 13).

So what are the broad brush conclusions? First, countries, mainly Anglo-Saxon, with relatively unregulated labour markets, low taxes, comparatively weak unions and benefit systems which are work friendly tend to sustain high levels of labour input. Second, France and Germany have the opposite characteristics and labour input has declined dramatically in the last 40 years. Third, most of the Scandinavian countries, while having many of the same characteristics as France and Germany, have nevertheless sustained comparatively high levels of labour input. The key factor here is that in the small, open Scandinavian countries, trade unions and the state recognised that the way to maintain high levels of labour input was to focus on international competitiveness. This led to their rejecting work sharing as a response to adverse shocks rather than wage restraint. By contrast, Germany and particularly France, embraced work sharing and labour supply reduction as a policy response. While this did not work as a method of reducing unemployment, it was very successful in lowering overall levels of labour input. Finally, further countries, such as Italy and the Netherlands, do not fit into any of these three groups, and different explanations of their labour input patterns are required.

Perhaps the most important lesson we can draw from all this is that unregulated labour markets, low taxes and weak unions are not necessary for sustaining high levels of labour input. Many of the Scandinavian economies, which have none of these, illustrate that by having generous but work friendly benefit systems and eschewing the use of policies to reduce labour supply in response to adverse shocks will work just as well.

*Centre for Economic Performance, London School of Economics,
Nuffield College, Oxford*

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Appendix

Appendix Table 1
Alternative to Table 2

	1.	2.	3.	4.	5.
	Average weekly hours by those in work	Annual weeks worked by those in work (52–3–4) and (annual hours)	Holidays and vacation weeks	Total	Other Absences Of which sickness/maternity
Austria	38.4	41.5 (1594)	7.2	3.3	2.6
Belgium	36.3	42.0 (1525)	7.1	2.9	2.1
Denmark	36.3	40.7 (1477)	7.4	3.9	1.8
Finland	38.8	40.6 (1575)	7.0	4.4	2.1
France	36.2	42.3 (1531)	7.0	2.7	1.9

Appendix Table 1

Continued

Germany	36.5	42.0 (1533)	7.8	2.2	1.4
Ireland	36.3	44.7 (1623)	5.7	1.6	1.0
Italy	37.4	42.0 (1571)	7.9	2.1	1.0
Netherlands	31.8	40.6 (1291)	7.5	3.9	2.2
Norway	37.3	39.6 (1477)	6.5	5.9	3.6
Portugal	40.4	43.7 (1765)	7.3	1.7	1.2
Spain	38.8	43.3 (1680)	7.0	1.7	1.6
Sweden	38.1	39.2 (1494)	6.8	6.0	3.8
Switzerland	37.5	43.3 (1628)	6.0	2.6	1.1
UK	38.2	42.1 (1608)	6.5	3.4	1.6
US	39.4	46.2 (1820)	3.9	1.9	1.0

Sources. Column 1. *OECD Employment Outlook, 2004*, Table 1.5. US, Alesina *et al.* (2005, Table 3).

Column 3. *OECD Employment Outlook, 2004*, Table 1.5. US, Alesina *et al.* (2005, Table 3)

Column 4. *OECD Employment Outlook, 2004*, Table 1.5, cols. (h) + (i). US, Alesina *et al.* (2005, Table 3, col. 5).

This Table is based on a different method of computing annual weeks worked.

Appendix Table 2

Another Alternative to Table 2

	1.	2.	3.	4.	5.
	Ave. weekly hours by those in work	Annual weeks worked by those in work (52–3–4) and (annual hours)	Holidays and vacation weeks	<i>Other Absences</i>	
				Total	Of which sickness/maternity
Austria	38.4	39.1 (1501)	7.2	5.9	5.2
Belgium	36.3	39.9 (1448)	7.1	5.0	4.2
Denmark	36.3	38.9 (1408)	7.4	5.7	3.6
Finland	38.8	38.5 (1494)	7.0	6.5	4.2
France	36.2	40.4 (1462)	7.0	4.6	3.8
Germany	36.5	40.6 (1473)	7.8	3.6	2.8
Ireland	36.3	43.7 (1586)	5.7	2.6	2.0
Italy	37.4	41.0 (1533)	7.9	3.1	2.0
Netherlands	31.8	38.4 (1221)	7.5	6.1	4.4
Norway	37.3	36.0 (1343)	6.5	9.5	7.2
Portugal	40.4	41.8 (1689)	7.3	2.9	2.4
Spain	38.8	41.7 (1618)	7.0	3.3	3.2
Sweden	38.1	35.4 (1349)	6.8	9.8	7.6
Switzerland	37.5	42.3 (1586)	6.0	3.7	2.2
UK	38.2	40.5 (1547)	6.5	5.0	3.2
US	39.4	45.2 (1781)	3.9	2.9	2.0

Sources. Columns 1. and 3. As previous Table.

Columns 4. and 5. *OECD Employment Outlook, 2004*, Table 1.5 cols. (h) + (i) + (j) and 2 × col. (j). US, Alesina *et al.* (2005), Table 3 col. 3 + 2 × col. 5 and 2 × col. 5.

In this Table, the survey data on sickness and maternity are doubled. This is an adjustment suggested by OECD staff. In our view, some of these numbers seem implausible.